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Inayat Ali

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To my extended family: especially my *Amān* (mother) and *Abā* (father), and the two great souls who prematurely left this world—my *Adī* (sister) Reemā and *Māmā* (mother's brother) Faiz Ali.

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With best regards and wishes,

Inayat Ali

Shottentor, Vienna, August 2020

A NOTE ON THE TRANSLATION, EXPLANATIONS, AND PRONUNCIATION OF LOCAL TERMS

Throughout the text, I have used numerous local terminologies and concepts mainly for one purpose: to make local voices heard in their words. All of them have as much equivalent translation and explanations as possible in the English language into the parentheses. The translations, which are marked by an asterisk - e.g., *Mātā Rani* [Queen goddess]* - are by myself, the ones without this mark have other sources or are generally used in Pakistan. Moreover, for the correct pronunciation of these local sounds, I list below only those sounds that are unique to *Sindhī* language using the International Phonetic Alphabet (IPA). Being a native speaker of this language, I also have written some words differently than the already prevailing spellings, which primarily were done by the British colonizers. I do see errors related to pronunciations.

Sindhī letters in Latin	*Sindhī* Letter	IPA Sign
Dd	ڈ	ɗ
Bb	ٻ	ɓ
Gg	ڳ	ɠ
JJ	ڄ	ʄ~j
Rr	ڙ	ɽ
Kh	ک	k^h
Ņę	ڱ	ŋ
Ńě	ڃ	ɲ
Ch	ڇ	$tɕ^h$
Nn	ڻ	ɳ

A note on the English: I have written the thesis in American English. Yet I have not changed the spellings of words from the British/Australian to American English in the following conditions: words in the direct quotes and terms such as the Expanded Programme on Immunization.

LIST OF ABBREVIATIONS AND ACRONYMS

AAP	Accelerated Action Plan
AD	Anno Domini
ADP	Annual Development Plans
ARI	Acute Respiratory Infection
BCC	Behavior Change Communication
BCE	Before Common Era
BCG	Bacillus Calmette–Guerin
BHU	Basic Health Unit
BISP	*Benazīr* Income Support Program
CDC	Centers for Disease Control and Prevention
CDD	Control of Diarrheal Diseases
CHP	Country Health Programme
CIA	Central Intelligence Agency
CMA	Critical Medical Anthropology
CMIS	Central Management Information System
COVID-19	Coronavirus Disease 2019
CRS	Congenital Rubella Syndrome
DC	District Coordinator
DCO	District Coordination Officer
DFID	Department for International Development
DEWS	Disease Early Warning System
DHIS	District Health Information System
DHQ	District Headquarter
DRAP	Drug Regulatory Authority of Pakistan
DSO	Divisional Surveillance Officer
DSV	District Superintendent Vaccination
ECDC	European Centre for Disease Prevention and Control
EDO	Executive District Officer
EIA	Enzyme-Linked Immunoassay
EmONC	Emergency Obstetric and Neonatal Care
EPI	Expanded Programme on Immunization
FATA	Federally Administered Tribal Areas

FP & PHC	Family Planning and Primary Health Care
FPAP	Family Planning Association of Pakistan
GAVI	Global Alliance for Vaccines and Immunization
GDP	Gross Domestic Products
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GID	General Intelligence Directorate
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
H	Hemagglutinin
HeI	*Hizb-e-Islamī*
HI	Hemagglutination Inhibition
HSSC	Higher Secondary School Certificate
HSW	Hijra (Transgender) Sex Worker
IgM	Immunoglobulin M
IMR	Infant Mortality Rate
INGO	International non-governmental organization
IPC	Inter-Provincial Coordination
ISI	Inter-Service Intelligence
JI	*Jamāt-e-Islamī*
JICA	Japanese International Cooperation Agency
JUI	*Jamiat-e-Ulema Islamī*
KfW	Kreditanstalt für Wiederaufbau
Km.	Kilometer
KMV	Killed Measles Vaccine
KPK	Khyber Pakhtunkhwa
LEA	Law Enforcement Agencies
LHV	Lady health visitor
LHW	Lady health worker
MCHC	Mother and Child Health Centre
MDG	Millennium Development Goals
MMR	Maternal Mortality Rate
MMR	Measles and Mumps Vaccine
MMR	Measles Mumps Rubella
M&RI	Measles & Rubella Initiative

MSF	Médecins Sans Frontières
MSW	Male Sex Worker
MV	Measles Vaccine
NADRA	National Database and Regulation Authority
NCTP	National Cash Transfer Programme
NGO	Non-governmental Organization
NIH	National Institute of Health
Nm	Nanometer
NNS	National Nutrition Survey
OBL	Osma-bin-Ladin
OPV	Oral Poliomyelitis Vaccine
PAEC	Pakistan Atomic Energy Commission
PDHS	Pakistan Demographic & Health Survey
PHC	Public Health Centers
PIA	Pakistan International Airlines
PITB	*Punjāb* Information Technology Board
PKR	Pakistan Rupee
PM	Prime Minister
PMRC	Pakistan Medical Research Council
PTI	Pakistan Tehreek Insaf
PVD	Vaccine-Preventable Diseases
PWID	Predominant in Who Inject Drugs
RA	Research Assistant
RBC	Red Blood Cell
RBM	Result Based Monitoring
RHC	Rural Health Centre
RNA	Ribonucleic Acid
SAAL	Seasonal Awareness and Alert Letters
SAGE	Strategic Advisory Group of Experts on Immunization
SDG	Sustainable Development Goals
SEC	Socio-economic Census
SIAs	Supplementary Immunization Activities
SIE	Small Industries Estate

SITE	Sindh Industrial Trading Estate
SoP	Standard Operating Procedure
SSC	Secondary School Certificate
SSG	Special Services Group
SSS	*Sāf Suthro* Sindh
STI	Sexually Transmitted Infections
TB	Tuberculosis
THQ	Tehsil Headquarter
TSV	*Talukā* Superintendent Vaccination
UC	Union Council
UN	United Nations
UNAIDS	United Nations Programme on HIV and AIDS
UNICEF	United Nations Children's Fund
US/USA	United States of America
USAID	United States Agency for International Development
USSR	Union of Soviet Socialist Republics
WHO	World Health Organization

PROLOGUE: AN AUTOETHNOGRAPHIC ACCOUNT

Measles has been reported to infect humans as early as the sixth century BCE (Düx et al. 2020) and continues to challenge the world, including Pakistan, where two consecutive measles outbreaks occurred in 2012-13, mainly in its Sindh province. These two outbreaks are the focus of this thesis, *Constructing and Negotiating Measles: The Case of Sindh Province of Pakistan*. I was intrigued by the question of why measles still causes outbreaks, in which thousands of children, especially those who belong to low-income families, contract the virus, and suffer accordingly. Herein I ask, what are those factors that impede the progress of Pakistan's Expanded Programme Immunization (EPI), which was started as early as 1978? How different stakeholders conceptualize and deal with measles?

I began my quest for answers by accumulating secondary data through different media sources and from information shared by my family, friends, and acquaintances. This preliminary information pointed to competing interpretations of issues surrounding measles and vaccination programs in the country. These competing narratives highlight social conflict, as measles and vaccination are perceived differently by diverse stakeholders. Many in Sindh province see measles as a necessary sacred illness, while others consider it to be a harmful infectious disease that should be avoided via vaccination. Likewise, the meaning of vaccination varies as well: some perceive it as a life-saving endeavor while others interpret it as a "Western plot."

At the outset of this project, the phenomena of measles as a necessary sacred illness, in which Hindu goddess *Mātā* manifests, and of vaccination as a "Western plot" to sterilize women to control the Muslim population were already familiar to me due to my upbringing in the country. I have experienced both phenomena: Measles occurred to me when I was an infant, and (by my choice) I received the hepatitis vaccine during my teenage years.

According to my mother, not only I but also my siblings contracted measles. She told me:

> [In *Serāikī*] *Hik Ddīhan*, *Māī Meharbān Waddā Bār Rakhyā Taiddy Mathun*" (One day, the kind goddesses showed high intensity over you.)* [1] Your eyes stuck in one place. You were fainting. This state made us highly worried. I

[1] From now on, I will use an asterisk (*) to indicate my translations of local terms and expressions.

was crying. Then our grandmother chanted *Lolī* (lullaby, which is a Hindu religious song called *Bhajjan*).* She already performed *Katchā Chandā* [in which a local woman – a healer – chants specific verses and pours drops of milk on the face of a child who has contracted measles. [Further details are provided in chapter 9]. Not only you had measles, but in our extended family there were a few more children; thus, she could not perform the *Pakā Chandā* as it is performed once *Māī Meharbān* (kind goddess)* cools down every contract child and returns. We played *Bhajjan* in the stereo that your *Nānā* (my mother's father) brought from a Hindu family. Our grandmother, my mother, your father's mother, and I were continually sitting beside you to look after you. My parents, your father's parents, and your father were coming time and again, to check your state. It was very critical. We thought you would not survive. Despite chanting *Lolī*, you could not sleep the entire night, but in the early morning. Finally, when you woke up, *Māī Meharbān* (kind goddess)* decreased the intensity, as she showed her kindness.

However, after your recovery, the situation of your cousin, Rameez (pseudonym), deteriorated. He (my mother's brother's son) was a few weeks younger than you, and the elder son of your *Māmā* [a term used for "mother's brother" in the *Serāikī*, *Sindhī*, *Punjābī* and Urdu languages].* Although he also had measles, he was all right. Each family member was worried about you. Suddenly, his health became critical, as it is always the case—whenever the kind goddess shows benevolence at one, it manifests intensity on the other. Thus, after showing kindness over you, *Māī Meharbān* increased the intensity of pain on Rameez.

Your *Māmā* (the father of Rameez) was in *Karāchī* to do a governmental job. Rameez's situation continually deteriorated; hence, we had no choice but to bring him to a Hindu *Hakīm*. There was a famous *Hakīm*, called *Nāru*, whose clinic was at a distance of 8-10 kilometers. We already consulted him for you and Rameez. To bring Rameez there, your *Nānā* (my mother's father) made the oxcart ready, as we had no other transport. Your *Nānā* and *Nānī*, your *Māmī* [*Māmā*'s wife], I, you (to seek some treatment for you, too) and Rameez got on the oxcart to reach the *Hakīm*. There was no paved road available. Hence, your *Nānā* took the bank of the canal. Without caring about the heat of the day and dust of the bank, we continued our journey.

Unfortunately, Rameez's health was not improving. We were singing *Lolī* in the cart, and putting a piece of cloth wet with goat milk over his forehead. Instead of improving, his situation continually became more critical. We were almost halfway through our journey; his eyes stopped blinking. Your *Nānā* started beating the oxen to run and reach quickly. Despite every effort, we were perhaps still 4-5 kilometers short. We were helpless and could not save Rameez, as he took his last breath in the lap of your *Māmī*. His sudden death broke us. We started crying and returned the oxcart home. Nobody anticipated that Rameez would die: everyone thought that Inayat Ali would not survive. After his death, your *Māmī* was not in her senses, as Rameez was her first child and then a son. We managed to deliver this tragic news to your *Māmā*, which broke him

> entirely. He could not see Rameez for the last time, as Karachi was quite far away. We had already buried Rameez when your *Māmā* arrived. The death of Rameez shook every family member because he was charming. Thereafter, your *Māmā* cried too much and resigned from his government job. Rameez's pain exerted a profound effect on his mind. Despite our constant push to continue the job, he did not listen to anyone. Instead of resuming his government job in Karachi, he preferred to work as daily wage labor. This is because he wished to stay close to his family.

This anecdote illustrates not merely my painful and first-hand relationship with measles but also reveals my firsthand experiences of structured disparities. I was fortunate enough to survive, but not everyone survives, as in the case of Rameez. However, when I applied for the Ph.D. scholarship and reached Vienna to pursue this current degree, this was not the topic on my mind. I had another proposal concerning exploring how people of the Thar Desert of Sindh deal with health and illness, as the basic needs, e.g., food are unfulfilled and necessary facilities such as schools, biomedical hospitals are scant there. I wanted to explore verbal healing and herbal medicine.

Nonetheless, just as when I was planning to reach Vienna at the end of 2012, measles caused an outbreak in Pakistan. Yet another consecutive outbreak occurred in 2013. Both outbreaks affected thousands of children countrywide, in which a few hundred died. At that time, I was already at the current department and attending a colloquium on "Rethinking Ethnography," offered by Ayse Caglar, for which every participant had to present his/her project. After attending a few presentations, I became interested in working on measles. For developing the project, I further accumulated information from various sources, including the media, academic literature, family members, friends, and acquaintances. These preliminary data, including my autoethnographic account, highlighted the magnitude and diversity of the matter and that a dispute among perceptions and measures regarding measles and vaccination is underway between positions that frame measles as a necessary and inevitable sacred illness or an infectious disease, and vaccination as a "Western plot" or as necessary to eliminate infectious diseases.

These diverse perspectives may be correct depending on an angle, or an aspect of a phenomenon, as views always can be appropriate in a particular context. Therefore, it was indispensable to situate these standpoints within a historical background of critical

sociocultural, economic, and (geo)political events, which have shaped views and contexts.

During further seminar discussions, Ayse suggested that working on the "making of vaccination" in Pakistan can be a promising "entry point" to understand these events. Her suggestion nurtured my idea to work further on infectious diseases. My concept matured during repeated meetings with my current supervisor, Bernhard Hadolt. At that time, I preferred not to directly study vaccination due to the ongoing (geo-)politics (see chapter 2) revolving around vaccination in Pakistan: Most recently, in 2012, a "fake" vaccination program was used by the American CIA to find Osama bin Ladin. As a result, many vaccination teams faced assaults, and multiple vaccinators were killed. The critical state of this life-saving endeavor frightened me, and this anxiety has continuously remained with me. I thought that it would be too risky to conduct research and reflect on the situation critically. This anxiety was not only about the involvement of the CIA, but also about the government, since in Pakistan, many critical thinkers and protestors, who try to "speak truth to power," have gone "missing"—abducted and killed. Both of these contexts carry significant risks for the researcher and have strong roots in contemporary and past critical events.

For comprehending this interplay, I employ a few critical anthropological concepts, such as "structural violence" (Farmer 1996), "social suffering" (Kleinman, Das, and Lock 1997), and "critical events" (Das 1996). With these concepts, I index all those factors and events that have played a pivotal role in shaping and configuring the particular socio-cultural, political and economic structures in Pakistan today, while including a wide range of stakeholders at local, national and global levels. Particularly dwelling on the concept of "critical events"—as Das has used it to trace the state of present-day India as the result of an interplay of several historical factors, mainly colonization—I discuss several economic and geopolitical critical events (such as the invasion of the Union of Soviet Socialist Republics (USSR) in Afghanistan and the production of the *Tālibān* in Pakistan to fight in Afghanistan in the 1980s), which have significantly shaped the present situation of Pakistan.

Given the risky nature of researching Pakistan's vaccination program, to ward off risks to myself yet to contribute into Pakistani society, I chose to work on measles from two

perspectives: (1) measles as a disease; and (2) measles as an analytical entry point to study the role of those critical events and structures, which have had significant impacts on current Pakistan, including on its Expanded Programme of Immunization (EPI) to control and eliminate the infectious diseases from the country.

The above-mentioned theoretical concepts also beg a brief note. Not only with measles and vaccination, I also have direct experience to understand and operationalize these theoretical concepts: I have experienced how structured types of inequalities affect an individual life (Ali, unpublished). Although my autoethnographic account of measles above vividly demonstrates the implications of these institutionalized forms of disparities, I briefly elaborate on these effects while providing another personal experience.

> My younger sister Reema—a more brilliant student than all of us—prematurely died when she was about to enter her teenage due to an improper diagnosis of chronic liver disease. For many years, we, especially I, brought her to different doctors—from local towns to the federal hospital—but no doctor could diagnose her disease. At the final stages of her disease, she became unconscious and my family—as I was in Islamabad for my master's degree—brought her to a district-level hospital. My parents were profoundly worried about the money to pay the hospital bills. Yet with economic support from relatives and friends, they decided to visit a private hospital where a famous specialist doctor was practicing. This doctor used to practice at several places across the province. We had consulted him previously a few times, when Reema was physically okay. However, this doctor could not diagnose the disease earlier; he only finally diagnosed it when my sister was already unconscious. I reached this hospital the very next day after travelling for around 18 hours by bus. I could not afford air travel. She never regained consciousness and passed away after two nights at the hospital: we certainly never anticipated that Reema would leave us so early. (Also, please see my acknowledgement in which I succinctly describe how my mother's younger brother also died prematurely).

This vignette reveals various levels of chronic disparities and their serious effects: (a) the lack of proper and affordable healthcare services and a dearth of qualified doctors; (b) the unavailability of economic resources to afford effective treatment and travel; (c) social stigma that disclosing the critical symptoms may generate a bad social image about the family, and especially about Reema, who might have faced severe consequences had she lived.

The project has distinct contours. It is related to me, and is not limited to the present, as it has strong roots in history, current affairs and (geo-)politics. I did not limit my orientation to only anthropology but also read non-anthropological literature. This interdisciplinary orientation was necessary to have a thorough lens through which to view my project, as health has profoundly been shaped by historical experiences, events, and structures that are interrelated with economic regimes, political affairs, technological advancements, and travel of microorganisms that cause outbreaks.

Considering that there is always room for improvement, I end this prologue by noting that research can be a never-ending process and there comes a time where the researcher is compelled by time and resource constraints to stop and write up the results of his/her work, even if that is only a momentary end-point.

CHAPTER 1: INTRODUCING THE PROJECT

In this chapter, I describe the scope of my study, defining the issues surrounding measles in Pakistan and putting them into the broader context in which inequalities occur; offer a brief note on the theoretical and methodological frameworks I have significantly benefitted from to conduct this project and analyze its results; explicate the key concepts; describe my positionality; and provide an overview and the organization of the dissertation.

1.1 The Problem under Focus

In 2012-13, two measles outbreaks occurred in Pakistan, in which over 25,000 children were infected (World Health Organization 2013a), and around 500 died (Azeem 2013). These outbreaks significantly affected Sindh province, which reported around 300-400 deaths (M.H. Khan 2014). These overwhelming outbreaks led several local and global stakeholders—local people, Hindu *Hakīm* (Hindu healers who mostly follow *Ayurvedā*),* vaccinators, government officials (e.g., officials of the Expanded Programme on Immunization), politicians, and global stakeholders such as the World Health Organization to search for explanations. This complex array of stakeholders conceptualized measles differently, enacted their authority and displayed their interwoven yet competing agendas around it.

Local people, including local Hindu *Hakīm*, believe that measles is a necessary and inescapable sacred illness in which *Mātā*, a Hindu goddess, manifests herself. Hence, they deal with it by performing various rituals and consider that contracting measles is a natural means of immunization. This perception and knowledge are passed down through families and acquired through enculturation. A growing number of local people are suspicious of vaccination and mistrust practitioners of vaccination.

In contrast, the public media, government officials, and representatives of WHO consider measles as a potentially lethal disease that needs to be controlled and eliminated through vaccination. Thus, they blame local people for adhering to the "rural customs" and "classical taboos" from the "Stone Age," insisting that these cultural practices significantly hinder the elimination of the virus. WHO also tends to blame the Pakistani government for lack of "political will" to properly implement vaccination programs. Meanwhile, local

people have their own, socio-culturally, and politically based reasons for not vaccinating their children.

Measles and vaccination in Pakistan are encompassed by multiple competing narratives that are constructed, negotiated, and interact to justify interventions and responses to them. Arguing that these phenomena reveal ongoing social conflicts and tensions, which further reveal institutionalized forms of socio-cultural, economic and political inequalities that are appropriated at local, national and global levels, this long-term ethnographic project, *Constructing and Negotiating Measles: The Case of Sindh Province of Pakistan,* extensively explores and elaborates on the multiple imaginaries, beliefs, and practices of stakeholders, from local people to international agencies.

This research explores those competing narratives, inequalities, and social conflicts that have created a conducive environment for infectious diseases, including measles, to cause outbreaks. The project provides in-depth analyses of the present inequalities and the historical contexts (especially the pre and post-*Tālibān* events) of the country that have played a significant part in shaping people's current views concerning measles and vaccination. I show how parents express the impacts of structured inequalities that are a result of the government's policies and disparities, which themselves are a product of global geopolitical and economic regimes (see chapters 11 and 12). The study aims to elucidate the impacts of global-level inequalities as they multiply national-level disparities and ultimately inflict suffering on local people in several forms, including outbreaks of infectious diseases such as measles.

The project's locale is multi-sited, ranging from a village in Sindh to the WHO headquarters in Geneva. Yet my fieldwork has mainly focused on two villages – *Rahīmpur* and *Rāmpur* – in the *Sakhar* and *Tharpārkar* districts, respectively.[2] I view measles from two perspectives: as a disease and as an analytical window on the world of relationships where inequalities are produced, exercised, and experienced. Measles is the micro-story that illuminates the macro interplay between historical (geo)politics and economic regimes, especially the USSR invasion of Afghanistan in the 1980s; the Pakistan-US relations that produced the *Tālibān*; and in the more recent past, the CIA's "fake" 2011 vaccination campaign designed to ferret out Osama-bin-Ladin (see chapter 11).

[2] The names of the villages have been anonymized, as have the names of the respondents.

Some of the central questions of this research project include: Why does measles still prevail in the country, mainly in Sindh province? How and why do different stakeholders situated in diverse locations deal with measles differently? Why is measles as a single phenomenon attributed different meanings by different stakeholders? How do they deal with it? How can measles serve as a window on a world in which disparities are generated and appropriated, and how can measles help us to understand these institutionalized forms of vulnerabilities? Why are some populations seemingly more vulnerable to contracting measles than others? And, what can anthropology teach us about the occurrence of measles through its unique perspective?

1.2 Measles Outbreaks and Structural Inequalities

Microorganisms have long held a distinct place in the human imagination, beliefs, and practices, as they consistently and significantly challenge us. Microorganisms have regularly been shaping our socio-cultural, politico-economic, and biological history. They repetitively cause outbreaks, epidemics, and pandemics and challenge not solely our physical bodies, but also social, political, and economic bodies. They shape the cultural beliefs and myths as well as affect our economic and political structures. Prior to the invention of the microscope, humans were suspicious about the existence of microorganisms. Some scientists suspected their existence, ultimately confirmed by the microscopic investigation, which initiated exploration of the relationships among micro- and macro-species, most notably humans, especially when the former were finally recognized to cause large-scale morbidities and mortalities of the latter.

Measles is one among them. Today's measles outbreaks have multiple historical precedents. As is currently understood, the measles virus began infecting humans in large numbers around the sixth century BCE as part of the process of early urbanization (Düx et al. 2020). Since then, measles has spurred discussions and debates on its prime causes in the past (Morley 1969; Furuse, Suzuki, and Oshitani 2010; Rāzī 1848; Koplik 1962) when, along with smallpox and other infectious diseases, measles ravaged populations (Cunha 2004). Nowadays, measles has re-emerged as a subject of controversy and contestation in public debates. This is because, despite enormous global efforts such as the Measles and Rubella Initiative (M&RI), the virus still prevails in various regions, including Pakistan, and still causes outbreaks worldwide. For instance, in 2017, measles caused around 90,000 deaths globally (World Health Organization 2017), and in 2018,

measles-related deaths increased to 110,000 (Lindmeier 2018). One year later, the *Agence France-Presse* (AFP) (2018) reported a 30 percent rise in measles infections across the globe. During 2019, the media also informed us about several measles epidemics. To name but a few: during February of 2019, measles outbreaks occurred in the Philippines and killed around 30 people; in April, measles broke out in New York City, where the mayor declared an emergency; and in May, two children died in Switzerland due to measles (Hein 2019). In 2018, and in great contrast, the newspaper *Dawn* (2018) – Pakistan's renowned English daily[3] – reported a measles outbreak in several districts of Sindh province, mainly in the *Thattā* and *Sijāwal* districts, in which some children died. In 2019, Pakistan reported that around 2,000 people contracted measles (World Health Organization 2019e) while by June 2020, around 1,800 people have contracted the virus, and other suspected cases totaled approximately 3,000 (World Health Organization 2020a).

To eradicate measles from the country, national and global stakeholders have been making massive efforts over many decades. As a United Nations (UN) signatory, Pakistan began to implement the WHO's Expanded Programme on Immunization (EPI) as early as 1978 to eliminate several infectious diseases, including measles. Despite that program, the WHO's (2019c, 2019e) data from 1981 to 2019 show two major infectious diseases – pertussis and measles—as still highly problematic in Pakistan. Over this period, both diseases infected around 400,000 and 280,000 people, respectively (ibid.). In an accumulative figure of all infections caused by communicable diseases, which is approximately 841,400, those two diseases account for around 80 percent (ibid.).

Historically, the most severe outbreak of measles in Pakistan occurred in 1988, infecting around 55,550 people (ibid.). Yet despite the vaccination program, more current data from 2010 onwards demonstrate an increase in measles, which has infected around 30,000 people and a decrease in pertussis, which only infected 575 people. As mentioned earlier, in 2012-13, there were two consecutive measles outbreaks (this project's subject of study) that significantly challenged Pakistan: Over 25,000 children were infected (World Health Organization 2013a), and around 500 died (Azeem 2013). These

[3] *Dawn* is an old newspaper in the country that is considered as particularly credible for two main reasons: its launching by the founder of Pakistan, Quaid-i-Azam Muhammad Ali Jinnah; and its attention to highly important issues and impartiality—its editorials are written solely about worthy issues.

outbreaks significantly affected Sindh province, which, again, reported around 300-400 of those 500 deaths (M.H. Khan 2014).

Consequently, measles remained a prominent topic of debate, especially in the Pakistani media.[4] These outbreaks gathered huge attention from diverse stakeholders, ranging from local to global, who deal with it distinctively. As noted above, this complex array of stakeholders enacted their authority and woven different competing agendas around measles—the manifestation of *Mātā* that needs reverent attention, or a lethal disease that requires aggressive measures—to justify interventions and responses in a complex process of negotiation and contestation that reveals several institutionalized forms of socio-cultural, economic and political inequalities.

Those stakeholders (e.g., government officials and representatives of INGOs) who consider measles as a potentially lethal disease, instead of talking about the crucial economic and political factors that underlie measles outbreaks yet are easily obscured, blame local people for their "rural customs," "classical Stone Age taboos," and their refusal and resentment of vaccination, which adversely affect the elimination of the virus.

For instance, the newspaper *Dawn* (2014) reported that when measles occurs in a child in rural areas, the family members follow "superstitions" to deal with measles because they consider it a "Hindu" disease, and believe that only a Hindu faith healer knows the proper ways to handle it. Similarly, the *Express Tribune* (2012) – another English daily of Pakistan – published an interview with the Sindh's Provincial Health Secretary, who criticized local people because most parents are still reluctant to allow the doctors to check their ailing children, as they fear the wrath of Hindu goddess *Mātā Rani* [Queen Goddess* and in Hinduism, she is believed to be one Goddess—*Mātā* or *Devī*, *Durga,* called "*Māhādevī*" (Great Goddess)— who manifests in different forms (Dowson 2000, 90-1)]. Even the Muslim families interpret measles in terms of Hindu mythology and believe that fever and red spots are signs of this goddess, who has possessed the children. They prefer to deal with measles according to their faith (Express Tribune 2012).

I argue that it is easy to blame measles outbreaks on "the locals" and their "primitive" beliefs. It is harder, yet essential, to contextualize measles outbreaks within historical,

[4] One can also see the provinces politicising measles. For instance, in 2015, newspaper Dawn (2015) reported that due to the prevalence of measles in Sindh, other provinces accused Sindh province of transmitting the measles virus to them.

socio-structural, economic, and political factors and their resulting inequities and inequalities. This fault-finding has roots in colonization and in a common perception among biomedical practitioners, especially in "developed" nations and for agents of "development": that low-income countries are vulnerable to measles epidemics due to several interrelated factors. For instance, David Morley (1969)—who was a British pediatrician and started early trials of measles vaccines, in his articles, "Severe Measles in the Tropics. I & II"—claimed that in several "developing" countries, those who lack economic resources and live in villages deliberately delay recognizing measles due to their strong beliefs. He tried to blame the beliefs that people hold about measles but left the economic and political reasons unattended, though these factors considerably contribute to specific views being held.

The new economic and political regimes, I argue, have deliberately overemphasized the socio-cultural factors. This overemphasis is—similar to what Escobar (2011) argues in his famous book *Encountering Development: The Making and Unmaking of the Third World*—a deliberate effort of specific countries to coin the concept of "development" to divide the world into "developed" and "underdeveloped." According to this categorization, those who cling to sociocultural norms and values are "backward." Thus, they urgently need external intervention from countries in the "developed" category to change their "backwardness" via education and modernization,

I extend my argument that socio-cultural reasons are not the main or the sole factors behind measles outbreaks to note that these outbreaks stem more from various gross economic and political inequalities that occur at global, national, and local levels. Outbreaks can be seen against a historical backdrop of economic and (geo)political inequalities, as well as contemporary global- level economic and political disparities, which are enormous, persistent, and deepening, and are a result of a disproportionally distributed wealth. According to UN's (2005, 1) *Report on the World Social Situation 2005: The Inequality Predicament*, one billion people settled in the "developed" countries own 80 percent of gross domestic product (GDP), while the remaining over 5 billion people have the remaining 20 percent of the GDP.

Moreover, the UN (2013), in its similar report *Inequality Matters,* mentions that the absolute gap in mean per capita income between these two categories has increased from $18,525 in 1980 to $32,000 in 2010. This report also shows that in 2010, the high-income

countries, which have only 16 percent of the global population, produced around 55 percent of global income. However, low-income countries containing 72 percent of the world's population produced only one percent of the global income (ibid.). Although these two reports are almost 1.5 and .7 decades old, both paint a sharp and distinctive picture of world inequalities.

In addition to this magnitude of disparities among countries, there are significant forms of institutionalized inequalities prevailing between individuals within each country. Consequently, low-income countries, such as Pakistan, are struggling in terms of economic self-sufficiency and political stability: For achieving both these states, they are overwhelmingly dependent on foreign aid, primarily from the International Monetary Fund (IMF) and the World Bank. As during general elections, Pakistan's current ruling political party, called Pakistan *Tehrīk-i-Insāf* (PTI), proclaimed that the party would not knock at the door of the IMF and would build on the country's own resources. Nonetheless, once in power in 2018, the new government moved towards the IMF for a bailout package to run the country due to its precarious macroeconomic situation. Pakistan's recent 2019 request to the IMF was the 13th such request since 1988, in which the government received US$6 billion for three years.

These rescue packages for the country's faltering economy come with strict terms and conditions, such as the government's promise of specific "structural adjustments" programs. Under such stringent conditions, the government no longer controls the value of the American dollar against the Pakistan Rupee (PKR). The inflation rate continues to increase, and the country cannot even set the price of bread. The terms also encourage several adjustments, such as privatizing state assets and liberalizing the conditions of trade and subsidy cuts. The country stands in an awkward position, as without the IMF, it would have more enormous challenges in meeting the needs of its citizens. With this organization, the given instructions make it hard for the state to run its economy and prioritize problems. It is arguable that if the IMF's aid had had a positive impact, then the country would need no more assistance in the present because it has been receiving this assistance for the last three decades. This constant dependence on aid raises critical questions about the effectiveness of these packages, as it has created the "dependence syndrome" at a country level. I use this term not to refer to an individual's constant urge for something, but use it in a country's context that fosters those attitudes and behaviors

without thinking about self-dignity, constantly seek foreign aid and attributing higher value to it than exploring and building on that country's own efforts.[5]

Concerning aid, Daron Acemoglu and James Robinson (2012) – one a famous economist and the other a political scientist – argue in their book, *Why Nations Fail*, that aid is not the most effective way to improve the situation of low-income countries and break the vicious circle of poverty. Additionally, Joseph Stiglitz (2000) – a Nobel Prize laureate and former chief economist at the World Bank – has criticized the IMF due to its "cookie-cutter" approach to conditional lending and structural reform. These structural adjustment programs reveal an ongoing "struggle, engagement, and resistance" (Pfeiffer and Chapman 2010, 159).

Needless to say, global stakeholders such as the IMF have not succeeded in helping the country to be self-sufficient (Gera 2007; Z.A. Bhutta 2001; S.R. Khan 2002). Yet it is equally plausible to critically evaluate how effectively the country has been governed at the national level. After over 70 years of independence, Pakistan's governments have neither been in a favorable position nor made significant efforts to build the country (e.g., T. Ali 1983; Nasr 1992). For almost half of its existence, the country has been ruled by army dictators (see Samad 1994; Rizvi 1989). Further impacting an already overwhelmed situation, many of the resources have been allocated to the defense sector, and remaining resources face massive corruption (Noor 2009; Farooq et al. 2013; Chêne 2008; Javaid 2010; F. Khan 2007). The politicians have "hunted and gathered" resources, built their own small economies, and shifted resources abroad (see O'Donovan, Wagner, and Zeume 2019). I call it *local colonization.* The media have regularly broadcast about their money-laundering and their offshore bank accounts in other countries (e.g., Sehgal 2017).

Such structures and webs of local and global inequalities take differing forms. The national and global policies and preferences have significantly impeded the creation of a competent and self-sufficient country, which should have appropriately established

[5] The WHO (2020b) has used this term to define "a cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for a given individual than other behaviors that once had greater value(…) [it] is the desire (often strong, sometimes overpowering) to take the psychoactive drugs (which may or not have been medically prescribed), alcohol, or tobacco. There may be evidence that return to substance use after a period of abstinence leads to a more rapid reappearance of other features of the syndrome than occurs with nondependent individuals."

institutions: e.g., adequate and accessible healthcare system; the construction of roads; and the provision of affordable public transport to reach healthcare facilities. These policies have hindered the development of educational institutions for raising mental capacity and awareness among the masses, who are instead blamed for clinging to "faulty" beliefs about measles.

The repeated measles outbreaks owe much to such disparities. For understanding this argument, we should inquire about *why* local people hold the view that measles is a sacred illness. It is a fact that any illness requires some measures to deal with it. The local people do not—and cannot—simply watch their children suffer. They make the best possible efforts according to their belief system–performing rituals for making sense of that suffering and fulfilling a primary healthcare need. Irrespective of their religion yet with similar economic and political situations, Muslims and Hindus perform a *Chando* ritual based on their association of measles with the goddess *Mātā*, in which a local woman – a healer – recites specific chants and pours drops of milk on the face of a child who has contracted measles (see chapter 9). This ritual saves money and time simultaneously as compared to seeking help from biomedical doctors. However, if fever and pain increase, people still avoid biomedical doctors in favor of local healers, such as a local older woman with specialized knowledge or a Hindu *Hakīm* (a local herbalist who follows *Ayurvedā* or *Unānī-Tib*). These healers, according to those who utilize them, deal with *Mātā* reverently. Since (both Muslim and Hindu) people believe that measles is a manifestation of *Mātā*, they prefer to bring a child who has contracted measles to a Hindu with the belief that this meeting pleases *Mātā*. Thus, bringing a child to a Hindu *Hakīm* serves two purposes — meeting with a Hindu and receiving an instant cure (see chapter 9).

This preference, I argue, may also be seen against limited economic resources to afford private hospitalization or effective healthcare that is unavailable, inaccessible, or unaffordable; therefore, these local people have limited choices beyond observing specific rituals. An entirely different realm stands behind the "sociocultural factors" that are referred to in contemporary media accounts. This domain contains broader and stronger elements—political, economic, and historical—that make populations or regions vulnerable to contracting specific diseases, measles included. These factors significantly shape sociocultural practices by producing particular circumstances to

create vulnerabilities in poor, rural populations. These circumstances encourage and facilitate people to hold specific views and compel them to adopt affordable coping strategies. The people of Sindh province understandably utilize the techniques available to them, which also makes cultural sense to them. The biomedical realm exists far away from their everyday realities.

As I have argued, the measles outbreaks have a strong relationship with structured inequalities that occur in diverse forms and at various levels-local, national, and global. The roots of the problem of measles prevalence lie in numerous areas: in the disparities in economic resources for building a hospital or visiting a hospital; inequalities in providing facilities and services; a dearth of opportunities to access adequate facilities or receive the best education to learn critical thinking; a lack of awareness of biomedical causes and consequences of a phenomenon such as measles; and the limited power to decide what is good or bad. These institutionalized disparities are a result of structural power, in which specific structures are subtly and skillfully built to serve some and to do disservices to others, in what Farmer and colleagues (2013) call "structural violence." Along with Farmer, I argue that people with limited economic resources and political power are subject to such violence – they usually cannot escape these forms of violence. Since these inequalities are structured both firmly and subtly, society offers them options and a vocabulary to rationalize systematic inequalities.

For instance, in Pakistan, many justify their suffering via the cultural concept of "fatalism," or are culturally compelled not to discuss this suffering. Interestingly, Adelson (2008) claims that the same is right in the case of Canadian women, who are also culturally compelled to hide their suffering. Kleinman and colleagues (1997) term this phenomenon "social suffering": the notion that the suffering has been structured in such a way that people construct narratives about being subjected to the suffering and justify that subjection as a result of their actions; they do not see their suffering as structurally produced by influential stakeholders. Social suffering refers to ways of suffering that are socially shared and that concern whole social groups rather than merely individuals.

This social suffering prevails across the globe as a result of the unequal distribution of resources. Frequently inflicting substantial harm on individuals and communities, there is a cause and effect relationship among inequalities. For example, due to the lack of resources and then misallocation of these limited resources, it becomes impossible to

build proper facilities where people could receive the treatments and education that are necessary for maintaining health. Furthermore, unequal resources impact the distribution of efforts, which then affect the extent of the required awareness for the prevention of diseases, including measles, and expenditures for therapeutic measures. At a household level, particularly in the rural areas, inequality of resources and awareness results in gender disparities. The difference begins soon after the birth of a female baby. Baby boys are preferred over baby girls, as women in Sindh receive less education than men due to unequal opportunities.

According to the Pakistani government's (2019b, 161) *Economic Survey of Pakistan*, the country stands at 150th out of 189th position for its education rate worldwide. The overall rate—for those who are formally educated and are over ten years of age—is around 62 percent. Of that, approximately 52 percent of the females of the country have formal education, as compared to 73 percent of the male population. This rate of education further differs in terms of rural and urban areas as well as the provincial divisions of the country. In rural areas, approximately 53 percent of the population have formal education, and out of a total rural population, the education rate for the female is around 40 percent, in contrast to 66 percent of males (ibid.). This difference in formal education has resulted in females being less aware and entirely dependent on their male counterparts for sociocultural, economic, and political decisions. Those men and—especially—women who resist the biomedical treatment of measles during outbreaks can be seen against the backdrop of (lack of) formal education (see chapter 9).

In other words, an individual—who owns enough economic resources, or is formally educated, or male, or lives in an urban area—receives more adequate opportunities and services such as for health and education. For instance, in urban areas as compared to rural areas, the formal education level is better; health facilities are more appropriate and effective; access to such facilities is adequate and easier; and electricity is available (to maintain the cold chain of vaccines) (Government of Pakistan 2019b).

Furthermore, I argue that the magnitude of specific economic resources makes some stakeholders more influential than others; therefore, their ideas and practices matter more. For example, the UN has a *de facto* veto over the national government in terms of giving guidelines and benchmarks to achieve. And as Pakistan's media reported in 2013-14, the WHO mandated vaccination for Pakistanis to travel abroad (Dawn 2014a; A.Z.

Bhutta 2013). The central government is more powerful than the provincial governments; the provincial authorities hold more power than the district-level government officials; and the district-level officials hold more power than a vaccinator. All these stated stakeholders are more influential than parents, while a male parent is more powerful than a female parent.

Nevertheless, for exercising power, there is also a reverse order: From bottom to top, the following sphere of influence exists—a parent to vaccinator; a vaccinator to sub-district health officials; sub-district to district officials; a provincial government to a federal government; and from a federal government to the UN. For instance, a parent exercises power through refusing or feeling resentment towards vaccination to express the persistent socio-cultural, political, and economic inequalities caused by inappropriate policies of the government and the global stakeholders. The combination of refusals challenges the order of power structures to revise vaccination programs, implement them again, and (re-) arrange additional vaccination campaigns, called "supplementary immunization activities" (SIAs).

People who lack economic resources may suffer the most and use their power of refusal to express pain inflicted on them by the government or the global stakeholders. Similarly, the government may show its power by not correctly implementing the UN recommended protocols. For instance, I would like to share notes from my field diary: the WHO mandated vaccination for traveling abroad in 2014, and I got a vaccine and vaccination card to go to Austria. However, the government authorities, despite putting in place the necessary measures, checked the card neither at the Pakistani nor at the Vienna airport.

According to Foucault (1982, 789):

> In itself the exercise of power is not violence; nor is it a consent which, implicitly, is renewable. It is a total structure of actions brought to bear upon possible actions; it incites, it induces, it seduces, it makes easier or more difficult; in the extreme it constrains or forbids absolutely; it is nevertheless always a way of acting upon an acting subject or acting subjects by virtue of their acting or being capable of action.

These ways of acting occur at multiple levels—such spheres of power flow from top to bottom and vice versa. The engaged stakeholders consciously and unconsciously use their power to bargain for their products—e.g., vaccine, services, and aid—to gain more.

Drawing on a Foucauldian view, my argument is that a stakeholder concurrently is powerful and powerless. Yet those who hold greater economic and political power are in a strong position to influence an action. Stakeholders choose to manifest their power as they negotiate measles and vaccination programs; each of them manifests both potential and helplessness through the ways in which they address measles.

For instance, a vaccinator receives a salary of around one dollar a day despite working in harsh conditions that include a tropical environment, lack of proper transport, and being subject to hunger. In contrast, district officials work in their well-maintained and temperature-controlled offices or visit the field sites in their air-conditioned vehicles. A vaccinator may choose to manifest/protest against such inequalities in multiple ways. Common ways may involve making minimal efforts to perform assigned duties, inappropriate ways of following the protocols for vaccination, taking more holidays than allowed, arriving late to work, and making up wrong facts and figures about vaccinated and unvaccinated children.

This manifestation of inequalities is analogous to Biruk's (2018) study of different HIV/AIDS surveys led by US researchers in Malawi between 2005 to 2008, in which she finds that the surveyors, especially the young Malawians recruited by the Americans to conduct surveys, produce and fabricate the data in what she calls "cooking" the data. Closser (2010) also makes analogous observations based on her work on polio in Pakistan, in which she calls this "negotiation" or ways of "resisting office politics."

These negotiation processes exhibit and manifest power asymmetries that prevail in Pakistan. Each stakeholder communicates and experiences inequality and distress differently. Such idiographic expressions, which Nichter (1981) terms "idioms of distress," reflect social tensions existing in society.

A vaccinator tries to mobilize parents not only to vaccinate their children but to save his/her job and obtain the reputation of a good worker. Analogously, a district-level officer negotiates with the provincial head, and the provincial chief negotiates with the national government and the latter bargains with international organizations such as WHO. Larger-scale negotiations occur between these organizations and major donors such as the Bill and Melinda Gates Foundation. These multilevel negotiations demonstrate the hierarchy of positions, which are significantly rooted in economic and

political resources. Most often, significant influence and these resources are directly related. Nonetheless, as argued earlier, those who own lesser amounts of resources may also show their influence and (unconsciously) express the effects of structured inequalities, such as a parent's refusal of a vaccine or a vaccinator's improper way of performing his/her assigned duties.

The stakeholders negotiate under specific terms and conditions, such as aid cutbacks or salary reduction. A single stakeholder may concurrently engage in parallel negotiations with others. For example, a vaccinator may be simultaneously negotiating with parents and higher authorities.

Vaccine refusal on the part of local people is another essential factor for bringing to light sociocultural, economic, and political inequalities. The refusal is concurrently an expression and an effect of a concealed cause or a result of an imbalance existing in the areas mentioned above, meaning that different politics about vaccination prevail in Pakistan as compared to other countries. Vaccination is essential, yet contested, endeavor that represents a critical context for the concerned stakeholders. Consequently, it has attracted substantial attention from various quarters at both local and global levels. People in Pakistan question the contents of the vaccine and the intentions of the vaccination advocates. The national and international media have been writing about such suspicions.

For example, on 23rd April 2019, the newspaper *Dawn* (2019) reported that a man in the city of Peshawar in the Khyber Pakhtunkhwa (KPK) province spread misinformation about the polio vaccine, asserting that it caused children to faint and die. Moreover, the media reported in 2019 that a mob attacked and torched a government health facility and murdered a woman polio worker in the city of *Chaman* in the *Baluchistān* province. These assaults compelled the government to halt the scheduled polio vaccination drive across the country due to safety concerns about the 270,000 polio workers (Dawn 2019). Such news reports, especially in the English dailies of Pakistan, also involve virtual discussions (see chapter 12).

The media have continually reported on the issue of using vaccination as an apparatus of (geo)politics in Pakistan. The most prominent example of this is the discussion around the "fake" vaccination drive to locate Osama-bin-Ladin, who was the "mastermind" of the

9/11 attacks on the World Trade Centre in New York. A Pakistan security analyst termed this fake vaccination campaign "vaccination suicide," because it made people suspicious of vaccination campaigns in general (AlJazeera 2013), as with the perceived "Western plot" to "sterilize" Muslims (e.g., Closser and Jooma 2013). Consequently, the vaccination teams became targets of violent assaults by local people who believed that the vaccinators are also "agents" of a nefarious international agenda. Since 2012, over 100 such attacks have been reported in the country by the media, killing over 120 vaccinators, their escorting security personnel, and other citizens (Closser and Jooma 2013; Mansoor 2016).

As previously noted, different stakeholders negotiate, express, and perpetuate inequalities in differing ways. Measles is, hence, more than a bodily condition: it is a window on a world where disparities prevail and where stakeholders negotiate them. I argue that those whose power counts more, i.e., the government and the global stakeholders, are significantly accountable for the prevalence of measles in rural areas. Indeed, blaming local people and saying that measles is a result of their "outdated" beliefs gives space to the stated stakeholders to conceal their inflicted inequalities and inefficiencies. These influential stakeholders view local people as a significant cause of the problem of measles, while in fact, their created structures play a decisive role in causing such crises.

I reiterate that against this background, as mentioned at the beginning of the chapter, the current ethnographic project focused on the two measles outbreaks that occurred in 2012-13. In this current project, I view measles from two perspectives: as an infectious disease and as an analytical window on the world of relationships where inequalities are produced, exercised, and experienced.

1.3 Theoretical and Methodological Orientations

The current project can be stretched far and wide due to its complexities. There are many intriguing trends and subfields in anthropology—that are relevant to my topics of measles and vaccination programs—which could inform my analytical approach to extensively explore and explain the subtle but central inequalities mapped out earlier in this chapter.

Nonetheless, I have significantly borrowed from and oriented myself within the literature of "interpretive anthropology," "critical medical anthropology," "anthropology of infectious diseases," "anthropology of global health," "anthropology at home," "autoethnography" and "native anthropology." Drawing on these bodies of literature and my ethnographic study, I call for new subfields: "anthropology of vaccination," "anthropology of Pakistan," and its provinces (e.g., "anthropology of Sindh"), and "medical anthropology of Pakistan." I intend to trigger and invite several debates based on my provocative ideas and critiques of anthropology's most favored theoretical threads and concepts: the floor is vast and open.

This project is based on long-term ethnographic fieldwork that I mainly conducted from January to October 2014 in Sindh Province of Pakistan, followed up with two short field trips in 2015 and 2017. The primary methodological orientation that guided this fieldwork was "multi-sited ethnography" (Marcus 1995). This orientation was against a backdrop of the dispersed, multi-centered and multi-faceted nature of the topic, which is characterized by an entanglement of a multitude of actors, localities, rationales, and practices, I wanted to include as many such "sites" as possible. The interlocutors I worked with include local people, *Hakīm* (*Unānī* and ayurvedic medical practitioners), vaccinators, biomedical doctors, government officials, politicians, representatives from the WHO, the Global Alliance for Vaccines and Immunization (GAVI), United Nations Children's Fund (UNICEF), and United States Agency for International Development (USAID). I also analyzed the situation concerning vaccination and local, national, and international media content in other countries.

This ethnographic project mainly employed several methods: participant observation, informal discussions, key informants, a socio-economic survey, theoretical sampling, and a new qualitative method that I developed, which is called *Kachaharī* in the *Sindhī* language. *Kachaharī* can be defined as an informal, voluntary and a socio-culturally obligatory gathering, which usually takes place in the evening at an *Otāq* (a guest house used for male members only).* *Kachaharī* is similar to a focus group discussion (FGD) because it often involves many people. Nonetheless, it differs from an FDG because local people have the authority to run it. In *Kachaharī*, the interlocutors lead, and a researcher attends it as a participant. I have discussed these differences and similarities elsewhere (I. Ali unpublished). This qualitative method has its roots in the socio-cultural settings in

which I conducted fieldwork. Besides using primary field data, I also used official documents and media news reports as secondary sources of information.

1.4 The Scope of the Study

Why was this conduct of study necessary? What knowledge will it add to the reader's understanding? The following section deals with these questions while discussing how measles, including vaccination, forms a complex and exciting subject matter for anthropological analysis for several reasons.

The study is theoretically significant. It employs a synthesis of various theoretical approaches and concepts that no other exclusive work has applied, especially in a Pakistani context, and to study measles. This study gathers different perspectives, partly due to a geographical focus, and adds to the critical scholarship on global health and in medical anthropology (e.g., Biehl 2016; Adams 2016a, 2016b; Adams, Burke, and Whitmarsh 2014; Adams, Novotny, and Leslie 2008; Farmer 1999, 2003b, 2003a, 1996b, 1996a, 2006; Farmer and Campos 2004; Farmer et al. 2013; Farmer et al. 2006; Rylko-Bauer and Farmer 2016; Kleinman 2000; Kleinman, Das, and Lock 1997; Baer 1982; Baer, Singer, and Susser 2003; Singer 1989, 1990b, 1995).

Moreover, this project also adds an interesting geographical flavor to the current debates in anthropology, particularly in medical anthropology: "anthropology of infectious diseases" (Brown and Inhorn 1997; Inhorn and Brown 1990; Singer 2015), "anthropology at home" (Peirano 1998; Van Dongen and Fainzang 1998; Greenhouse 1985), "native anthropology" (Thapan 1998; Gwaltney 1976; D.J. Jones 1970; D. Jones 1995; Haniff 1985), "the anthropology of childhood" (Lancy 2014; Vitale 2014), "autoethnography" (Strathern 1987; Wall 2008; S.H. Jones, Adams, and Ellis 2016), and "critical ethnography" (Thomas 1993; Foley 2002; Madison 2011; Carspecken 2013).

The study holds significant geographical importance. Thus far, anthropology has not fully explored the medical landscape of Pakistan, although some works inside and outside the discipline have been conducted mainly by "non-native" researchers (Closser 2010, 2012; Mull 1997, 1991; Pirani 2009; Mull et al. 1994; Zaidi 1988). At the country level, some graduate-level theses have been produced, especially at its public university, named Quaid-i-Azam University. These theses have mainly emphasized health-seeking behavior (Anjum 2000; Kiani 1991); sanitation and health (Maqsood 2001; Zehra 1991);

environment and health (Iram 2003; N.T. Khan 2003; Maqsood 2001); maternal health (C. Shah 1999; Raja 2003); local perception of health (Shahzadi 1999); ethnomedicine (M. Ashraf 1994), and the relationship between culture, health and illness (Siddiq 1998; I. Ali 2011; Razzaq 2004; Zehra 1991; M. Ali 2003; Sohail 1999).[6] Such theses have employed what William Sax called "five-decades-old anthropological approaches" (personal communications, Heidelberg 2018). Furthermore, a few studies have focused on infectious diseases in Pakistan like measles (Mull 1991, 1997); polio (Closser 2010, 2012); and HIV/AIDS (Qureshi 2015, 2013). The current thesis, hence, adds valuable content into that existing gap in the field of medical anthropology and the domain of infectious diseases.

Thematically, the study is also significant. Although measles outbreaks worldwide have significantly increased during the current decade, it has not received a great deal of attention from anthropology and other social sciences. A review of literature displays a dearth of anthropological work on measles. Except for some research articles, not a single anthropological thesis has exclusively focused on measles thus far. Nevertheless, authors working in other domains such as journalism and public health have produced literature using a different lens (Azizullah et al. 2011; Akram and Khan 2007; K. Ahmad, Jafar, and Chaturvedi 2005; Shaikh and Hatcher 2004; S. Iqbal et al. 2019; S.A. Ali et al. 2009; S. Ashraf and Ahmad 2015; Galpin 2013; Press Trust of India 2018; A. Khan et al. 2015; Malkani 2016; Nishtar 2006).[7] Within anthropology, Peter Aaby, a Danish anthropologist, has extensively worked on measles with a particular reference to measles vaccines in several geographical locations, such as Guinea Bissau (Aaby et al. 1983; Aaby et al. 1988) and Denmark (Aaby 1991, 1988); Germany (Aaby et al. 1992); the Gambia (Aaby and Lamb 1991) and Kenya (Aaby and Leeuwenburg 1990).

Moreover, Dorothy Mull (1997) collected data on measles in the Sindh province. In a household study on childhood diarrhea and malnutrition with 150 mothers of malnourished children, she encountered a measles outbreak and obtained the data on measles. With mere three detailed case histories. Mull's work, *The Sitālā Syndrome: The*

[6] These are some of the theses. In my opinion, there would be around 70 theses in the domain of medical anthropology at Quaid-i-Azam University. I cannot mention all of them here due to unavailability of online record; and due to space in this thesis. Writing about the work in medical anthropology in and of Pakistan, a detailed anthropological research may be published.

[7] I have mentioned some of the works to make my point.

cultural context of measles mortality in Pakistan, is the only anthropological research that focuses on measles in the country and the province.

However, this research has three significant weaknesses in terms of characterizing a thorough understanding of measles. First, the study's original plan was to work on another disease, thus working entirely on measles would have brought detailed results. Shifting focus from one point to another jeopardizes the chances of an in-depth account of anything. This weakness seems visible in the local terminology about measles that Mull has used. She has written the names of measles in a couple of languages but has not mentioned the name in the major provincial language: *Sindhī*. Not using the local name in the research raises significant concerns and criticism about the validity of the research. The second weakness of the study lies in its time of execution, as it was conducted more than two decades ago, and since then, the socio-cultural, economic, and political situation of the area has significantly changed. The third reason is that locale of Mull's study is an urban area. In Pakistan, especially in the Sindh province, rural and urban areas differ substantially in terms of facilities, such as education, and health (see Government of Pakistan 2017b, 2017a, 2019b). These differences result in a distinguishable perception and practices towards life, including health and illness, between rural and urban people. These critical points mean that thorough work—as the current one— centering measles in the province with the *Sindhī* speaking people, who live in rural settings, holds significant importance. After producing a comprehensive view and critical analysis of measles, this study, *Constructing and Negotiating Measles: The Case of Sindh Province of Pakistan*, can contribute at the national level and add to the respective scholarship at the global level.

More specifically, the study is important at the national level due to its focus on measles and vaccination programs in relation to socio-cultural, historical, economic, (geo)political and biopolitical factors. The findings of this study will help stakeholders to better understand a local perspective on measles and vaccination. This is especially true for those who devise and implement health-related policies, such as policymakers and vaccinators responsible for controlling and combating measles and implementing vaccination programs, which will subsequently lead towards a reduction of morbidities and mortalities caused by vaccine-preventable diseases (VPDs), including measles.

Furthermore, measles still prevails in the country, as the most recent infections of measles have occurred in this ongoing year of 2020. Furthermore, governments and the global stakeholders are incredibly concerned about VPDs, including measles, which may cause outbreaks, as the coronavirus diseases 2019 (COVID-19) pandemic has overstretched health services and disrupted the routine vaccination drives (I. Ali 2020c). This recurrence demands an anthropological investigation to inquire about the root causes of the measles epidemic. In addition to this study, measles requires multiple anthropological studies focusing on Pakistan's different geographical areas and employing different theoretical lenses. Such works would highlight differences and similarities in the observed categories since diversity in the local perceptions and practices concerning measles and vaccination prevails. For instance, in some parts of the country, people refuse the vaccine, and yet in other parts, they do not trust vaccination programs. These anthropological works will contribute practically and theoretically by providing information about the roots of socio-cultural practices. The studies debate should move the debate to the next level to ask why people view measles as a necessary sacred illness. More importantly, studying measles is less dangerous than working on polio, since the latter has been highly politicized; and holds significant risks for (specific) researchers, including death threat (see chapter 2). This study of measles can help to substantially understand the vaccination problem in the country.

Forth, there are many anthropological studies concerned with various forms of socio-cultural, economic, and political inequalities at the global level. Yet, studies from this perspective that have focused on Pakistan and measles in the country and worldwide are scant. This project, therefore, offers the implications of the aforementioned inequalities on measles and with the help of measles on people in Pakistan.

Concisely, this study has theoretical, applied and methodological importance. It identifies and introduces several key concepts, such as "societal memory" and "local colonization," which can serve as useful analytical entry points through which to study health problems, interconnections and interplays between several factors, competing narratives and stakeholders that significantly affect health. It presents a great case of measles, including vaccination, which can be used to analyze similar cases worldwide. Geographically, i.e. South Asia, Pakistan, and Sindh province, in the absence of great deal of anthropology work, this study offers significant details. Methodologically, it introduces a new

qualitative method that I call *Kachaharī* (I. Ali, unpublished work), which can be intriguing method to conduct further studies.

The case of measles, including vaccination is complex. Yet I have made significant efforts to make competing narratives and interests—that make both contested phenomena—lucid, which play a considerable role in shaping ideas and practices related to measles and vaccination.

1.5 Defining Primary Terms

I briefly describe that two primary concepts of my thesis: construction and negotiation. My use of the concept construction is informed by "meaning-center" approach, mainly by "explanatory models" (EM) (Kleinman 1980) coined. These models are "notions about an episode of sickness and its treatment that are employed by those engaged in the clinical process" (ibid., 105). I use it from a conceptualizing and interpretive perspective to show that people's ideas, preferences, choices, perceptions, interests, and practices are socio-culturally shaped, which affect their knowledge and understanding. These are learned during life through ways of enculturation. Furthermore, socio-cultural factors are considerably shaped by the economic and political institutions, which embody specific norms to shape an individual's worldview in a specific way.

Similarly, an illness is an interpretation that is socio-culturally constructed while drawing on the specific theories of illness causation. Construction is a process of attaching meaning, and acting, in which stakeholders interpret measles and decide how to deal with it using their available awareness and orientations based on their stock of knowledge. Every stakeholder engaged in dealing with measles therefore defines and tackles measles according to that embodied knowledge and perception. That is to say that people apply their notional knowledge and perspectives to explain measles as a phenomenon.

Local people, for instance, attribute meaning to measles as a necessary sacred illness and perform ritualist treatment at home. Their conceptions and practices draw on culturally specific beliefs about measles origins and etiology, risk perception, and attitudes towards those infected.

In contrast, a biomedical doctor's EM can be biomedical while emphasizing the biological and physical aspects of a disease. He or she relies on science and logical positivism while considering an individual as a biological organism, which contains various parts, and

illness is a result of malfunctioning in one or more of these parts. Also, a WHO official interprets measles as a potentially deadly infectious disease that puts patients and other unimmunized persons (nationally or internationally) at risk. Such officials consider eradicating measles to be a necessity.

Good (1994) argued that an interpretive explanation starts in relation to an identified culture, which constructs and interprets one's response to and understanding of reality. Hence, every stakeholder learns specific socio-cultural, economic, and political orientations over time due to external forces such as the natural world and socialization or internal subjectivities. These orientations then frame not only the stakeholders' incentives but also their shape interests and identities. Owing to this different exposure, knowledge, and training, each stakeholder perceives measles differently. Each stakeholder develops a distinguishable perception, and this leads towards a contestation, in which stakeholders negotiate measles according to their conceptions. They try to make sense of measles and vaccinations and attach different meanings to them, and these interpretations shape their experiences and affect dealing strategies.

I use the concept of negotiation more in the sense of contestation, in which distinct narratives emerge around measles that illustrate several socio-cultural, economic, and political factors at the backdrop. The negotiation process involves not only an exchange of material things, e.g., the vaccine, but it also entails the exchange of non-material phenomena, such as ideas and practices. I am using this negotiation concept to show relationships that occur among multiple stakeholders ranging from the local to global scale. In these relationships, everyone has a different power, position, and bargaining skills (see Vanderlinden 2011). Their varying definitions and coping strategies make measles a different phenomenon for each of them. Negotiation involves strategies and counterstrategies in terms of bargaining and calculating cost and benefits. Every stakeholder calculates how to bargain with their product – tangible or intangible. In the words of Foucault (1982), it can be called "power relationship," in which stakeholders negotiate their power.

That negotiation occurs at a micro-level, e.g., between a local person and a vaccinator or a macro level, e.g., between the government and the global stakeholders. In this way, measles involves domestic and international politics that occurs via bargaining

(indirectly) between a layperson and a WHO official, or among diverse stakeholders situated in different locations simultaneously. A parent's refusal of vaccination shows a negotiation with the vaccinator, the government, and global stakeholders. For instance, for vaccinating her children, an economically poor woman, *Karmā*, negotiates with the vaccinator to receive proper attention and medicine at a hospital, and how she negotiates with the government to receive a card of Benazīr Income Support Program (BISP) (see chapter 11).

Negotiation works in more of a political sense: if one does this, then others will do that, and vice-versa. Yet the advantages or control of negotiation often remains with powerful stakeholders, who can seek extra concessions in multiple ways during an agreement. That means some stakeholders have the advantage of high economic and political resources, and others have fewer chances to influence due to a dearth of resources. Consequently, the former category holds a de facto veto to bring some fundamental changes to a phenomenon. For example, WHO and government officials hold the authority to design and implement vaccination programs to deal with measles; however, a parent can merely refuse vaccination, and that refusal may force these officials to reformulate vaccination programs.

1.6 My Position about Vaccination

A complex question has often been raised on my position on the vaccination during various conferences and meetings. Therefore, this question begs a brief description. I view vaccination as a pivotal invention and a bulwark against infectious diseases to decrease suffering and challenges to humans, but only if administered as per the required protocols. For the current refusals of and resistance against vaccination occurring in Pakistan, the influential stakeholders – government officials and global stakeholders – are more accountable than an ordinary person. These stakeholders have produced several forms of inequalities related to economic resources, awareness, and health facilities – that are significantly affecting the efforts to decrease human suffering. The inappropriate use of vaccination in 2011 in Pakistan is an excellent example of this politics: Vaccination and politics should be separated.

Additionally, there is also an anthropological position that needs to be described. From this anthropological perspective, vaccination can be seen as an effective method of

preventive medicine, and medicine, according to critical medical anthropologists, is directly related to the economic and political systems (see Doyal 1979; Baer 1982; Morgan 1987; Zaidi 1988; Singer 1990b; Morsy 1990; Baer, Singer, and Susser 2003). Vaccination, as a part of the biomedical system, carries a particular ideology. These mentioned anthropologists, and several others, have shed light on how this western ideology, particularly the western colonizers, affected the already existing medical systems in the former colonies. Banerji (1981) has extensively written on this impact of ideology on local medical systems from an Indian context, and Zaidi (1988) has discussed it in the context of Pakistan. Due to these attached ideologies, an increasing number of parents are refusing vaccines and, in some cases, showing a resentment (Feldman-Savelsberg, Ndonko, and Yang 2017; Feldman-Savelsberg, Ndonko, and Schmidt-Ehry 2000; J. Roberts and Mitchell 2017; Fairhead and Leach 2007; Blume 2006, 2017).

Vaccination, therefore, can also be seen as primarily a product of the social, economic and political factors; and it as a medical field provides a vast ground to accumulate profits (Foucault 1980; Biehl 2016; Adams 2016a; Singer 1989; Baer 1989; Lock and Scheper-Hughes 1990; Singer 1995; Baer 1996; Doyal 1979; Baer 1982; Morgan 1987; Morsy 1990). Being a result of the changes that occurred in the western world in the last few centuries, vaccination is chiefly a product of "laboratory medicine" that started in the late 18th and early 19th centuries and become a dominant method to advance medical knowledge, in which intervention into the physiological processes of humans started (Doyal 1979).

Without going into further details about the relationship between an economic mode of production, political system, knowledge production, and medicine, I end the discussion here with a few more words. From an anthropological perspective, especially in medical anthropology, there is a question of the position an anthropologist should hold; whether he or she should intervene to end suffering; or just to write about what is going on in a particular society at a particular time and context? These debates are open and have compelled ethnographic practices to take several turns (see, e.g., Csordas 2014; da Col 2017; Fassin 2014, 2015; Faubion 2014; Holbraad, Pedersen, and de Castro 2014; Howell 2017; Ingold 2008, 2014, 2017; Laidlaw 2002; Mattingly 2012; Sherry B Ortner 1984; Sherry B. Ortner 2016; Paleček and Risjord 2013).

1.7 Organization of the Thesis

This thesis is organized in 13 chapters. Although I have written the chapters with a coherent structure in mind, there are some chances of reiteration. For those merely interested in processes of construction and negotiation, chapters 8 to 12 would suffice this purpose, because the four chapters make up the heart of this thesis due to empirical data.

After "Introducing the Project" in this first chapter, the second chapter, "Theoretical Framework: Many Anthropologies," reviews and revisits a range of significant theoretical concepts. To situate the project in the broader theoretical spectrum, I have borrowed and profited from several interconnected anthropological theoretical and analytical concepts. These concepts have helped to develop a thorough understanding and formulate the critical questions of what is happening and why it is happening. For instance, why do people consider measles as a necessary sacred illness? Or, why does measles occur, despite the efforts spanning almost four decades in the country? The theoretical concepts reviewed have simultaneously aided in describing the chosen subject and then posed critical questions to find the underlying cause of the measles occurrence and refusing vaccination.

Chapter 3, "Researchlogue: Design, Methodology, and Circumstances Behind Gathering the Data," presents the methodological framework and the study design that were adopted to accumulate the required data. After drawing on the "multi-sited ethnography" (Marcus 1995) methodological orientation, it describes employed methods and processes of the data collection. The chapter discusses circumstances that shaped plans during the expedition. It further illuminates the subjective experiences, problems encountered, and benefits enjoyed while conducting this study "at home." After providing a blueprint of the research design for conducting the fieldwork, the chapter adds to the current debates in anthropology regarding "anthropology at home," "native anthropology," and "autoethnography."

The locale—two villages from Sindh province—of the study is the subject of chapter 4, "The Settings - from the Sindh Province to the Selected Villages." A continuation of the earlier chapter, it introduces the multi-sited locale while describing geographical, socio-cultural, and eco-political characteristics of the area studied. The reader can find broader descriptions about these characteristics: from the country to the province, and from

districts to the villages. Like chapter four, the current chapter also presents a context to situate the case of measles comprehensively. It describes socio-economic and demographic characteristics and highlights the available health, educational, and infrastructure facilities in the selected villages.

The fifth chapter, "the Critical Geopolitical Events: Making Sense of Anti-vaccination Sentiment," revisits the critical geopolitical events that occurred in the region and significantly shaped the socio-cultural, economic, and political landscape in South Asia, including Pakistan. It focuses on the events that are related to the geopolitical history of the region and the country—such as Pakistan-Afghan relations; the Union of Soviet Socialist Republics (USSR) invasion in Afghanistan; the United States (US) intervention in Pakistan; the production of the *Mujāhidīn* – "the holy warriors" – against the USSR; and then the rise of extremism in the country. The chapter provides a basic understanding of how the geopolitics created extremism and that extremism was involved in the movement against the vaccination.

Chapters 6 and 7 offer broader foundations for the thesis in terms of the healthcare system. Both provide a background to measles and vaccination while giving an overview of the "healthcare system" (Kleinman 1978) or "sectors of healthcare" (Helman 1984), or the medical pluralism in the country: Ayurvedic, *Unānī-Tib*, biomedicine (allopathic), homeopathy, and specific belief systems. These chapters supply local understanding, perceptions of and practices about health and illness, as well as; explore governmental policies and practices related to these two categories.

Chapter 6, "Health and Illness: Socio-cultural Understanding," describes the elements of local socio-cultural ideas and practices related to health and illness. Exploring the local measures to conceptualize and maintain good health and restore it, the chapter gives a context to understanding measles and the reasons why people perceive it as a sacred illness. The seventh chapter, "Medical Pluralism in Pakistan: Competing Healthcare Systems," is an extension of chapter 6, which helps to put measles into a broader context of a spectrum of medical cultures. It offers an overview of the healthcare system of Pakistan: What has been done at the government level to meet the health-related needs of people. It analyses the official documents to understand the allocation of budget in the health arena used to ensure the availability of health facilities, doctors, and nutrition. Precisely, it sketches the country's health profile.

Chapter 8, "Measles Worldwide: Epidemiological and Biomedical Perspectives," provides certain epidemiological data about measles at the global, South Asian, and Pakistan levels for drawing a relationship between the webs of inequalities and measles prevalence. The chapter also highlights some historical aspects of measles, in particular concerning the question of when studies on measles did start to explore its causes. In its last part, the chapter describes measles from a biomedical perspective. It discusses global initiatives such as the Measles and Rubella Initiative (MRI&) that several global stakeholders, including the WHO undertook to deal with measles.

Four chapters – 9, 10, 11, and 12 – constitute the main body of the thesis in which measles and vaccination are centers of attention. The ninth chapter, "Measles from a Cultural Perspective: Emic Perceptions and Practices," puts measles at center stage while supplying the data from Sindh province. It offers details on the positions, perceptions and practices of local people, *Hakīm*, and government officials relating to measles, and probes, what measures do they take to deal with it. Mainly, it also illustrates the local perceptions and practices in the villages, like the *Chando*[8] ritual that is observed for dealing with measles. This ritual involves quarantining the child, locally called *Chillo*, in a purified room, singing of *Lorī* (lullabies), and preparing sweet bread. This chapter then extends the argument that measles exposes inequalities while unfolding various standpoints on the occurrence of the 2012-13 measles outbreak in the province. In the later part, the chapter draws on print media to describe how government officials view local ideas and practices regarding measles.

Chapter 10, "Two Measles Outbreaks and Multiple Narratives," is significantly linked to chapter 9. In the earlier chapter, it was discussed how local people of Sindh perceive and deal with measles. This chapter, while expounding on that, discusses how measles outbreaks of 2012-13 were interpreted and tackled by several stakeholders ranging from the chosen villages to the WHO. Specifically, the chapter presents perspectives of the local people and local *Hakīm* as well as the government and its institutions, i.e., Aga Khan University, the National Institute of Health (NIH), the Pakistan Medical Research Council (PMRC) and the Ministry of Inter-Provincial Coordination (IPC)/Federal Expanded Programme on Immunization (EPI) Cell, and Accountant General of Pakistan Revenues

[8] The plural form of *Chando* in Sindhi language is *Chandā*.

(AGPR), and international NGOs, i.e., the WHO, the United Nations International Children's Emergency Fund (UNICEF) and the United States Agency for International Development (USAID).

The eleventh chapter, "Vaccination and Anti-Vaccination Campaigns: Competing Perspectives," offers a general understanding of controversies about vaccination, by casting light on politics, rumors, and conspiracy theories. It questions why people refuse and resent vaccination in Pakistan. The chapter presents a brief history of vaccination in general and in the country, especially how it developed as a "Western plot". The reader can find valuable information on the politics of vaccination in Pakistan. One can find answers about how a rumor emerges and affects a vaccination drive. How did yesterday's rumor that vaccination is a plot to sterilize Muslim women became today's reality when the American Central Intelligence Agency (CIA) used a "fake" hepatitis vaccination in the KPK province of the country? Or how is the global presence felt in individual cases of refusal and resentment at a local level? Chapter 11 summarizes controversies that have been dominating the issue of vaccination in Pakistan. For this analysis, I use media accounts, especially the headlines in the print media, to explicate vaccination, particularly about measles.

Chapter 12, "Measles Vaccine: From General to Particular," elucidates the historical development of the measles vaccine (MV) and then traces its usage in Pakistan. This chapter supplies the information on suspected side effects, rumors, and conspiracy theories related to measles vaccination in the country. It inquires how measles vaccination has been linked to reactions in the children, and how news reports of side-effects have been discussed online on the websites of the English newspapers of Pakistan.

The concluding chapter 13, "Summary and Conclusion: Future Perspectives," summarizes the whole thesis and reiterates that measles is interpreted differently by various quarters of society that make it a multifaceted phenomenon. These interpretations are firmly rooted in economic and political practices. Measles, therefore, has proved to be a significant entry point to comprehending interrelatedness and interplays of various social, cultural, (geo)political, and historical factors, which are invisible and subtle otherwise. Measles outbreaks, especially local perception of sacredness, can be understood against a backdrop of economic and political factors, which have played a

vital role in creating persistent inequalities. The chapter claims that measles is sacred for a simple reason, with economic and political inequalities behind it. Measles could have been eliminated if there had been equal distribution of resources, opportunities, and awareness. After drawing specific conclusions, the chapter offers practical suggestions to deal with measles and increase the vaccination uptake in the country, and elsewhere.

CHAPTER 2: THEORETICAL FRAMEWORK: MANY ANTHROPOLOGIES

Needless to say, the current project can be stretched far and wide due to its intricacies. Its focus on measles and vaccination programs interacts with many trends and subfields in anthropology. There are several possible analytical entry points to understanding the various forms of systematic inequalities and institutionalized violence relevant to measles, and more broadly to illness and infectious disease. In my analysis, I have borrowed from and oriented myself within a vast body of literature in anthropology; however, the thesis is grounded mainly in three bodies of this literature: (a) "interpretive anthropology" or "meaning-centered approach," (b) "critical medical anthropology" (c) and "anthropology of global health." [9]

2.1 The Interpretive Approach

Interpretive or "meaning-centered anthropology" provides a foundation to my understanding of meanings and interpretations of measles: especially how its significant emphasis on the various ways a society maintains cohesion and on how ideas shape individuals' lifeworlds.

Debates such as those humans engage in entail "symbolizing, conceptualizing, meaning-seeking" and seek to "make sense out of the experience, to give it form and order" (Geertz 1975, 140); such concepts substantially influenced medial anthropology. New questions were formulated for asking and understanding how culture shapes people's patterns of behaviors related to health and illness: What is the relationship between culture, health, and illness? Since a significant emphasis was put on the meanings that human beings weave around a phenomenon, the interpretive approach became famous as the "meaning-cantered paradigm" in medical anthropology. This approach challenged and influenced the existing epistemological foundations of "disease" while calling it an "explanatory model" (Kleinman 1980), not an "entity" (B. Good 1994, 53).

From one perspective, I understand measles as a state of a body: an illness or infectious disease. Thus, this "meaning-centered" approach provides a constructivist argument that a body's state is constituted and becomes visible and understandable with the help of

[9] Although the project also relates to other bodies of literature, such as "anthropology of childhood," "anthropology at home," "autoethnography," and "native anthropology," "anthropology of development," "anthropology of south Asia," "post-colonial anthropology," "moral anthropology," "political anthropology." and "economic anthropology," I have not reviewed much literature from those fields.

used interpretations. According to this model, a body's state can be declared as an illness or a disease. This definition lies within a context in which engaged stakeholders—such as a local lay person, Hakim, a biomedical doctor, or officials of the government or WHO—use specific interpretations based on an interaction between biological, social, and cultural factors. According to this approach, illness is an interpretation in a given local culture, and disease is defined by scientific principles in the specialized culture of biomedicine (Kleinman 1978). Through giving meaning to human experience, these explanations shape future actions to be taken. Based on their interpretation, individuals decide how challenging is the new state of the body and then choose a response of whether to ignore or treat it (I. Ali 2011). Hence, these explanatory models play a significant role to analyze the understanding of patients about their own experiences and help other stakeholders, such as healers, to deal with these health conditions.

Considering "disease" as a natural phenomenon and beyond culture is nothing but a "category fallacy" (Kleinman 1977; 1988, 14). Kleinman explains: "The reification of one culture's diagnostic categories and their projection onto patients in another culture, where those categories lack coherence, and their validity has not been established, is a category fallacy" (ibid., 14-15). This constructivist argument (B. Good 1994) is especially important, viewing disease as ontologically rooted in a human-made system of meanings (Young 1976), and specific interpretations in particular historical grounds, which is a critical standpoint for analyzing how these interpretations are contested and negotiated in particular contexts and power relations (Kuipers 1989; Good and Kleinman 1986; B. Good 1994).

A significant focus shifted towards the construction of therapeutic practices as medical knowledge and interaction of cultural explanations with biology, psychophysiology, and the social relations that influence the diagnosis of the illness and its treatment (B. Good 1994). These studies attended to variations in defining and dealing with an illness while considering that cultural "idioms of distress" (Nichter 1981) play a substantial role in those dealings, ultimately making a course of disease distinct in various societies. Bringing culture to the center, studies claimed that it not only shapes the course of a disease (Carr and Vitaliano 1985; I. Ali 2011), but it may construct specific disorders that another culture might not perceive as a disorder (B. Good 1994). Attention was paid to

how distinct forms of illness and related trajectories are produced as a result of an ongoing interplay between socio-cultural and psychophysiological processes.

The meaning-centered paradigm helped me to search for the culturally attached meanings of measles and to discover how a diverse set of stakeholders, which range from a local to a global scale, makes sense of measles after constructing or interpreting this disease to deal effectively with it. This approach helped me to collect narratives about experiences, explanations, etiology, and treatment options about measles required for understanding and answering essential questions: Which meanings do measles carry, and how do such meanings function in negotiation processes among stakeholders? Why is the etiology of measles expressed in Hindu mythology as a necessary sacred illness? Why do local people observe the ritual of *Chando* and give preference to *Hakīm* (healers) over biomedical doctors? Only culturally detailed and thick descriptions such as those I provide in this thesis can answer such questions.

Without understanding these multiple interpretations and responses within a socio-cultural context, comprehending the reasons behind the occurrence of measles in Pakistan is extraordinarily tricky and hard to relate to its broader background.

As Geertz (1975, 28) rightly pointed out, the interpretive approach draws "large conclusions from small" or the vast inferences from specific, but thickly structured, cases to generalize extensive statements about a culture's role in constructing collective life. However, critical questions remained unanswered: For instance, how have these specific contexts—in which local people explain measles as a necessary sacred illness—been shaped by the broader context? How is this specific perception and practice connected to the past, especially the "critical events" (in the vocabulary of Das 1995) that have significantly shaped the current South-Asian region and the field of global health (discussed later on in this chapter)?

Undoubtedly, the meanings surrounding a phenomenon are vital for understanding it. And they are not independent of other circumstances that mainly relate to economic and political factors and occur at local, national, and global contexts.

The interpretive paradigm lacks the rigor to go beyond the phenomena of measles and vaccination. It pays little or no attention to the circumstance that produce these specific

meanings and explanations about measles. The interpretive approach did help to explain what is happening in the case of measles. However, it did not supply the second level of questions to go beyond the usual socio-cultural perceptions and practices of measles as a necessary sacred illness. It was equally important to know why people hold specific opinions that measles is a necessary and a sacred illness, and what are the underlying reasons, especially for those phenomena that directly result in death or save someone from dying? Describing measles as a necessary sacred illness and explaining the ritual of *Chando* is necessary, but so is the question of why these local people hold to such beliefs about measles. Why do formally educated people perceive measles as a disease that can be prevented via vaccination and cured through medication, while less-educated people do not? Or, why do specific people consider vaccination as a "Western plot," and why and how did this perception originate?

Despite its limitations, the interpretive paradigm has significantly shaped my views to explain what is happening in the arena of measles and vaccination, as well as triggered me to move beyond what is visibly happening. When why it is happening remained unanswerable. The "meaning-centered" approach emphasizes discovering meanings in human behavior and places less focus on the broader contexts. It thereby exposes itself to cautious criticism based on the revision of the old as well as the presentation of the new ethnographic data. Severe criticism surrounded it for being "too 'clinical,'" too aligned with medicine's interests, yet lacking sufficient attention to biology and the "scientific rigor of epidemiology or cognitive studies" (B. Good 1994, 55).

Moreover, whether the meaning-centered approach's attention was too little or too much—depending upon the theme as Good (1994) mentions—it indeed paid insufficient attention to how exactly cultural representations of the illness are produced and reproduced—the broader context mentioned above. Although explanatory models are often applied to individual behavior, that behavior is significantly shaped by external forces—local, regional, global. Roger Kessing (1987, 161) rightly criticized that culture also constitutes specific ideologies, which often disguise political and economic realities. Lorna Rhodes' (1990) criticism holds importance; she notes that although critical perspectives tend to emanate from the cultural analysis of biomedicine, the interpretive approach could not draw on these standpoints.

Owing to such missing contexts and critical questions in this approach, I am not the only one who is criticizing this meaning-centered approach. However, many critical thinkers, including Kleinman, who developed his approach further since the 1980s (e.g., Kleinman 2000; Kleinman, Das and lock 1997), which I am discussing under the heading of "critical medical anthropology," have taken on this paradigm.

2.2 Critical Medical Anthropology

My research project also builds on the relevant literature from critical medical anthropology for highlighting the broader economic and (geo)political contexts that produce and reproduce specific webs of inequalities. It is because this body of literature helps to identify causal factors— the hegemonic ideologies and structures of power— that lie underneath the outbreaks of measles and particular ways of dealing with the disease.

The term "critical" denotes something "censorious" or "fault-finding." This school of thought draws heavily upon the Marxist concepts of "exploitation," "false consciousness," and Gramsci's (1971) "hegemony." Due to these roots, the critical perspective helped me to explore connections among the broader determinants, such as economic and political ones, that directly cause disease, indirectly create circumstances conducive to contracting the disease, and yet create a narrative to rationalize those circumstances. These circumstances expose people to precariousness, such as infectious pathogens. These factors produce vulnerabilities and also create particular cultural explanations to construct or explain an illness from a specific perspective.

The critical medical anthropology literature has paid significant attention to these broader and influencing circumstances (e.g., Kleinman, Das, and Lock 1997; Baer, Singer, and Susser 2003; Farmer 1996a; Rylko-Bauer and Farmer 2016).

2.2.1 Social Suffering and Structural Violence

One theoretical lens for studying the economic production of suffering has been developed under the heading of "social suffering" (Kleinman, Das, and Lock 1997; Kleinman 2000). Paul Farmer (1996a) proposed the notion of "structural violence" to explore the relationship between institutionalized forms of inequalities, health, and illness. Under the flag of structural violence, multiple studies have explored the subtle ways in which violence is subverted, contested, and appropriated (Farmer 1996a; Rylko-

Bauer and Farmer 2016; Qureshi 2013; Ellison 2003; Farmer 2006; Farmer et al. 2006; Massé 2007).

Both concepts critically discuss the impacts of institutionalized forms and webs of inequalities that cause "suffering" and "violence." Some stakeholders cleverly construct such structures, which become everyday stories. These stakeholders are influential and have hegemonic control of almost everything, not solely over the exploitation of resources, but also over which ideas are given credence and acted upon, and which are not. They aim to control the powerless.

On the one hand, suffering is exerted on people in the form of problems and crises. On the other hand, stories of suffering are normalized, and people are either unaware of it or again compelled in a specific way to ignore it. For example, Adelson (2008) explored how Canadian women are culturally compelled not to disclose their stress and suffering to maintain the status quo.

That means lay people's vision is blurred; they cannot hold responsible those who cause suffering; they instead find explanations of suffering in narratives. These narratives are often the devious creations of the powerful, who invisibly weave them to give the powerless words to relate to their realities. The powerless then live within and according to those realities. For instance, the notion of measles as a necessary sacred illness and concept of *Qismat* (literally: "fatalism") exists in Pakistani society as attempts to accept their powerless realities.

It will be helpful to illustrate this latter concept. *Qismat* is a concept that people use in almost all everyday activities of life. Whenever something happens – such as the death of someone by accident, murder, inappropriate treatment by a doctor – the most frequent sentence one hears is, [in *Sindhī*] "*Jaiko Qismat Main Likhayal Huyo*" ("it was written in the fate of that person, so this had to be the way it happened").

This idea of *Qismat* perhaps trickled down from ancient philosophy in various places and was embraced by the masses in those places as an explanatory framework for their suffering—its roots are thousands of years old. The current powerful stakeholders, such as politicians, elites, and governments, did not create this concept, but they are benefiting from this construction of suffering. Such discourses visibly (to an ordinary person) do not

benefit the ones who cause such events, but invisibly these justifications profit them significantly. These people do not see that an equal, appropriate, and adequate healthcare facility is a prime responsibility of a government. If it is not put in place, then a government should be held accountable. Yet in Pakistan, usually all injustice, violence, pain, and even deaths are justified in the name of *Qismat*, attributing them to the supernatural rather than placing blame where blame belongs and taking action, such as protesting against government policies, to improve their lives.

Fatalism has received plenty of attention in philosophy. Its origin goes to Aristotle's work *On Interpretation* (most recently published in 1984), in which he argues against it in the famous "Sea Battle Argument" to draw a relation between logic and necessity in the world around us. Robert Kane (2005, 19) argues that fatalism is "the view that whatever is going to happen is going to happen, no matter what we do." This concept implies a necessitation—events will happen "no matter what," which contains the idea of us being too powerless to do anything about what happens. It ignores our agency behind our actions and how our thoughts impact on the outcome of an event. Similar to most philosophers, I argue against this idea, mainly due to ethical grounds that are required for moral responsibility. After believing in fatalism, it becomes tough and complicated, if not impossible, to frame an ethical system to hold someone responsible (see chapter 6).

Kleinman and colleagues (1997) rightly propose that anthropological analyses should move beyond the visible problems and crises that cause social suffering and study the mechanisms of social suffering: This perspective is vital to comprehend the making of social suffering. In the case of measles, although children and their families suffer, they do not see it as suffering, because a strong narrative exists in the Sindh province. The story explains that measles is a necessary sacred illness, blessed by the Goddess *Mātā* that everyone must contract: "It can occur to you in the grave if you missed it during life," stated one of my respondents, in his late 40s, from *Rāmpur* village.

In this way, suffering and violence are appropriated by powerful stakeholders through structured webs. Both take the form of related words since language constructs realities by influencing human beliefs, actions, and behaviors. For example, if the terminology of sacredness is changed or the people's perception of viewing measles as a necessary illness is replaced with an understanding that measles that can be avoided entirely

through proper vaccination, then people certainly would consider measles occurrence as suffering, and perhaps even see it as a result of a set of inequalities.

Moreover, sometimes social suffering can also be categorized in terms of its impact: bearable and unbearable. The influential stakeholders most often cleverly exert unbearable suffering, which compels people not to view the bearable suffering as suffering. For example, people often view poverty as a result of poor governance that exerts suffering on the whole family. Family members worry about the resources to buy food. On the other hand, measles seems to be bearable suffering that they believe would go away by observing certain rituals over the next 5-7 days. However, hunger cannot go away without the provision of food, even after performing rituals.

Therefore, we should be vigilant in observing the categories of social suffering in terms of its impact. This yardstick, on the one hand, would help to capture all forms of social suffering, and on the other hand, it would prevent those inflicting suffering from disappearing as causal agents.

Therefore, critical endeavors raise questions about the creation of social realities—under what circumstances do they emerge and whom do they serve (Baer, Singer, and Susser 2003)? The real beneficiaries may be the government, a social class, gender, or ethnic group and/or stakeholders in such particular cultural conceptions. Theorists of critical medical anthropology (CMA) mainly question the relationships among external hegemonic ideologies and social patterns as well as the dominant ideology of biomedicine that permeates almost all countries' healthcare systems (Baer, Singer, and Susser 2003, 37).

My research supports the argument of the CMA paradigm that the production of disease and its treatment happens within the broader setting of the world system and within embedded systems of social stratification and social violence that flows along the lines of social stratification. It is crucial to consider the global context while studying Pakistan's healthcare system. This is because, as Elling (1981) argued, these healthcare systems include international health agencies; corporations; national bilateral aid programs; all multinationals (especially drug companies, medical technology manufacturers and suppliers, industrial companies, agribusiness, commercial suppliers of baby food, suppliers of chemical fertilizers and pesticides and sellers of population control devices)

and the biomedical cultural hegemony that justifies the interventions of such stakeholders on the world stage, particularly in low-resource locations.

Baer and colleagues (2003, 40) contend that the dominant health systems of capitalist countries reproduce class structures worldwide. Their profit orientation is driving biomedicine into a capital-intensive endeavor that depends upon the latest technologies, the extensive use of drugs, and the concentration of services. The state legitimizes and strengthens corporate involvement by supporting medical training and research in the reductionist biomedical framework. I give as an example the World Bank, which has become an active international player in formulating health-related policies and granting financial loans for healthcare endeavors. The Bank influences health policy by co-financing international and bilateral agencies and matching the funds of recipient governments. The Bank then performs country-specific health sector analyses to propose reforms that are highly compatible with market-driven economies (ibid., 40). The Bank's influence is visible in vaccination programs worldwide, including in Pakistan. The low-income countries, such as Pakistan, have become a laboratory where large corporations test their products or "dump" the ones deemed unsuitable for high-resource countries.

There are various specific companies involved in the construction, development, and equipping of hospitals, the provision of medical, surgical and diagnostic equipment, and numerous auxiliary products and services (Doyal 1979). These companies become allies with the elites of low-income countries and then influence health policies by offering incentives: jobs, favors, and outright bribery (Baer, Singer, and Susser 2003, 41).

Moreover, macro-level structures feature highly concentrated power to shape the micro-level structures. The critical approach is a prime lens for examining the occurrence of measles beyond the illness and concerning economic and political factors. It questions the continuous and consecutive outbreaks of measles. The etiology of illness can be "scientifically" right. Nonetheless, other factors may significantly contribute to providing an environment conducive to the production and distribution of that illness. This means that measles can be a result of negligence, "vested interests" and deliberate efforts of some stakeholders or institutions.

This CMA approach supports questioning of the repetitive occurrence of measles in Pakistan: why does measles prevail and what is negotiated? Through this perspective,

this thesis investigates measles both in local and in broader perspectives of political and economic forces, both at the national and the global level. According to Singer (1990a, 181), these shape interpersonal relations, determine social behavior, yield social meanings, and form collective experience.

This standpoint offered essential insights to unveil and understand the factors behind the frequent occurrence of measles, which otherwise remain neglected, avoided, and diligently and cleverly diverted. This approach helps to elucidate the factors responsible for people's avoidance of bringing their children to modern hospitals. Why do people refuse and resent vaccination? At the superficial level, people are seemingly the culprits for failure in the elimination of measles. However, behind the scenes, there are structural and eco-political factors that make these people into the culprits, "blaming the victims". The CMA contextualization unpacks these factors by shining a light on several forms of inequalities. The CMA perspective situates health issues, as Baer and colleagues (2003) argue, within political and economic contexts (at any scale). These contexts effectively formulate human relationships, shape social behaviors, create collective experiences, rearrange local ecologies, and influence their cultural meanings (ibid., 4).

Agreeing with Good (1994), I note that illness (measles in the current case) can be a "misrepresentation" if it is defined in a particular perspective to ultimately serve the interests of influential segments of society, such as elites, beneficiaries of dominant economic arrangements, the medical profession, or an empowered gender. It is, therefore, necessary to study the interactions among several levels: macro, national, institutional, community, and micro—to look at measles from both emic and etic perspectives. It means looking at intersections of broader economic patterns, the national economic and political structure, the health care system, the popular and folk beliefs and actions, the experience of illness, behavior, and meaning, human physiology, and environmental factors.

The medical discourse of "stress" justifies existing social inequalities (Allan Young 1980), in which pathogenesis is placed within the everyday experience and holds significant ideological consequences by influencing social contexts and ultimately perpetuating disparities without valuing these contexts. As I do throughout this thesis, it is vital to

analyze health systems within broader perspectives after focusing on processes such as the social making of disease (Frankenberg 1980).

The political economy of health, being a macro-analytic, critical, and historical perspective, helps examine disease distribution and health services under a variety of economic systems while focusing on the effects of stratified social, political, and economic relations within the world economic system (e.g., Ong 1988; Morgan 1987; Morsy 1990,).

This study connects explanations of measles with the underlying causes of those interpretations. The critical medical anthropology perspective provided a conceptual framework to question perennial measles outbreaks and helps to analyze the connections between macro and micro-structures. I significantly benefit from it to understand how dominant systems produce meanings through social and institutional rules and practices, which shape and influence our lifeworlds (e.g., Foucault 1980).

Building on CMA, I unpack the underlying circumstances that compel people to consider measles a necessary illness or vaccination as a "Western plot." These works have offered a relevant set of terminologies of inequalities and significantly made me (like many others) aware of the forms of suffering that many people, including me, have been witnessing and experiencing. Nevertheless, my awareness is formed in the crucible of the inequities I myself, an anthropologist from the Global South, have faced, along with my family and my community. How? I describe below. The following "critical reflections" concern research practicability, research ethics, and the personal and political dangers of telling the truth, but not the epistemological groundings of CMA.

2.2.2 Critical Reflections on the Critical Paradigm: Practicability, Ethics, and Dangers

Critically speaking, critical dispositions are paramount skills to explore deep meanings yet conducting studies with a critical lens is a daunting task. This standpoint requires a researcher's vigilance and poses several challenges and problems. Critical studies often need to involve quantitative and qualitative research methods and to adjust them to complement each other. Thus, the first problem that I faced was the suitability of research methods to obtain the data both qualitatively and quantitatively, because quantified data is also essential for critical ethnographies. This is because quantitative data offers a vital understanding of the economic and demographic state of an individual, a family, or a

community. The data helps to comprehend the inequalities. I developed a socio-economic survey to learn about people's socio-economic situations—such as demographics and income patterns—to situate into this context the occurrence of measles while arguing that such factors compel people to hold specific views about measles.

The second challenge with this approach is related to the application of those methods. In some geographical locations, especially those that remained under colonization, people have widespread suspicions about surveys or have poor economic conditions or receive aid/charity; thus, carrying out quantitative methods is a challenging task. This is because people are more conscious of the harms and benefits of sharing their real economic situation or telling the truth. They either therefore exaggerate or avoid sharing. This problem is similar to what Biruk (2018) finds in her study on surveys in Ghana in which surveyors "cook" their responses. If people tell the truth, the disadvantages include the fact that tax may be due, or they may no longer receive aid. The exaggerations can be seen against the backdrop of the persistent economic and political inequalities that have encouraged people to fabricate information to avoid adverse sequelae.

The third problem concerns academic freedom and autonomy. Although critical knowledge, skills, and reasoning are profoundly needed to evaluate one phenomenon either to defend or reject it, the criticality can pose precariousness— sociocultural, economic, and political—for a researcher, and especially for some researchers and in some specific geographical settings. The critical enterprise has hardly discussed how this approach can compel a researcher into a state of precariousness. The objective of the critical approach is to uncover the powerful sociocultural, and politico-economic forces—hegemonic institutions and ideologies—or "culprit" factors at work that construct the underlying circumstances to silence and marginalize some people, ultimately restricting human freedom and affecting human dignity. Yet these factors largely stay hidden, at least from non-academic eyes. This paradigm aims to explore and expose such subtle but crucial factors: It intends to seek how "truths" are being socially constructed temporally and spatially. That means, the critical perspective unveils the interests of the influential stakeholders, which then can be used against a particular researcher employing criticality if they do not like what s/he finds.

For the current project on measles, employing the critical paradigm to deeply describe the interplay between internal and external factors was an onerous task, because, in Pakistan, this lens could result in severe implications for me personally due to the involved stakeholders, who – after zooming in and out – are the USA, the CIA; Pakistan's politicians, its army and the Inter-Services Intelligence (ISI); and "Big Pharma". These stakeholders are influential and hold specific interests, and their policies and practices have adversely impacted the country. This is because the extremists who now are called "*Tālibān*" were produced deliberately in the name of the "greater good," or because the country spends a considerable amount of its budget on the army due to "constant" fear and threat of wars with India at the expense of sectors like education and healthcare. As a result, the country suffers severe consequences of "*Tālibān*" production and could not develop its non-military institutions, which should fulfill people's basic needs, such as food, health, and shelter.

I repeatedly thought the way to go would either be to refrain from applying the critical theories, write the thesis and get the degree done, or to apply the critical approach to do accurate and comprehensive analyses—while drawing on credible sources and observations, and then take or reject a position to change and challenge hegemonic and hidden power structures, such as capitalism, neoliberalism, "Western" domination, colonization, political corruption—for the greater good. Finally, fighting a great "battle" with myself in which fears, anxieties, ethics, and obligations participated, and the latter two won to compel me to employ criticality. After completing this project, hopefully, no harm will come my way. Nonetheless, dangers loom on the horizon.

Furthermore, I argue that criticality is not dangerous for every researcher. Being a critical and conscious thinker and working with a critical standpoint is either not or less problematic for those researchers who mainly belong to the global North to conduct their research, perform their analyses and return to their own countries. Undoubtedly, they do face other challenges such as "going native," but they rarely have to fear for their lives. For instance, in Pakistan, Svea Closser (2010) conducted her work on polio and mentioned the "politics" behind the "failure" of a mega polio program. Although she has exposed critical factors, it is less threatening for her to live in her own country and conduct her work in Pakistan or other countries because she holds US citizenship. The latter identity is a privilege, as on 27th January 2011, Raymond Davis – a US soldier who

was working for the CIA – killed two men in *Lāhore*, Pakistan, and despite that was set free after deep negotiations.[10]

Thus, I argue that using a critical lens is extremely important, but not applicable to all endeavors nor suitable for every researcher to employ. The anthropologists coming from former colonies and low-income countries need extra vigilance while conducting "anthropology at home." This conclusion favors classical anthropological fieldwork patterns, in which an anthropologist always researched a society that was not his or her own. The challenges of conducting fieldwork in one's own country were not apparent to the first generations of anthropologists, but other challenges such as objectivity and "going native" were. In contrast, doing anthropology at home features other advantages that I call "plug and play" because the anthropologist is already familiar with the "emic" perspective or the widely held views from the inside. This familiarity offers her/him an edge since s/he has already completed the *rites de passage* that are often required to be an ethnographer.

The fourth limitation concerns the consequences of such studies for the interlocutors. Our studies can be dangerous for them in at least two ways: we may change their views to make them more "conscious," and ultimately, they can challenge the hegemonic ideologies and structures of power that inflict the suffering. We can change the views of our interlocutors during and after our fieldwork. When we participate in their lives, we learn from them, and they from us. Our continuous conversations, especially the critical ones, compel them to think differently. We convey another worldview to them, which perhaps the interlocutors never thought of before. I do not claim that they are "unconscious," but what we do we add a new perspective to that consciousness and make them more aware. We often tell them about the problem we are studying—because they want to know—which earlier they may never have considered as a problem.

Moreover, if we feedback to them with theses or articles, some of them – if not all – can read the stories we have created from their views. Our analyses can further convey to

[10] Some anthropological work has started to highlight vulnerabilities of the researcher (e.g., Biner 2017). Now, there is a platform called "researcher at risk." In cooperation with the Institute of Social Anthropology, the *PrecAnthro Group* and the Swiss Anthropological Association, EASA's Annual General Meeting (AGM) Symposium, *On Politics and Precarities in Academia: Anthropological Perspectives,* was organised November 2020 at the University of Bern. During this symposium, I gave a talk on precarity in being an anthropologist in Pakistan and a Pakistani Anthropologist in abroad.

them that what is reasonable to them is "abnormal" in the wider world. Informing our interlocutors about our work based on their accounts and maintaining trust relationships have long been considered as our obligation (e.g., Caplan 2004; Jorgensen 1971).

Before our research, the interlocutors are mostly unaware and not critical of the structures of power or forms of subtly institutionalized violence and root causes of suffering or ignore the causes because they are used to that sort of violence—as in the above-mentioned study by Adelson (2008), in which she found in her study of Canadian women that they are culturally compelled to maintain the status quo by not disclosing their stress and problems. Cultural critiques question biomedicine for producing and supporting a status quo while discriminating against and subordinating women and minorities (see, for example, Ehrenreich and English 1973; Ehrenreich 1978; Davis-Floyd 1994).

Therefore, simply by sensitizing them about the root causes of their suffering, we indirectly pit our interlocutors against the people inflicting the suffering. The inflictors can proactively exert further suffering as a punishment for speaking the truth because those suffering are now aware of the problem, which ultimately can make the inflictors of suffering have to defend themselves.

That means that although we may leave our fields, our impressions and perspectives remain, and we may still cause problems and suffering for our interlocutors and ourselves. We set off ripples of change at our respective field sites. This precariousness-related puzzle raises questions about research ethics and limitations, especially regarding using critical lenses. Anthropologists should also conduct research to identify whatever new suffering we may leave behind. This way, we can reflexively study the critical problems of the critical paradigm. Therefore, I maintain that how to protect both researchers and their interlocutors after applying the critical approach should emerge as a new critical theme for the critical school of thought.

2.3 Anthropology and Global Health

Global health has received ample anthropological attention to study its intended and unintended consequences (e.g., Biehl 2016; W. Anderson 2014; Farmer et al. 2013; Fassin 2011; Escobar 2011; Kleinman 2010; Collier and Lakoff 2008; Baer, Singer, and Susser

2003; Farmer 1996a). These researchers have paid attention to how and why health has become a global project and research obligation.

History shows us that specific broader key political and historical processes, which Das (1995) called "critical events," are behind this development. Critical events, according to her, can be viewed as those critical events that hold intense and broader impact and consequences that last (Das 1995). Prior to global health policies, there were different endeavors such as "international health". The focus of "international health" was to control epidemics across the boundaries between nations (Brown, Cueto, and Fee 2006).

The internationalization of health and illness goes back to the era of colonization, invasion, and missionaries when they moved to "exotic" places to achieve their interests and were confronted with strange (to them) natural and socio-cultural environments. They found these new settings challenging to cope with, most notably the new microorganisms, and they started falling ill. It is because their bodies were a product of different evolutionary, environmental, socio-cultural, and economic and political circumstances. Of course, they also brought sometimes deadly microorganisms with them that were new to the populations they worked among, including those that cause measles. Thus, the presence and prevalence of measles in colonized countries may be a direct result of colonization.

For some, the roots of international health are found in the 18th and 19th centuries when the missionaries established clinics, and the colonizers organized large-scale campaigns against infectious diseases in their respective colonies for their own sake, to protect themselves from the infections and keep their colonized populations healthy so that they could work for the colonizers (Lane and Rubinstein 1990; Leng 1982; El-Mehairy (1984; Asad 1995).

Briefly, this interaction provided the foundations of today's international healthcare systems. The attitude of the colonizers towards the "natives" and their measures for protecting themselves and coping with the novel settings shaped the world differently. It was an interaction between them and the settings, and between different medical systems – one the colonizers practiced and the "other" one that native communities believed in and practiced.

Thereafter, the health arena took another turn, in which it was reconceived in light of "technical" parameters of the concept of "development" while labeling diseases as signs of "underdevelopment." Escobar (1984, 2011) argued that "underdevelopment" was formulated more like a technical issue, which needed the technical expertise of the "developed" nations to be solved. This new conception provided high-income countries with the authority to intervene in low-income countries because the former countries regarded development and modernization as part of their primary agenda, which also included the massive exploitation of natural resources and workers of the colonized countries.

However, "international health" changed into "global health" over time, in which health is no longer viewed only as an individual concern or a national responsibility. Health and health care have become perceived as a global problem as well as an obligation, especially when health is disturbed by microorganisms: viruses and bacteria. The promotion of health has turned into a global endeavor due to human-made alterations such as population growth, unequal distribution of resources, and international travel (Singer 2015). What is more, the weaker national health systems are believed to be a significant threat to other countries due to the spread of infectious diseases such as measles, Ebola, avian flu, and now COVID-19. As mentioned earlier, Pakistan has remained under the spotlight due to the prevalence of infections, e.g., measles and polio. Due to this prevalence, vaccination was made mandatory for Pakistanis to travel abroad.

Owing to rapid disease spread, global stakeholders have become more interested in global health, realigning, and repositioning themselves to that focus (Hafner and Shiffman 2012). Brown and colleagues (2006) have described this process of repositioning while focusing on the WHO, which has continuously adjusted its interests and expertise in the field of global health. Similar observations are made by Closser (2010, 46) that this international organization has been practicing the "culture of optimism" for receiving funds from its donors to continue its worldwide projects.

Considering improving health as a global challenge opened new avenues of intervention: humanitarian and business. This new packaging of health as a global problem now appears to need global solutions. Adams (2016b, 187) argues that, ideologically, the solutions should be cost-effective, practical, technologically sophisticated – affordable,

but also profitable – and accountable to the public. This ideation attracted a wide range of stakeholders such as academics, scientists, experts, administrators, and business personnel.

To address the multitude of burning global health problems, new economic and technological forms have emerged. A new range of professions has materialized from conceiving an idea to making it real in a laboratory, and from laboratory to delivery level. Brown and colleagues (2006) argue that moving away from the older conceptualizations – e.g. as colonial-era "tropical medicine" and post-war "international health" – has gathered diverse actors and interests situated in diverse places, which has made the field of global health into a "big business."

Consequently, health has moved from a more state-centered endeavor towards a global challenge: this framing allows potent stakeholders to justify their interventions irrespective of political or national borders. It is more like a technical problem that is a result of some technical faults. In the name of "technicality," new economic and technical regimes have multiple agendas and engage a diverse set of stakeholders, such as the WHO, the World Bank, the Gates Foundation, pharmaceutical companies, governments, universities, and numerous non-governmental organizations (Biehl and Petryna 2013). George Foster (1987), in his article *Bureaucratic Aspects of International Health Agencies*, identifies four types of bureaucratic organizations involved in tackling health crises: international (multilateral) organizations; governmental (bilateral) organizations; non-governmental organizations; and philanthropic foundations. Biehl (2016) claims that such changes in ways of engagement for conceiving of and dealing with health have significantly changed ideas, practices and the political capacities of state and non-state actors, which currently are more visible.

The people are seemingly the real beneficiaries of such programs – for instance, children in the case of measles and vaccination – when the concept of universal humanity is employed or when programs are developed "for the sake of humanity". If these programs exist to benefit laypeople, then why do problems under focus remain unresolved? When they do, these problems demonstrate that something somewhere is inappropriate. Adams (2016b) argues that there is a visible gap between the theory and praxis of this notion of humanity: humanitarianism has been cleverly used and politicized by various

stakeholders to meet their vested objectives. By that Adams means that in the name of humanity, as mentioned earlier, the stakeholders carry various visible and invisible agendas and weave the programs in such subtle ways that while implementing the humanitarian endeavors, the original beneficiaries remain hidden, at least from the sight of an ordinary person (ibid.).

Given that, Adams (2016b) then questions what (unintended) consequences such a universal approach toward humanity will cause, especially in the presence of hidden motives related to accumulating profits. One can answer that it has also brought a cluster of problems that need further solutions, as Farmer and colleagues (2013) view global health as an "assemblage of problems". The problems, in the case of measles in Pakistan, have emerged in the form of mistrust, suspicions, rumors, conspiracy theories, and ultimately suffering embodied by diseases and deaths. These "hidden agendas" in Pakistan have fueled massive resistance against the population control and vaccination programs. For example, a "fake" vaccination drive was used as a cover in 2011 by the American CIA in the northern areas of Pakistan, especially in Abbottabad city, to discover the location of Osama-bin-Ladin. This misuse of the hepatitis vaccine, an example of hidden interests, was declared by a Pakistani security analyst to be a "vaccination suicide" (AlJazeera 2013)and indeed it most definitely heightened people's fears of and mistrust in the country's vaccination program, as described in chapter 11.

Andrew Lakoff (2010, 59) divides contemporary global health into two contemporary regimes: global health security and humanitarian biomedicine. According to him, the former regime focuses on diseases that still might occur, such as virulent influenza and smallpox. Although these diseases may not cause outbreaks, numerous stakeholders, including multilateral health agencies, national disease control departments, and laboratories, are engaged to provide "early warning" systems while considering the probable political, economic, and health-devastating consequences. The latter regime, however, deals with those diseases that are presently infecting people in low-income countries such as malaria, HIV/AIDs, Ebola, and COVID-19.

Both these regimes, according to Lakoff (2010), are "global" because they cross the boundaries set by the national governance of public health. The engaged stakeholders in these regimes make a global space that results in sites of knowledge and intervention.

Medical anthropology has significantly focused on the concept of the "global" due to its association with health and illness. Didier Fassin (2012, 96), in his book chapter "That Obscure Object of Global Health," interrogates the concept of "global" to "unveil the dialectic of spatial expansion and moral normalization" and "health" to highlight the "tension between the worth of lives and the value of life." He claims, "Global health has become an effective signifier. Independent of the object to which it refers, it transmits an idea of change, of worldliness, of postmodernity. This dimension—which makes it a keyword of our time—should not be understated" (ibid., 101). Fassin further wonders about the functions of global health; he wonders whether this concept is more about "Western" power to define and transform the world or about the practical matter of dealing with the world's health problems.

These diverse perspectives allow the researcher to particularly focus on global health for documenting and analyzing the power relations and people's requirements in tension with various national and global stakeholders. In the case of this project, they include laypeople (*Hakīm)*, biomedical doctors, politicians, federal and provincial governments, national institutions, and global organizations, e.g., WHO and USAID. The global stakeholders issue protocols to the Pakistani government to conduct various programs to deal with measles and other infectious diseases and to measure the progress. For following these guidelines, the government receives aid not merely for dealing with infectious diseases, but also for developing the fragile economy. Thus, global funding plays a pivotal role in global health.

2.3.1 Funding and Metrics in Global Health

The funds, from an economic perspective, involve the processes of production, (re-) distribution, and consumption. Over time these processes of funding have become the subject matter of several disciplines of the social sciences. To investigate the mechanisms of funding, McCoy and colleagues (2009, 413), while considering them as a "fragmented, complicated, messy and inadequately tracked" phenomenon, divide these mechanisms into three phases: provision, management, and spending. This "chaotic" state of funding requires critical study to track the real beneficiaries (ibid., 407). The studies should specifically be critical about the funding that goes to the low-to-middle-income countries (LMICs) with an apparent aim to upgrade their healthcare sector. At the same time, the other realms—such as poverty, food insecurity, malnutrition, inaccessible clean water,

hygiene and education, humanitarian and emergency aid—that affect health are less prioritized (ibid.). These realms are far more critical and relevant to health because of their considerable influence on it. As discussed in chapters 9 to 12, many laypeople refer to a lack of economic resources, clean water, food, and medicine. Due to the unfulfillment of these needs, they negotiate the vaccine with health officials. They perceive the danger of no food to be higher than that of contracting measles and thus are reluctant to skip even one day's work to take their children to be vaccinated or to take a child with measles to a medical facility.

For McCoy and colleagues (2009), this prioritization of global stakeholders reflects the theory and praxis of funding. After studying this gap, they view global health as an enterprise worth billions of dollars that potentially entails several actors with competing pursuits to make use of this investment. To ensure that health financing is fulfilling the needs of recipient countries, exploring fundraising and how the money is spent and whom it serves is necessary.

When money is involved, numbers appear by default. Quantification has emerged as an objective[11] determinant of science, as Porter (1995, 3) mentions in his book *Trust in Numbers*. It is the same in the arena of global health, including measles and vaccination in Pakistan.

Evidence production has therefore received critical attention in anthropology, sociology, and philosophy. In anthropology and sociology, one can observe the "critical turn" to study the quantification of a phenomenon, as profoundly as possible, because some stakeholders use it as a tool to construct realities that allow them to exploit or justify their interventions in mega-projects (Adams 2016a; Espeland and Stevens 2008). The question of what counts in global health is under critical discussion in anthropology (Adams 2016a; Roalkvam and McNeill 2016; Biehl 2016). This is because health programs significantly depend upon numbers.[12] Weight is given to high or low numbers according to a requirement for creating a specific impression.

[11] On types of objectivity and issues related to it, see Allan Megill (1994).
[12] This approach reflects and perhaps comes from newer forms of governmentality such as democracy. In democracy, the majority is the authority.

In my project, the usage of numbers is quite prominent, e.g., the number of vaccinated children; 95% vaccination coverage to create success stories to receive further funding and continue the projects. The engaged stakeholders, such as the vaccinators, the government, and WHO, understand the importance of "numbers"; hence they adjust them according to requirements. If reporting more considerable numbers of vaccine refusals have an advantage, then the high numbers are communicated, or the other way around. For instance, the reported number of measles-infected children, unvaccinated children, and refusals would demonstrate the efforts of a vaccinator to the federal level health officials, governments, and the WHO. A lower number of such infected children is better for a vaccinator, as it would show that s/he is effectively performing the required tasks. In contrast, as stated earlier, if the number of unvaccinated children and refusals is high, then stakeholders, such as the government and WHO, practice, in the terminology of Closser (2010, 46), the "culture of optimism." In other words, the numbers are significant, yet there is great hope to substantially minimize them in future projects.

I argue that the usage of numbers reveals an optimism bias: Good "numbers" are relative phenomena. To put it differently: good (higher or lower) numbers make success stories while weak numbers are used to show how much further effort is required to run the global health projects. Either the project fails or is successful; the numbers determine further interventions as success stories rationalize similar interventions in other villages, towns, countries, or continents while focusing on the same or similar diseases.

A deliberate fabrication of data has started, primarily in development projects to receive aid at local and global levels. As mentioned earlier, Biruk (2018) finds a "cooking" of data in development projects in Africa, in which the African researchers fabricate the data. The stakeholders use numbers for manipulation. For instance, Adams (2016b) argues that the Bill and Melinda Gates Foundation and the Global Fund can engineer profit-making as a global health tactic by using randomized controlled trial (RCT) metrics (ibid.). The metrics are used to "tether neoliberal forms of profit-seeking to global health by making 'scalability' the primary measure of efficacy" (ibid., 189-90). Depending on circumstances, such organizations work with numbers: generate good numbers and avoid negative numbers like those related to casualties.

Therefore, the issue is how much one should (mis)trust such numbers since the numbers are one way to define the objectivity of evidence making and knowledge production but not the only one. False or "cooked" numbers can be extremely misleading because numbers speak on behalf of humans. Although the metrics are used as administrative apparatuses to solve the old problems of accountability in health, they often create unfamiliar problems while controlling our thoughts by focusing them on isolated parts of problems (ibid.).

Furthermore, global health programs produce specific models of formulating a problem and then designing strategies to deal with it. These models incorporate the differences embedded in belief, behavior, and context to give background information, but do not necessarily value them in designing interventions. Pinto (2008) terms global health as a "black box" because of its discriminatory approach to suppressing the local contexts and the specificities (regional, cultural, and national) in interventions or research. Counting is a vital part of such programs, as in the programs focusing on the elimination of infectious diseases, where there is considerable reliance on statistics.

Over time, health has become defined as more of a global problem than an individual's concern or a country's problem. From this perspective, infectious diseases are diseases that can infect countries and continents. The potency of microorganisms has worked as a primary determinant to make health as a global concern. This concern is not a moral obligation to help someone, but it is more likely a threat from "others" to "us." More importantly, it is an opportunity to earn economic and political favors and resources. Hence, this epistemological shift or new transformation from international health to "global health" has brought on a shift in the policies and praxes concerning health.

Similarly, global health includes distinguishable experts on designing, implementing, and evaluating a project; experts for fund hunting and allocating; governments and the people. These stakeholders practice power, which builds what Foucault (1980) terms "power relationships."

Moreover, strategies and ways of dealing with infectious diseases are linked to the concept of modernization: Vaccination can also be seen as a tool for differentiating the "traditional" and "modern." The people who are against vaccination are labeled as

"traditional" due to holding old beliefs, and those who accept vaccination are the "modern" ones with innovative ideas.

2.3.2 Global Health as a Global Assemblage of Problems

Furthermore, global health can be seen in Collier and Ong's (2005) phrase, a "global assemblage:" the site of formation and reformation of individual and collective existence. Drawing on work of Deleuze and Guattari (1987) in *A Thousand Plateaus*, Collier and Ong (2005, 4) have developed this analytical concept to study particular technologies, ethical regimes, and administrative systems that play a substantial role in the present transformations of patterns of society and culture across the world. They argue that "the forms and values of individuals and collective existence are vulnerable to technological, political, and ethical reflection and intervention." This vulnerability is due to the quintessential interconnection and configuration of the current settings of the world.

I see that our contemporary lifeworlds are connected in such highly sensitive and inextricably intricate ways that if something happens in one place, it leaves a significant impact on the other places as well—in what I have identified as the "the butterfly effect." By this metaphor, I mean due to an intricate connection, there is always a causal relationship between two close or distant occurrences: (in-)significant effects of a happening anywhere can be felt in the rest of the world. The causal factors can relate to temporal or spatial context, which further can be interrelated to the contemporary or past events. The current study's results show these effects based on links between vaccine refusals and geopolitics. Refusals are intricately related to the happenings, which are simultaneously rooted in temporal, spatial, current, and past critical events. These refusals, via halting the elimination of infectious diseases, including measles, cause further micro and macro effects across the world. For instance, considering measles as a "threat," at a micro level, the respective province organizes supplementary immunization activities (SIAs); or at the macro level, the WHO offers further guidance, and "resources" to Pakistan; or the organization makes the "yellow" (vaccine) card mandatory to travel abroad. In this way, refusals although as micro-level are effects of some other (in)visible causes, they become a cause of several other effects. This chain of cause-effect-cause continues.

To consider global health as a mix of numerous determinants, not just biological, Farmer, and colleagues (2013) propose a "biosocial" approach. Digging deeper to understand the factors that structure the problems, they raise a salient question about the ways that history and political economy can help to comprehend the twisted distributions of wealth and illness around the globe (ibid., 2-3). This approach seems an extended version of the "structural violence" concept that Farmer (1999, 2003b, 1996b) developed in the late 1990s while arguing that improper distribution of wealth impacts on the poor, and this impact had not been significantly investigated. He, with Campos (2004), called for a "resocializing" of ethics – especially bioethics – to investigate the asymmetrical distribution of powers and positions. Apart from legal responsibilities, practices of global health projects should be right, just, and fair.

Stories to capture meanings and complexities of structural violence have been collected (Green 1998). Outside anthropology, there has also been a critical turn to examine the impact of global financial and economic crises on health in terms of creating the health inequalities that prevail across the globe (Navarro and Muntaner 2016). In other words, attention is paid to situating medical problems within the broader spectrum of world events.

I argue that anthropologists should work more on making the invisible structures visible in global programs and make efforts to analyze and explain the "butterfly effects" of every policy and practice. For example, the butterfly effect will help to understand and explore how a fake vaccination drive in Abbottabad district affected vaccination uptake in other regions of Pakistan, and at an international level. Also, how did that fake drive affect other areas in which foreign stakeholders are involved? Such studies could help to improve programs, decrease human suffering, and extend our knowledge. Anthropology should unveil non-medical determinants by gathering and analyzing the broader power constellations, institutions, processes, and ideologies that structure disease and health. Such analyses should be empirical, historically rooted, and not limited to one part of the world. Inquiries, Biehl (2016, 135) suggests, must focus on places affected by global inequalities and neo-ideologies, such as neo-colonialism, neoliberalism, governmentality, and humanitarian reasoning. Farmer and colleagues (2013, 9) propose that emphasis should also be placed on the role of non-state institutions such as NGOs and private philanthropists.

Studying the reification of the policies and practices of stated ideologies that are made active and studying the people for whom these programs are made as passive objects would help to explore the implications of chronic inequities and inequalities – local, national, and global – on individual people's lives. The accumulation of individuals' experiences becomes data collection, and economic and political institutions use metrics to create "evidence." Our studies, therefore, should unveil the making of evidence and reveal its manipulation. Such focuses would highlight the "geographic specificity and global relevance simultaneously" (Adams 2016b, 191).

Anthropologists have studied the global in the local and not so much the local in the global, especially in relation to health and illness. I argue that we should also reverse the direction of our analysis or move our inquiries towards the latter. For instance, such research could explore how an ordinary person perceives injection of the measles vaccine, or how a simple refusal compels the policymakers, at diverse levels, to redesign the vaccination programs and protocols, as I will demonstrate later on.

2.4 Concluding Remarks

This chapter revisited the several concepts and approaches I have borrowed and profited from to conduct the research. Interpretive and critical approaches are center stage. I combined the theoretical approaches, which throw light from different angles on one and the same problem about human imaginaries and practices related to health and illness. These approaches, therefore, work in a complementary fashion.

To further address my topics, I refer to Ortner (2016, 49), who states that the "culturalist" approach—the notion that culture takes central importance as an organizing force in human affairs—helps us to learn about how culture offers people meanings in their lives, and how anthropologists decipher those meanings in their thick descriptions. The critical perspective investigates how economic and political forces – locally and globally – shape people's lives more than culture.

Both of these approaches—the culturalist and the critical perspectives—view and understand the world differently, and also criticize one another for their limitations. The interpretive culturalist approach criticizes the "reductionism" in the work of the critical paradigm--for example that it considers people's lives as reflexes of mechanical forces. The critical theorists critique the interpretive theorists for similarly valuing culture to

literary texts while ignoring the harsh realities of power (ibid., 49). The critical theorist goes one step further in insisting that culture also constitutes the ideologies, such as fatalism, that disguise political and economic realities (Keesing 1987, 161). Webs of culture are seen in this approach as simultaneously mystical and significant. The argument advocates that culture can be produced and significantly shaped by dominant structures that then may produce "hegemonic" structures to achieve desired actions and behaviors and that these impacts need to be critically studied. Why, despite concentrated efforts, constant aid, and consistent involvement in the struggle, has poverty not yet been eradicated (see, for instance, Pogge 2010)? Following this line of inquiry, we can also ask: Why do infectious diseases still occur despite continuous vaccination programs?

I see the criticisms of both paradigms against each other as valid. I also perceive the weakness of one paradigm, as also its strength. Whether something is considered a shortcoming depends on one's specific view and focus. As the importance of the meaning-centered—interpretive, culturalist approach—consists of valuing culture and weighing culture's value and influence in the lives of its practitioners, in contrast, as Ortner (2016, 49) puts it, the value of the critical "political economy" approach lies in its focus on "the power, inequality, domination, and exploitation" that may create a specific cultural pattern. I see these approaches not as contradictory but as complementary because both shed light on differing yet equally important phenomena: culture does have extremely potent effects on people's beliefs and behaviors, while hegemonic powers do exist and do generate top-down influences on culture and belief.

With its emphasis on interpretations of illness, the interpretive approach supported me in understanding and explaining what measles is to a diverse set of stakeholders—how do they define it? In contrast, maintaining that the origin of an illness resides in irregularities and configurations that occur at several levels, the critical approach guided me to understand the underlying causes of outbreaks and why stakeholders hold specific explanations for the occurrence of measles. It provided the key to understanding how geopolitical and economic regimes have rather cleverly and subtly carved out diverse local and global inequalities, which then result in various crises, as well as in benefits for these regimes, such as ongoing funding. The existence and specific shape of measles in Sindh province are a result of this unequal distribution of resources, lack of healthcare

institutions, as well as a dearth of adequate facilities and lack of public awareness, in particular about vaccination.

These aforementioned perspectives support the formulation of essential questions about the links between global geopolitics and local anti-vaccination sentiments and outbreaks of infectious diseases. How did the critical event of a fake vaccination campaign to locate Osma-bin-Ladin fuel anti-vaccination sentiments, including the killing of vaccinators in Pakistan?

Besides, “anthropology of infectious diseases” and “anthropology of global health” that have informed my analytical approach, I have also woven together with the other concepts I have touched on herein: “global health,” which sees diseases and the provision of health care as a global endeavor not merely from a biological perspective; “social suffering” and “structural violence” to observe the appropriation of specific structures that affect some human lives negatively by the making and using of suffering; “global assemblage” and “critical events” to study the interplay between local and global worlds, and between past and present circumstances that shape human lives in particular ways.

CHAPTER 3: RESEARCHLOGUE: DESIGN, METHODOLOGY, AND CIRCUMSTANCES BEHIND GATHERING THE DATA

In the earlier chapters, I described the subject matter of the thesis and the theoretical paradigms to thoroughly study measles outbreaks. I now proceed to research design and methodology, which were used for conducting the research for learning and exploring the construction and negotiation of measles. In this chapter, I have attempted to write that I call, a "researchlogue" to show how I approached the field, what were challenges and circumstances under which the data were gathered, and with what methods, strategies, and approaches. I present several anecdotes from my field diary that demonstrate my entire research journey to carry out the current research. Devoted to the researchlogue, the chapter begins with an anecdote from my field diary.

> It is a summer day in May 2014. The temperature is rising steadily from morning to noon since Sindh province is situated in a subtropical region, where the temperature in the summer frequently rises above 46 °C (115 °F). Despite the rising temperatures, routine activities of life never stop. Similarly, for reaching and vaccinating every child, the government's 12-day supplementary immunization activities (SIAs) against measles are underway throughout the province from May 19th to 30th, 2014 (see photographs 1-22 in the annexure 1). These activities may be seen against the background of the measles outbreaks in 2012 and 2013. Thousands of vaccinators and social mobilizers are engaged in the form of teams. There are fixed-site teams, which sit at one place, such as a hospital or a bus station, to vaccinate children, and there are mobile or outreach teams that are continually moving from one house to another for immunizing the targeted children (see photographs 1-22 in the annexure 1).
>
> To observe these immunization activities, we are at the *Sakhar* district's control room that is governing the vaccination campaign in the district. My today's task is to observe the vaccination campaign in rural areas. Its exact location is unknown, except that it will take place in the cluster that was severely affected in the outbreaks of 2012-13. The village *Rahīmpur* lies here.
>
> My research assistant and I have a motorbike (the Honda 70 – a small four stroke-motorcycle, which some vaccinators get from the government to run the vaccination) (see photograph 12 in the annexure 1). It is essential to mention that this small bike is not comfortable, especially for the long rides, and during hot weather, as we are covering our head and face with a scarf and wearing sunglasses. Yet the hot wind and sunlight are burning our body, particularly our uncovered body parts, e.g., hands and feet.
>
> In contrast, the officials – of the government and WHO – have an air-conditioned vehicle followed by an escorting police jeep in black (see

photographs 13, and 15 in the annexure 1). The officials generously offer a ride in their car that I politely refuse in order to observe the hardships vaccinators (particularly those who are engaged in outreach teams) face to cover scattered areas on a bike, especially during the hot and humid summer.

We start our journey on a small paved road, locally called a "link" road, which contains many ditches. In terms of width, it is too small that two trucks or buses can hardly pass or cross each other. The temperature is around 30^0C at the beginning of the journey, and in the afternoon, it crosses 40^0C. The vehicle of these officials is leading, followed by a police vehicle and then our bike. We head towards a village that has no road, but a *Sarrak* (an unpaved or unmetalled passage or road)* within the agricultural fields. The *Sarrak* continues for almost 10 km, and the mentioned vehicles leave a cloud of dust behind. Now the small dunes to cross appear. The vehicles of officials crossed them with no effort while our bike is unable to cross the dunes, despite our enormous efforts.

Therefore, there are two apparent solutions: to leave the bike there or carry it in our hands to cross. The second option is more convenient and appropriate because we still have to reach the village. Without switching it off, I become able to cross the dunes with the help of acceleration. The sand that is coming from the empty spaces of the sandals is burning my feet because of its heat. Although the dunes are approximately one km long and approximately 300 km wide, this small journey to cross them makes me and my assistant sweat immensely and gather dust on our hair and clothes. I am feeling like burning on my body due to perspiration and dust. This small act of participation offered indispensable and profound insights about the circumstances under which vaccinators perform their duties.

After taking the *Sarrak*, we finally reach the village. However, vehicles of the officials are already there. The vaccinator is making announcements on a small, mobile loudspeaker to inform the villagers about the vaccination and the location of an *Otāq* (a guest room for the male members and also for the accommodating male guests) where the team is staying (see photograph 10 in the annexure 1). Gradually, people start to gather. The event turns into a gathering. Villagers begin bringing their children to get vaccinated. Children are panicked: Their cries are dominant, as many of them are crying even before vaccination. Simultaneously, officials are keeping records, discussions are underway, and the district health officials and the WHO person are inspecting the entire event (see, for example, photographs 6, 14-15, and 18 in the annexure 1). Their dresses are different from the inhabitants of the village, not merely in terms of quality, cleanliness but also in terms of patterns, as the WHO person is wearing pants and a shirt and two of the officials have basketball caps. Whilst the people of the village are in *Shalwār-Qamīs* (loose trousers and shirt) or *Lungī* or *Goadd* (a type of sarong that is wrapped around the waist and worn in place of trousers, especially by men

> from South Asia), *Sindhī Topī* (caps) and *Patko* (turbans). Policemen[13] in their uniform (light black pants and shirts) are holding handguns, such as AK47 Kalashnikov rifles and revolvers, in their hands ready (see photograph 10 in the annexure 1). Although vaccinators are busy in vaccinating the children, they seem under tremendous pressure as well, due to being continuously monitored by the district and WHO officials.

This vignette presents a valuable idea concerning the way SIAs are organized, and particularly how the mobile vaccination teams perform their duties. Also, the vignette offers an understanding of the experiences and circumstances under which I gathered the data. This piece helps to understand the context of the present research and the context in which I conducted this project. Without quoting any literature, or in the words of Malinowski (1922) "works of high repute," I therefore directly and candidly elaborate on the ways of gathering data and piecing everything together.

3.1 The Strategy

Fieldwork is always overwhelming and challenging. It requires essential preliminary planning, patience, and tolerance. It matters less that how much you are familiar with your proposed project and potential locale. In any case, you require the stated characteristics to conduct your fieldwork. Although I belong to Pakistan and am thoroughly familiar with almost everything there, planning the fieldwork is still valid and necessary. After my faculty presentation at the current university in late 2013, the first thing I commit is to drop an email to the Federal Minister of Health for getting an appointment to introduce the project, seek permission, and conduct an unstructured interview. Unfortunately, the Minister's response never arrived. Although I keep wondering to commence the current expedition, I organize the fieldwork at the beginning of 2014 with an inductive approach to keep the options open. The broader locale is in view: selecting two villages from two districts of Sindh. The specific villages and districts for this are not decided in advance. The preliminary design is to collect information about the outbreak from the District Headquarters (DHQ) hospitals, *Talukā* (subdistrict) Headquarters (THQ) hospitals, and Basic Health Units (BHUs). The plan of where to start was vague. Nonetheless, the significant units of data collection included the national office of EPI, health ministry, district health offices, and district offices for the EPI.

[13] All of them were men; thus, I use policemen.

Nonetheless, after arriving in the field, it became clear that neither DHQs, THQs nor BHU could provide sufficient data about the outbreak, but the federal expanded programme on immunization (EPI) center. Thus, I plan to commence the fieldwork at the federal level.

In January 2014, I enter my field at the stated level. The underlying reasons for initiating fieldwork from *Islāmābād* are not only gathering the required data on the outbreak in order to select the villages but also informing the national EPI officials about the expedition and visiting the WHO office. Therefore, the expedition starts at the federal level by wandering around the National Institute of Health (NIH). The location of the NIH is already known, as I was living in *Islāmābād* from 2005 to 2013 until my arrival in Austria to pursue my Ph.D. studies. To the NIH, I had also accompanied some allergic patients from my native [in *Sindhī*] *Taluko* (subdistrict)[14] during that stay of eight years, as there is one of the best biomedical centers of the country to deal with allergic patients.

Accordingly, the fieldwork begins with multiple visits to the NIH, as the EPI and WHO country offices are at the same location. During this time, luckily, I arrive at a laboratory, where the samples of suspected measles arrive from across the country for tests to be conducted to confirm whether (or not) measles is present. I did not come across that type of laboratory in the country beforehand. Thus, it is a great beginning to "thrust my nose" like Malinowski into all measles-related information and institutions (Malinowski 1922, 6). I arrive there and approach a person who is around his 50s and wearing a white overall. After he is informed about my visit, he brings me to the person in charge, his boss, where a brief informal meeting occurs. The person in charge of the laboratory then directs me to his assistant (the same person I met earlier) who is responsible for conducting the experiments and record keeping. The meeting with the assistant continues for two to three hours and proves to be a significant source to learn of the procedures and protocols for declaring whether (or not) there is an outbreak. He nevertheless shows indifference in sharing the record of cases reported during the outbreak, while considering it confidential. He shares what he considers was permissible during the discussion.

Eagerly awaiting the Minister's response, I make as many efforts as possible to get to know acquaintances and friends who are perhaps working at the NIH or WHO

[14] In Sindhi language, subdistrict is called *Taluko* and its plural form is *Talukā*.

headquarters for getting access. This strategy of finding someone is often practical in the country and justifies the expression "do as the Romans do." Everything before entering the field seemed highly smooth and more accessible. Nonetheless, during the implementation phase to commence the fieldwork, I am very concerned because the apparent smoothness to organize the fieldwork is continuously changing into zig-zag patterns. To deal with this anxiety, I keep myself engaged in collecting (news-) reports related to measles and vaccination.

Since nothing significant is coming up, one day, I decide to visit the WHO office in order to check the protocols required to have an appointment. The WHO office gives the impression of a fortress. Fool-proof security is provided by a wall containing a barbed wire fence and big cement blocks at the main entrance to stop an unwanted vehicle's attack in particular (as on 20th September 2008, a truck filled with explosives entered and detonated in the Marriot hotel in *Islāmābād*). At the same location of this office, there is a check-post containing alert security guards, who are ready to fight, as and when needed. This fortress-like outlook, it does nothing then, at least scares me. Maintaining my composure, I talk to the security guards, who informed me that only officially invited visitors are allowed. I return with the hope that I would receive that invitation after finding a relevant person.

My exploration continues. Meanwhile, I reach the health academy, where I, by chance, meet a professor of public health. We have a brief conversation, in which I share my anxieties. He encourages me and comments that this is what fieldwork is about, and a researcher must mention all experiences of difficulties in accessing people and initiating fieldwork in the design of a project. Although I am already familiar with this thought to mention all the problems encountered during the fieldwork, it is significant interaction with him.

Visiting the WHO without an invitation does not work. My efforts to get to know acquaintances continue. After almost ten days, unceasing efforts finally work, as one of my friends introduces me to a person named *Shabīr* (pseudonym), who is working in the federal EPI office, responsible for training, capacity building, and vaccine maintenance (cold chain, record). My friend gives me his cell number. That day, I am profoundly happy, like Sherlock Holmes, as a clue to a riddle had been found. The very next day, I call *Shabīr*

on my mobile phone, while referring to my friend and introduce myself. *Shabīr* responds positively, as my friend had already informed him about me, and invites me to his office. I accept the offer with no further delay because time is passing quickly. According to my initial study design, the expedition is for three months (we will get back to plans in the present chapter), and I have to travel far and wide to visit the districts as well as villages. On the next day, I arrive at his office. *Shabīr*, in his 40s, welcomes me by coming out of his office. After hugging each other and shaking our hands, we enter his well-furnished office, containing a comfortable couch, the country's flag and a picture of the state founder.[15] *Shabīr* is also from Sindh province, so we speak the same language. We start a *Kachaharī* that offered a preliminary understanding of the making of vaccination programs in Pakistan. He ordered his assistant to bring *Chānh* (black tea with milk) and biscuits. He shares his information about outbreaks and vaccination programs, and his acquaintances in the office of the WHO. He informs the national EPI manager – his boss – about me and arranges a meeting with him. To do so, he goes there and secures an appointment for me. "Tomorrow, the EPI manager has some spare time to meet," he states. Now finally, things are going in a more desired way as clues were leading to other clues.

As decided, I reach at *Shabīr's* office the next day to meet the manager. *Shabīr* accompanies me to the manager's office that is superbly furnished. The manager welcomes me with a smile and shacks my hand. He has limited time, so it is good to inform him about everything as briefly as possible. In that brief meeting, I introduce myself and, most importantly, the project. He finds the project intriguing and indispensable. Although the meeting goes well, he demands the project proposal and an approval letter from the university. This demand puzzles me. I am profoundly reluctant to share the proposal due to fears of "copyright" and "misuse," as many people use submitted proposals, even theses for their purposes with their name.

In some cases, people do sell the project proposals. Being aware of this critical state, I face an awkward situation. Of course, this is not less than a tricky phenomenon: it is like standing at the edge of ethics, where a researcher tries to ward off any danger or trouble and needs to decide what to do the next. With anxiety, I hesitate to provide him with the

[15] In the governmental offices, you would always see a picture of Quaid-i-Azam Muhmmad Ali Jinnah – the founder of the country.

proposal. Yet the second demand is fulfilled by providing a letter from the scientific committee of the University of Vienna, describing my project and its approval.[16]

One important point needs to be mentioned here. In these offices, a dress code is crucial because the dress, including shoes, is used to judge a person's personality and worth. Consequently, at the federal level, I am highly conscious of dress patterns. I use to wear smart Western trousers and a shirt because most people working here use to wear this dress. This is compounded by knowledge of English: good English is considered a sign of knowledge. Native dress patterns, such as the turban, were humiliated by the British, who forced their "servants" to wear them, especially those who used to stand at the entrance of their houses and hotels. Using dress patterns and English as a parameter to measure the worth of a person is also debris (this is what I call it) from the British colonization. Both phenomena work as identification of rational and irrational people. English is still an official language, although the country's parliament has been discussing making Urdu an official language for a couple of years. Colonization is a matter of the utmost importance, but not the present focus, so it is left unaddressed.

These meetings and discussions paved the way for insights about the Sindh's affected districts and the EPI district offices, for example, their location and structure, which were utterly unknown to me earlier. To get there quickly, I continue searching for EPI locations and asking some friends in the province. This information helps me to choose both the districts (we will get back to the selection presently).

The journey now begins towards the south-eastern part of the country: the Sindh province. To continue the data hunting and gathering, I plan to travel to the province from *Islāmābād* to reach the district EPI centers and to choose the villages in February 2014. There are three options to get there: by airways (two cities: *Sakhar* and *Karāchī* have airports), by roadways, and by railways. Traveling by airways is more expensive than the remaining two options. Trains are noisy – if one is not in, what is locally called, a 6-person lower air-conditioned cabin, or a signalperson air-conditioned parlor compartment) – and are always confronted with delays. Thus, both the options are inexpedient, except for

[16] My anxiety can also be seen in the broader context of Pakistan that how different structures have affected the country and culminated in the types of mistrust and corruption, which further impede the country to grow.

a bus. Therefore, I book a bus ticket and depart from the country's capital in the late afternoon. I reach the *Sakhar* district the next morning after an 18-hour journey.

After entering the province, a new world begins: geographically and ethnographically (chapter 5 describes this). There are hot summers, as although it is February, the outside or natural temperature is rising, and my body is sweating. Ethnographically, one can observe shrine behaviors, a different *Shalwār-Qamīs* (trousers and shirt) clothing pattern with a unique *Sindhī* cap, turban, language, and historical buildings. The influence of Hinduism remains visible in meeting patterns, rituals, and architecture. *Sakhar* district also contains historical Hindu temples and sacred places such as *Sadhbelo* (based on a small island in the *Sindhu Daryā* (Indus River) and *Satyan-jo-Āstān* (literally: a residence of women, who threw themselves in their husband's pyre).

After reaching the district, my next task is to locate the district EPI office. By taking a taxi, I reach the *Sakhar* EPI office, which contains a big signboard at the main entrance declaring that it is a governmental building. The first impression of the building shows its old condition, as the cement of the walls is falling. After entering the building, I meet a person and ask him who the officer in charge is and where s/he is. He says, "In charge's office is a few doors down the hall." I reach a room with an open wooden door. The person-in-charge, Mr. *Rānno* (pseudonym), is facing the door, and four other persons are sitting facing each other. To my "*Aslam-o-Alikum,*" I receive a response of "*Wa'alikum-a-slam.*"[17] Everyone stands up to show respect and meet me (it is a norm in the province that shows deep respect). We hug each other and shake our hands. After that, I introduce myself and the research endeavor. *Rānno* is highly obliging, even in our first meeting. He shares that other researchers also visit him, so I am not the first one. He is quite welcoming, encouraging, and helpful. A *Kachaharī* starts, led by *Rānno*, as the other four persons are also participating. As mentioned in Chapter 2, a *Kachaharī* is a small informal discussion that has roots in the local socio-cultural norms, which I also describe in more detail in the methods section. He introduces the four people to me as vaccine supervisors. In parallel, *Rānno* orders *Chānh* (black tea with milk) – a *Kachaharī* without tea is like incomplete. Our *Kachaharī* continues for one hour, in which he never shows a disinclination towards the topic in terms of sharing the data. He willingly provides the

[17] The common greetings to wish safety upon each other. The literal meaning of these phrases is "peace be upon you".

required data and further introduces me to his staff. During several *Kachaharī* on (plural of *Kachaharī*) with him, sufficient data is gathered regarding the number of cases in the outbreak, the names of affected villages, local responses, design of the vaccination program, weak areas in vaccination, and local politics. He shares a list of cases that occurred in the outbreak, broken down into *Talukā* and villages. He never asks me about a permission letter for the research and continually encourages me in my work, which he considers a significant contribution to the province and the country. However, he does want me to meet the Executive District Officer (EDO) health – government's district official responsible for the health department. The EDO is in-charge of the entire office as well as of the district.

Hence, it is necessary to seek his consent by informing him about the project. I make an appointment. When I go to meet him, around seven people are already standing and waiting in the corridor. The door to his office is closed. The assistant inquires if I am there to meet *Sāhib* (literally: boss).[18] I nod my head to indicate yes, I have come to meet the EDO *Sāhib*. He asks me to write my name on a piece of paper, which I do (my name and the university's name), and give it to him. He takes the slip inside, and surprisingly I am called in prior to anyone else. After entering, following the local norms, we shake our hands. He asks me, "Yes, son! What can I do for you?" These government officials are mostly busy as many people are waiting outside to meet him; thus, I briefly introduce myself and the project. "Excellent! Please meet Mr. *Rānno*. He can give you all that required data," he suggests politely. He, thence, shares his views on the outbreak and the working of EPI briefly. The meeting lasts for around half an hour. Thereafter, we say *Khudā Hāfiz* (May God protect you) to each other.[19]

The visit of the district office set the further course of action, such as selecting the village of *Rahīmpur*, the district EPI cell, interaction with the vaccinators and supervisors. This visit solves the puzzling parts of the study, and ultimately is an essential step for the continuation of the project. According to the given list of cases in the district, the village of *Rahīmpur* reported the highest cases, i.e., 50 during the outbreak. Now the task is to

[18] *Sahib* is a common word used for bosses or government officials. It can also be used as suffix to names to show respect.

[19] This is one of the popular expressions to utter at the time of parting. It can also be *Allāh Hāfiz.* The other expressions used in Sindh include *Sadain Gadd* (together forever);* *Sāth Salāmat* (our relations should stay safe);* *Sik Salamat* (our curiosity to see each other may stay safe).*

find this village. The information on the *Taluko* is available, but not the exact location. I have a partial understanding of the area, as when I was a teenager, I once went to that geographical area. There is no proper public transport available in that area, except hourly intervals to catch a van. Reaching the area by a van is even possible, but not a village. Therefore, to reach the village, the sole option is to take a motorbike. I take a 70cc motorbike with my research assistant. After putting a bottle of water, a note pad, and a camera in our bags, we begin the search from the morning. This area also falls into the Thar Desert and is called *Nārā* Desert, but it now has irrigation water available. Agriculture has significantly evolved in the last two or so decades. It is also home to various social groups, locally called *Zāt* (literally: caste) such as *Shanbānnī* (a Baloch caste), *Bhanbharā* (not Baloch and locally called *Hur*)[20] (refer to chapter 5). Finally, we reach the village *Rahīmpur* at noon with an aching body, due to a constant riding, and interactions with several people to ask about the village.

Working in my "own" area or doing "anthropology at home" have advantages and disadvantages, which have been highly discussed and debated in anthropology (see Peirano 1998; Van Dongen and Fainzang 1998; Greenhouse 1985; Strathern 1987; Edward 2014). The utmost and distinct advantages, in my case, are knowing the language, the area, the dress pattern, and what Malinowski (1922, 23) call "the imponderabilia of actual life," which means a series of phenomena or daily activities – e.g., working routine, that humans perform – that can be carefully studied and clearly understood by constant and detailed observations. Due to sharing and following similar cultural orientations of that *Sindhī* society, finding an *Otāq* (a guest and meeting room for male members)* in the village is the utmost priority. After following the broken link-road that led to the village, I observed the physical layout of the village: small white dunes, *Pakā* houses, and *Katchā* houses (the details are in the upcoming chapter 5). Interestingly, the endpoint of the road is a place containing a *Masjid* (literally: mosque), a school, and the *Otāq*. With no hesitation, I proceed to the *Otāq*, where Mr. *Sāhil*, *Waddairo* (literally: chief) of the village, is available. Following cultural norms, he stands up to meet after my *Salam*.[21] He begins

[20] They are *Murīd* (followers) of *Pīr Pāggārā* – who is a spiritual leader and also president of a political party: Pakistan Muslim League Functional. Presently, it is the *Pīr Pāggārā* VII. To learn about who *Pīr Pāggārā* is and what the *Hur* movement is called, please read (Sodhar and Shaikh 2015).
[21] Shorter version of *Aslam-o-Alikum* that means peace.

the interaction with a question of how I am as per cultural training.[22] The question, nonetheless, is a usual way to continue the conversation. Thus, it leads to the full introduction of me, the project, and the purpose.

In the afternoon, the schoolteacher joins us after closing the school, and I needed to introduce myself again. After that, a *Kachaharī* begins. We find common ground, Shia Islam, by discussing brochures of *Zayārāt* (chapter five encompasses the elaboration on shrine behavior) and *Alam* (lit. flag).[23] I begin the discussion about it, which stimulates them, and they start talking continuously about the *Mojza* (lit. miracles), *Karam* (lit. blessings), and experiences of their *Zayārāt* (chapter three discusses it). They love to talk about it. Meanwhile, it is lunchtime; thus, they offer *Mānī*, which includes vegetable curry and *Chapāti*, despite my insistence otherwise.[24 - 25] Simultaneously, the *Kachaharī* continues till evening. This first meeting proves a significant entry while creating a base for further work. Afterward, the visits, *Kahchārīon* on (plural of a *Kachaharī*), in which they share the accounts of the outbreak, continue.

Without going into minute details of the village of *Rahīmpur* here, I now provide a little introduction of the south of the province: the *Tharpārkar* district and *Rāmpur* village. The precedent of the *Sakhar* district has set a tone for the further proceedings in *Sakhar* and crystallized the strategies to commence the fieldwork in the next district: to reach the EPI district office and select the village.

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[22] This is a frequently asked question, in which the person who asks the question actually wants to know the social group ("caste") of the person. The expected answer is to tell the "caste". Although there is no visible hierarchy, but it exists invisibly. People treat others accordingly. People start to infer from the references who you are, as there are certain prejudices related to each social group. The inferences can bring you closer rapidly or put you at a distance. I deliberately started my response with my name and the university, because, this makes a great difference in terms of mingling with people and obtaining data. During my fieldwork in the same province, I wore the same cloth as the respondents wore. Whilst following Malinowski's recommendations to go native, I struggled significantly in the beginning. I used to wear simple *Shalwar-Qamees*. One of seniors – who had his masters in Anthropology – suggested to me to change my dress. I hesitantly wore trousers and a shirt next day, and the respondents who were ignoring me suddenly welcomed me. Drawing on my previous fieldwork experiences as well as experiences whilst living in the province, I put the PhD in the first sentence.

[23] A religious flag that is associated with *Ahl-e-Bait* (family of the holy Prophet Muhammad), worship and esteemed significantly.

[24] It is used for Chapatti as well as a general term for a whole meal, which may contain rice, chapatti, curry, and so forth.

[25] I was treated as a *Mehmān* (lit. guest) and if your guest goes hungry, thence, it is considered as against *Mehmānnawāzī* (lit. treating guests). There is a common belief that guests bring their food with themselves. That means, *Allāh* sends the food of a guest to the host. A guest is considered as a blessing, sent by *Allāh* to the dear ones to Him.

No direct public transport runs between *Sakhar* and *Tharpārkar* districts.[26] However, connecting transport options include by a train, bus, or van to reach *Hyderābād* (the second largest city of the province) and then take a bus to *Mithī* – headquarters of the *Tharpārkar*. Alternatively, a van can be taken to *Mīrpurkhās* (another provincial city) and then a direct bus to *Mithī*.

During the summer season, traveling by public transport, especially in a non-air-conditioned train or an excellent air-conditioned bus, is not that easy. Public transport, particularly vans and buses, is always overloaded. Vans, for instance, accommodate four persons on a three-person seat. Trains, on the contrary, are mostly unpunctual and also overloaded. And, the well air-conditioned buses which depart from the northern areas, e.g., Gilgit-Baltistan; Khyber Pakhtunkhwa (KPK) province, or from *Islāmābād* are always full or do not stop.

Consequently, I take a van from the *Nāra* desert to *Mīrpurkhās* and then a bus to *Mithī*. A friend suggested me to do so. I never knew about that route beforehand, as the road was newly constructed. My wish was to arrive on the same day. Traveling via *Hyderābād* was undoubtedly time-consuming, as vans or local buses take more than five hours to reach there and four to five hours to *Mithī*.

Moreover, there is an interval between the departures of two public transport vehicles. Hence, in a new city, I want to arrive as early as possible in the evening so that I could find accommodation. According to a friend's suggestion, traveling via *Mīrpurkhās* takes less time than *Hyderābād*. However, it also did not work because the van was slow due to regular stops to drop and pick the passengers. Also, during the journey, the driver decides to stop there and load all the passengers to another van. It is irritating, but only patience is possible. We are loaded into another van. Owing to heat, all passengers, including me, are sweating. The summer season in this province never spares anyone from perspiration. It is already evening when we reach *Mīrpurkhās*; hence I decide not to travel to *Tharpārkar* and rather stay that night in a hotel in *Mīrpurkhās*. Staying there is not a pleasant experience due to its location. It seems the hotel is close to the area of sex workers (male and female). The next morning, I take the bus (non-air-conditioned) and arrive in *Mithī* around eleven. I book a room in a hotel in the center. It is a double-story

[26] At least at the time of field, there was not any.

building. The ground floor is a hotel while the first floor contains accommodation rooms. In front of it, yellow color Ching-chi (rickshaws) are waiting in a row. This is my first time there. The first-ever encounter to see cows freely roaming intrigued me, so after having my first lunch at the hotel, I started wandering or doing transect walk (I will talk about it in the next section) in the city.

In this area, most of the country's and province's Hindu population live here. The grey-color (specific of this region) cows (the majority of cows with a few bulls) with big horns roam.[27] Also, there are Hindu *Mandar*; *Shamshān Ghāt* (lit. cremation ground); mosques; Neem trees;[28] vendors selling fresh fruit and vegetables; (I)NGO offices; a famous well of sweet-water that belongs to a family and who sell water. On a mound of a dune, there is a picnic spot that offers a panoramic view of the city. The accent of language completely changes here, as I speak *Utrādī* (northern) accent and here it is *Lārrī* (southern) accent. The following language is politer and more submissive, contrary to the former that is more authoritative and egoistic. In *Uttar* province (north), *Mān* (lit. "I") is used, and in *Lārr* (south), the equivalent is *Āu'n* (that can be translated as "me"). Despite various

[27] In the past, it used to be like that (free animals) across the Sindh, as my grandfather tells, but this is now no longer the case.

[28] What this tree offers in a place where water is scant, please read this poem written by Elsa Qazi – a German girl married to a Sindhi.

My lovely Neem
That intercepts sun's scorching beam,
Yet bears the heat all day
Without the rain's refreshing spray,
Thou charm'st the wanderer's woe away
With soothing shade
How strong you are, how unafraid,
How green thy leaves inspite of all
The mid-day flames that burning fall
Upon thy unprotected head ……..
Could man be both as thou and rise
Above the earth, with the sheltering arm
To save the suffering ones from harm,
From sorrows, poverty and vice
Through sacrifice
Could man be steadfast, and like thee
Face every fate, would it not be
Fulfilment of life's loftiest dream
My lovely Neem!

Elsa Kazi (2017)

meanings attached to such differences, exploration of the difference in both the accents in this thesis is stopped here to move forward.[29]

The next morning, my purpose is to go to the district EPI office. To do so, taking a Ching-chi is an excellent option. I just ask the Ching-chi driver to bring me there and paid him 20 PKR (around 15-euro cents). I arrive at the EPI center with my black backpack, where I meet an employee in the corridor. He asks, in the Urdu language with a *Sindhī* accent, "*Ha Lala! Kaisy Ānā Huwā*" (Yes, Lala! why are you here).* Well! It surprised me, and I start pondering over why he is speaking in Urdu, giving me the title of *Lala*, which is used for *Pathan*, *Pashtun,* or *Pakthun* from the KPK province.[30]

Nonetheless, my response is in *Sindhī* with an *Utrādī* accent, but he again responds in Urdu. After telling him that I belong to this province, and asking to speak in *Sindhī*, he starts communicating in *Sindhī*. After a brief introduction, he tells me about the office of the person in charge of the district EPI – Mr. *Sukhyomal* (pseudonym). To see him, I go to his office, where he is sitting alone. He is a medical doctor and in his late 50s. He welcomes me with a handshake. As usual, the *Kachaharī* starts after an introduction. We hold a brief meeting. In my first impression, *Sukhyomal* does not seem as open and willing to share the data as *Rānno* of district *Sakhar*. Then I return to accommodation.

The room during the day is sweltering. Also, there are constant power-cuts, which locally is called load-shedding of electricity. The phenomenon, perhaps, is unknown to people in Europe or America or any other country or region where electricity with full voltage is available for 24 hours. Therefore, load-shedding begs a quick-short description. Load-shedding means electricity is not provided for 24 hours or with the full voltage. It is given in intervals, which can be one hour of electricity and one without. The interval could, in some areas, be day and night. Because of that heat and load-shedding of electricity, I

[29] There is a popular perception that inhabitants of the *Utar* are more arrogant, egoistic and clever and the people from *Lārr* who are expected to be the other way around.

[30] Perhaps, my skin colour is brighter than most of Sindh' inhabitants, i.e. whitish, especially compared to those living in the rural areas. This incident was not the first time that happened to be perceived as non-*Sindhī*. Though such a title was given to me before in my province after spending my eight years in Islamabad, I have been addressed as Lala. There can be several underlying reasons of addressing me as a Pashtun: origin; dress pattern; orientations, lifestyle, habits that I received whilst studying in the capital; or the Afghan refugees' settlement in the province after the USSR invasion. Although, my family has been living in the province since many generations, my grandfather shares that our fore generations migrated somewhere from the Middle East, settled in Baluchistan province in the beginning, and thence migrated to Sindh. We abandoned Baluchi and adopted Seraiki as our mother tongue.

prefer to visit the city and observe the daily phenomena such as activities of local shopkeepers, buyers, small restaurants, and vendors. As mentioned earlier, this part gives the feeling of old Sindh (in imaginary Sindh that my grandparents used to tell us during our childhood), in terms of peaceful coexistence of Hindu and Muslim with Hindu population in a higher number where one can observe more *Mandar*, cows, and shops run by Hindus.

While wandering around, I observe children, boys, adults playing cricket in some sandy grounds with a cemented pitch. The craze for cricket in the subcontinent is comparable to football fever in Europe. I play this sport, too, and am not bad in it, as I remained a captain of the departmental cricket team in Pakistan and Pakistani cricket team in Vienna. Cricket, I must mention, is also one of the "leftovers" of the British colonizers in addition to the English language and the dress pattern. To my knowledge, this exists in most of the British colonies.

In the evening, I go to a cricket ground where young boys and some adults are playing, who ask me if I would like to play. As in the field, one as an anthropologist, make every effort to build rapport and mingle with the people under study; therefore, my response is nothing but a big yes while considering it highly crucial for building a trustworthy and open relationship. Hence, they put me in a team. Fortunately, I perform, according to the expectations of my team, and we win the match. This interaction leads to further interaction. They want to know more about me, [in *Sindhī*] "*Adā! Tawhān Pānn Kair Āhyo? Hin Sheher Main Nawān Āhyo?*" (Brother! Who are you? Are you new in this city?).* The interaction offers an opportunity to tell them a detailed account of arrival and mingling with them. This proves to be more a rapid process than expected as they invite me to join them very early in the next morning, as they play cricket regularly before sunrise. I happily accept the offer, and the next morning, I wake at dawn.

On the way to the ground, I observe women coming and going, holding small pots in their hands, moving them towards and away from the ground. It intrigues me, so before going to meet the players, I go to see these women, who are giving food, e.g., smashed grains of wheat, rice, flour, pulses, to ants at their burrow (see photographs 23-24 in the annexure 1). When I ask, they tell that these are creatures of *Bhaggwān*, and feeding them brings luck, fortune, and averts troubles. They have been practicing it since the olden times. It is

interesting: remember the feeding of cows and now ants. I had never observed such practices before.

Afterward, I join the players. We play a match and then have a brief *Kachaharī*. Playing cricket and holding post-cricket *Kachaharī* does not cease as long as I was in the city. They become like acquaintances, and I am no more anew in the city. This looking around with a wandering mind is allowing me to directly see the things, meet people, and gather the data.

For instance, one day, the president of the country was there to visit the area – media was repeatedly broadcasting about the deaths caused by the malnutrition and measles – and security was strict. The police were inspecting every vehicle. Some roads were closed, and police were stopping Ching-chi rikshaws on the road leading to the district EPI center. I was also in a Ching-chi to go to the center when it stopped. There was a barrier not to allow everyone to go in this direction. Suddenly, a policeman came to me and said *Sain* (sir),* please, you can go. The policeman and I played cricket together one day. I did not know that he was a policeman. Moreover, rapport played its part, and I reached the center.

Contrary to the *Sakhar* district, the district health officials here are less friendly and welcoming. My preliminary observations include that they are afraid that I might disclose their "weak" points. There is an invisible resentment to share the "secret," especially with *Sukhyomal* – the in charge of the expanded programme on immunization (EPI) district. Despite this, they share some primary data, which help me to meet vaccination teams and other health staff. More importantly, the visits contribute considerably to select the village of *Rāmpur*.

During that phase, I come to know about one friend of mine who is working in the district with an INGO. We had a meeting in which I share my project. He offers me accommodation, as he is living in a four-bedroom house, given by the organization, in the city. I accept the offer and leave the hotel. During the stay, the hotel manager informs me that someone inquired about me and checked my identity card – the copy submitted to the manager. It is because the area is under intense surveillance. After all, (a) the Indian border is quite near, and (b) drought in the Desert has attracted several international as well as national non-governmental organizations; religious parties; government officials

(mentioned about the president). The governmental intelligence agencies are keeping an eye on the area. For the drought, in particular, I observe four-by-four vehicles (especially Pajero) crossing or moving in the city with green plates that mark them as vehicles of international organizations.

I shift to my friend's house. One day he takes me with him to his office in a given vehicle, as he is going for an official visit, and simultaneously wants to show me the Thar Desert. As soon as we leave the city, the red-brown dunes start containing wild plants, and there are some green trees where cattle are wandering and grazing. Also, I observe children holding empty pots, especially pitchers, in their hands as a symbol of the need for water. They are showing them to specific vehicles. My friend states me, as he has been working there for a few years that they need some "aid" and they know that the vehicles belong to (I) NGOs. The children with empty pots and innocent, questioning eyes try to stop us by showing us the empty pots, which is a deep reflection of drought.[31-32]

My keen observations consistently continue to comprehend life in the area. With enough knowledge about the area, I decide to visit the village of *Rāmpur*. To go there, I need to take a minibus, locally called a coaster, which goes every hour from the city until 6 pm, in the evening. I walk to the bus stop and wait under a gigantic Neem tree. This time, a policeman – who is standing almost 100 meters far away – calls me by making "*shhh*" sound and hand gesture: a gesture that is considered impolite and unacceptable culturally. I, therefore, ignore him completely. He shouts again and asks me to go there. There is no other choice than going to him. He starts communicating in Urdu, addressing me with the same title "*Lālā*" as mentioned earlier. I then inform him that I am not a *Pathānn* (*Pathān* in *Sindhī* language) but live in Sindh. He demands that I show him my identity card. After that, he finally started communicating in *Sindhī*, and later we found out that we both speak *Serāikī*.[33] Thence, he shares that if I were from KPK, he might have

[31] Sometimes, some of these children get scared by you. They cry, scream, and run away if you try to communicate or approach them. For instance, one day, we (research assistant and I) were walking back from the village, the local fruit of a tree -*Khabar* was ripe. Three children around 7-to-10 years of age – two girls and one boy – were on the trees for picking the fruit. They dreadfully started screaming and crying, as soon as, we talked to them.

[32] This also signifies the 'dependency syndrome' resulting from the activities of the NGOs. People of the area are now 'expert' enough to differentiate a private vehicle and a public one. Most of them look for some aid. There are number of NGOs – local, national and international, working.

[33] Some linguists classify it as a separate language, and some consider it as a dialect of Sindhi. It is a mother tongue of some social groups in Sindh and particularly it is spoken in the southern parts of *Punjāb* province. It is said that the *Baloach* social group, who left *Baloachī*, speak Seraiki now as their mother tongue.

wanted some *Kharachi* (lit. bribery). An ordinary person always has fears from the police, because the police are strong across the country. However, not all police officers are bad and corrupt, indeed.[34]

Finally, the coaster arrives, I get in, and it is highly decorated with locally made, colorful handicrafts on the inside. Its front part is (always) reserved for women who are dressed in colorful clothes, white bangles, and covered faces. The men are sitting in the back seats of the coaster with *Shalwār-Qamīs* and turbans. It is like a mobile home, in which people are eating, women are breastfeeding their children, and Bollywood songs are loudly dominating the whole atmosphere. After almost two hours, the village's stop comes. I get down and follow a link road that is under construction at that time. The road goes in between the brown dunes with wild plants and trees. It takes half an hour's walk to reach the village. I get a panoramic view from a mound of dunes that allows me to see the scattered *Chanworā* (huts) (see photographs 25-26 in the annexure 1). Some of them are newly built, some are old, and some are burnt down. After getting closer to the village, I observe peacocks and peahens roaming around; a donkey working at the well to take water out and women are filling pitchers of unglazed pottery with water; two men are putting unfired pottery in a simple kiln (see photographs 27-28 in the annexure 1).

I ask a man about *Patel* (the influential person). He informs me that an old man has died; thus, *Patel* is sitting at the house of the deceased family to share their pain and perform specific offerings such as prayers. On request, he brings me there. Twenty men are present there and sitting on the *Rillī* (handmade bedsheet) carpeted on the floor under a *Chanworo* (hut).*[35] After inquiring about the deceased, I learned from people that he was a Hindu, and it was the second day of the death. This knowing put me into an awkward position as I know Islamic ways to condole the people by reciting some verses from the holy *Qurān* but am unaware of how to condole a Hindu. I utter *Rām Rām* while folding my both hands and inquire as to who has died. I utter some prayers verbally and inside my

[34] One needs to be highly obedient; otherwise, you may end up in jail. A simple sepoy is more potent than a professor. Mistaken or not, if one is caught, then, is caught. The mere possibility is to pay some *Kharchī* and emancipate. The corruption is the quite prominent phenomena in all the country's institutions, and bribery is just one form of it. In religion, *Rishwat* (lit. bribery) is *Harām* (lit. forbidden), but despite that it does exist. The value is not to be corrupt; the fact is that corruption exists. There are undoubtedly various concomitant and confounding factors related to it. The poor are even further vulnerable.
[35] The plural of a *Chanworo* is *Chanwarā* in Sindhi.

heart. After that, the *Patel* leads the discussion that turns into a *Kachaharī* on the causes of that person's death.

These sketches from my fieldwork offer a general but distinct impression about the field, the people I have been working with, and how I got access to the field. The villages were at my best objectively selected. Yet there may be subjectivity involved in that selection.

3.2 The Study Design

The current project employs several methods as per the anthropological orientation. The hunting and harvesting of data at the beginning of the project were planned into three phases. The first phase was a preliminary phase to visit the field, introduce the project, make the unfamiliar familiar, build rapport and trust, understand the necessary horizons and boundaries (in terms of difficulties), to set the pace to conduct the thorough research. Its time duration was three months, originally scheduled from November 2013 to February 2014. However, due to the prolongation of the Austrian *Visum* (lit. Visa) – a requirement to study and live in Austria – that was expiring at the beginning of January 2014, the first phase was postponed to cover the period from the beginning of January 2014 to end of April 2014. The second phase was planned from July to December 2014 to gather the detailed data in a place that is now known and familiar. This phase was double the length of phase one, because of its importance in terms of collecting the "raw material" for constructing the "building" of the thesis according to the theoretical framework. The third phase began right from the conceiving of the project and ran to the completion of the thesis – concatenating the pieces of data together. This phase comprised the translation, transcription, analysis, and writing of the thesis.

Nonetheless, after fieldwork's start, various unwanted and unexpected problems and emergencies lead to a revision of the plan. Most importantly, I learned about the governmental 12-day supplementary immunization activities (SIAs) against measles across the Sindh province that I wanted to document in any case. Initially, the campaign was planned from April 28 to May 9, 2014. However, eventually, the government postponed it "over the failure of the department concerned to devise a micro-plan before its launch[ing]" until May 19, 2014 (Pakistan Press International 2014). Resultantly, the first three-month phase was extended to a 10-month fieldwork phase. The original two-phase design converted into a single continuous phase to study the vaccination campaign,

whose occurrence was a fortunate coincidence. Emergency-based campaigns do not occur so frequently. Proving an essential event for the project, this campaign offered direct insights and inferences about its administration and the local perception related to the vaccination. The campaign brought the idiom of refusals, resistance and resentment against the vaccine, based on the local, and the global politics (see chapters 9 to 12).

During that phase, I collected data through several methods, including participant observation, *Kachaharī,* building rapport, key informants, socio-economic survey forms, informal meetings or unstructured interview(s), reviewing, and gathering of secondary material, and media reports. The primary units of data collection were the local people, local healers, vaccinators, biomedical doctors, lady health workers (LHWs), government officials, and INGO officials. Moreover, there were also two follow-up phases in 2015 and 2017, which lasted for a few months and by which I complemented my data. It is also important to mention that (similar to most of us) collecting data has never stopped thus far, as I have been collecting reports and views from the respondents through phone calls. Although I have been incorporating much of the data into the thesis, I will use the remaining for future research and publication.

3.3 The Approach

For conducting this longer-term ethnographic project, I mainly oriented myself with two anthropological approaches: the extended case method (Burawoy 1998) and multi-sited ethnography (Marcus 1995). It is because selecting an appropriate orientation was a challenging task mainly for two reasons.

First, the project studies the (inter)linkages, the interdependency, and the interconnection between the local, the national, and the global and their impact on each other. Second, there was not any "fixed" locale, but a vast and scattered in terms of spatial characteristics or what George Marcus (1995) terms "multi-sited." By multi-sited, I mean, there were multiple locations, and all of them were at a vast spatial distance. Both the selected villages were farther from each other, the federal capital was farthest, and the global "space" is omnipresent. For instance, reaching the Village *Rahīmpur* from *Islāmābād* needed around 18 hours by road during 2014 (now one may reach within 10-11 hours due to better roadways). The multi-sited ethnographic approach offered

insights to conduct fieldwork in a "multi-sited" or a scattered locale for covering a vast field.

Moreover, reaching this vast field and building a clear relationship among them, the extended case method (ECM) played a significant part. This is because ECM, according to Burawoy (1998), employs reflexive science to ethnography for extracting the general from the particular, moving from to the other, as well as connecting the present to the past. It helped to pay great attention to every part in order to comprehend the broader through narrow clearly. The ECM advocates for an extended stay in the field while employing participant observation as an immanent method and using the critical theoretical framework, as Burawoy (1998) conducted his research critically while following the theory of Marxism and claims himself as a Marxist.

Specifically, the extended case method helps to analyze complex microsocial events to reveal structural characteristics at a macro level (see Gluckman 1961) or investigate "(…) the interrelation of structural ('universal') regularities, on the one hand, and the actual ('unique') behavior of individuals, on the other" (Van Velsen 1967, 148).

In a combination, both the orientations supported in using measles as an analytical entry point to significantly understand the institutionalized structures that create a fertile ground for particular inequalities and ultimately result in specific ideas and practices. Both orientations helped to understand the general or macro (global and national level policies and practices) from the particular or micro (measles outbreaks or refusing and showing resentment against the vaccination at a local level) while drawing on the past critical events to connect it the present happening.

3.4 Criteria to Select the Villages

Seven districts of Sindh were significantly affected during the outbreaks of 2012-13. Covering all of them was impossible due to constraints of time and resources, thus I chose two villages: *Rahīmpur* from the *Sakhar* district and *Rāmpur* from *Tharpārkar*. There were multiple reasons behind that selection. First, since measles is believed to be a manifestation of *Mātā*, it was necessary to select the villages with a different geographical location and religious practices. The *Rahīmpur* village is in the northern part with many Muslims than Hindu, while *Rāmpur* lies in a southern district of the province with a high number of Hindu population than the Muslim. By this selection, I wanted to compare the

perception of and dealings with measles to understand differences and similarities in terms of religion. Second, both the villages differ from each other in several ways, most importantly, regarding the mode of production, infrastructure, political system, health amenities, and social organization. Figure 4-1 maps such differences and similarities in both. The third reason is slightly related to the second factor. *Rahīmpur* was at the "epicenter" of the outbreak of 2012-13, while *Rāmpur* village lies in an area that is severely affected by malnutrition, where over 100 children died during those years, and the deaths were associated with measles. The government and the politicians continuously contested the deaths that occurred in both the districts.

Figure 4-1 Mapping basic features of the selected villages

Village *Rahīmpur*	**Village *Rāmpur***
Greater number of Muslim	Greater number of Hindu
Mātā – do not know the specific name	*Sitālā -Mātā*
Kālkā Devī Mandar	*Mandar*
Mosque present	No Mosque present
Worship of Allāh	Worship of *Mātā* every Monday
"Uttar" (Northern) Sindh	"*Lārr*" (Southern) Sindh
Agriculture (Semi-Desert)	Rain cropping (Desert)
Less number of Cattle	Cattle as a source of income and food
Pakā houses	*Chanwaro* or Jhuggi (hut)
Waddairo (political organization)	Patel (political organization)
Handpump/electric motor	Well
Clean drinking water	Unclean and stagnant drinking water
Joint families	Joint families
Endogamy/exogamy	Exogamy/endogamy
Small town nearby	Small town nearby
Transportation: mainly private by jeep, motorbike	Transportation: mainly public by bus and private truck
Close to the Indian border	Close to the Indian border
Hindu Hakīm	Bhopa "Hindu *Hakīm*"
Women healer	Women healer
No modern healthcare facility nearby	No modern healthcare facility nearby

Sindhī	*Mārwarrī* (mother tongue), *Sindhī*
High literacy rate	Low literacy rate
A primary school in the village	A primary school nearby

3.5 The Methods

I used several methods or what Rivers (1906, 10) calls the "method of indirect corroboration" to intend to gather and cross-check the data through several sources for collecting as much accurate information as possible. Participant observation was used more like an approach, which allowed me to observe and partake in the activities, events, or business of the selected villages. In some cases, it was not always feasible to partake and simultaneously observe. For instance, I tried to observe how it feels to a vaccinator, as mentioned in the earlier description of the chapter while traveling to far-flung areas during a hot day of summer; however, it was never possible to feel the pain and the fear of a child before and after the vaccine. Nonetheless, participant observation remained a pillar of the data collection. Through this, I gained a first-hand understanding of the way events and situations occur—such as attending the meetings of health officials or observing the supplementary immunization activities (SIAs)—and had direct experience with them. Using it more like an approach helped me to employ the rest of the methods and strategies for gathering the data, which I detail below.

Pakistan, including its Sindh province, is a patrilineal society, where males generally enjoy more power, higher social position, receive double the inheritance (as compared to sisters according to Islamic teachings) and lead the descent (male heir). Nonetheless, women play a pivotal role in conceptualizing and dealing with measles (see chapter 9); therefore, their exclusion from the data collection would have been grossly inappropriate. Considering the sociocultural norms of the area to interact with the women for me being a "*Nāmehram*" [36] (an outsider, and religiously forbidden to interact meet and talk)* especially in *Rahīmpur*, I hired two female research assistants (RAs), one

[36] According to Islamic teachings, a *Nāmehram* can be defined as the one from whom purdah, or concealment of the body with hijab is obligatory: Precisely with whom a marriage (or matting) is possible. Hence, meeting a *Nāmehram*, especially if they are young and not from the same family, is highly avoided. Meeting alone further adds to strictness. Otherwise, it is considered as shameful and vulgar and rumours begin in the village. This is practiced preventing adultery and as a result, women, particularly unmarried girls, remain chaste. Despite this, there are also cases of adultery and exposed couples especially girls are killed, called *Kāro-Kārī* (lit. honour killing) in the province. Shah has done a significant critical work on *Kāro-Kārī* to explore its roots and underling cause (N. Shah 2007).

from each village, in order to make the inclusion of female interviewees possible. With the experience of conducting surveys and doing social mobilization due to working with NGOs, the RA from *Rāmpur* village also a rapport in the same village. To hire an RA in district *Tharpārkar*, my friend (we met him in our earlier discussion in the strategy) helped me by introducing some female mobilizers and forwarding of their curriculum vitae. I contacted two of them by mobile phone who were willing to work on this project with me. Both had Masters in Sociology and were practitioners of Hinduism. To avoid religious biases, choosing a Hindu RA was predetermined since *Rāmpur* encompasses the Hindu in a high number. After having a *Kachaharī* with both, one was selected, keeping in view her research experience, education, writing skills, and understanding of the topic.

However, in *Rahīmpur*, there was no female holding graduation or above, except intermediate (12th Grade). During *Kachaharī* with the key informants, I asked whether there were any females who could help to interact with women, conduct *Kachaharī,* interviews, and the socio-economic census with them. The chief informants informed me about a girl who was intermediate with minimal experience of conducting a survey but might be willing to work. He referred me to her brother, who was a student and who I previously met in the village. I called him on my mobile and shared the requirements. After discussing with her mother, the next day, he invited me to their *Otāq*, where he and his mother were accompanying the girl because I was a *Nāmehram* male (for a female and vice-versa).

This interaction indicates the way gender relations work in the village. We had around three-hour *Kachaharī,* and her mother shared enough knowledge on dealing with measles, such as it is a manifestation of *Mātā,* and we observe a ritual. This meeting turned out to be a *Kachaharī,* particularly with women. They, meanwhile, offered *Chanh-Panni* (tea and water). She and her mother agreed to work under the condition to seek permission from his father. We set protocols and agreed on PKR 500 (around US$ 5) salary per day. The next day her brother confirmed their agreement via mobile phone. However, he would accompany her.

Moreover, the RA for *Rāmpur* was a big help to me, not merely facilitating access to women in the *Kachaharī,* but also in taking notes, translating and transcribing the data in English (as much as she could). The other one, however, did the same job, but since her

English was not proficient, she transcribed the data in the *Sindhī* language. Besides, a male research assistant, a trained anthropologist, accompanied the project during a significant part of the fieldwork. He provided a great deal of support by taking notes, holding a discussion, probing, translation, and transcribing the data.

Furthermore, a transect walk played a significant part in learning about the physical layout of the villages. Especially at the beginning of the fieldwork, I kept walking to explore the spatial settings of the villages. The walk enriched my understanding of the locations of the sacred places, school, well, shop, and the structure of the villages in terms of "social group" settlement patterns. This way, it became possible to comprehend spatial as well as social boundaries of the villages, especially the location of several social groups. The people used various expressions, for instance, "*Menghwārr Mahalo/Pārro*" (a colony of *Menghwārr* social group)* for communicating and referring to a physical location in a village. This walk provided spatial orientation to select a sample size and proceed with the research further. Although, sometimes, I was walking alone; otherwise, an RA or a key informant accompanied me. Having a walk with key informants provided a great chance to talk and learn from them.

3.5.1 Kachaharī

What is *Kachaharī* indeed?[37] The term was used for Revenue Collector's Office in the early years of the British Colonial Administration, and afterward, it became a governmental agent's office across South Asia (Wickramanayaka 1992). Currently, this institution exists and is called *Kachaharī*, which is a legal court where a judge, jury, or magistrate decides legal matters. In Pakistan, people most often say *Court-Kachaharī*, and always fear not to visit it.

Nonetheless, *Kachaharī* exists and functions as a social institution, mainly in Sindh province due to its socio-cultural roots, and significance. Although it can be arranged on special occasions like marriage and death, *Kachaharī* is a—voluntarily and informal—social gathering, in which people sit, share, discuss and talk about life in the evening: the discussion can surround personal, collective, socio-economic, political, religious, news, and other affairs. There is a gender difference related to it. Male members most often

[37] In *Sirāki* language that mainly is spoken in Sindh province, not in Punjab, *Kachaharī* is most often pronounced as *Kahchārī*. I know this difference, because *Sirāki* is my first language.

meet, for example, every evening, at an *Otāq* (a place, especially for the male guests), or a tea-stall. However, female members may also commence a *Kachaharī* on some special events like marriage, death, inquiring about someone's health, or visiting some relatives.

Having socio-cultural roots, I employed *Kachaharī* as a novel method during the fieldwork of this study. Having grown up in the area, I certainly had knowledge of *Kachaharī* beforehand, though I never thought about using it as a method. *Kachaharī* proved an effective method in the present case to participate in and observe the daily activities of people and employ other methods. People never felt that they were under study or "surveillance" or on the researcher's radar. The composition of *Kachaharī* varies from situation to situation; it can be comprised of two or more people.

Moreover, the hosts can arrange it for a guest to show their hospitality, in which almost every member of the community gathers and participates. As noted earlier, it always began whenever and wherever I arrived. In anthropology, we have a few similar methods like focus group discussion (FGD) and group discussions (GD). The gathering seems akin to them, notably a GD, yet simultaneously, it differs because of its emic perspective since a community person leads it, not the researcher. The researcher neither disturbs nor invents something.

I often conducted *Kachaharī* with male and female respondents. In the *Rāmpur* village, I had a chance to conduct *Kachaharī* with female interlocutors due to the flexibility in the concept of *Nāmehram* that I discussed earlier.[38]

3.5.2 Unstructured and Informal Interviews

The researcher always has a blueprint of what to accumulate. Thus, s/he remains as an active gatherer of the data. Although *Kachaharī* continued during participant observation, I never missed a chance to conduct an informal interview whenever possible, with vaccination teams, health officials, and folk healers. Keeping interviews semi-structured since I used an interview guide was a deliberate choice to remain organized and avoid my unnecessary influence, such as inventing their answers during these. Interlocutors had the authority to share their views based on their will and wishes

[38] I have drafted further details on *Kachaharī* elsewhere to discuss its socio-cultural and colonial roots as well as significance and compare *Kachaharī* with other qualitative methods in anthropology (I. Ali, unpublished).

instead of inventing their responses according to my knowledge and choices. If we compare it with *Kachaharī,* here I was leading the interviews, but in *Kachaharī,* I behaved like a passive participant-observer or a community member.

3.5.3 Socio-economic Census (SEC)

I developed a five-page census form to gather quantitative data on demographics, literacy, family patterns, age composition of inhabitants, religion, housing patterns, income, occupation, economic assets, health facilities, sources of information about the happenings in the country, civic amenities, the occurrence of measles, treatment type, perception and response to vaccination. The SEC is akin to an open-ended questionnaire and consisted of a five-page table with 90 columns containing different questions about the above categories. It was a mixture of quantitative and qualitative answers. For instance, questions related to literacy and age were quantitative, while views about the perception of vaccination were qualitative. The census supplied baseline information about the studied villages to situate measles and analyze the inequalities.

3.5.4 Document Analysis

Document analysis was done on various materials and documents of the federal ombudsman, the WHO (WHO), and the UN (UN). Likewise, the current project has substantially profited from the media content analysis, especially the content of English print media. The main newspapers from Pakistan, I obtained information from, are *Dawn* and the *Express Tribune*, since both are believed to be credible and more objective. I also have analyzed the comments of people on news reports, in which different competing narratives emerge on measles and vaccination. I call this discussion "an online dialogue," which may fall into the category of "digital ethnography" (Dicks 2005; Hjorth et al. 2017; Paterson and Domingo 2008; Pink 2015; Underberg and Zorn 2013). Since comments are not with the involvement of the researcher, they might also be considered more natural, although some may be deliberately and strategically added. This method already has been used in studies on globalization and care (see McKay 2014). These analyses supplied the current perspective related to measles and vaccination and deepened my understanding of the interconnections between the local and the global.

3.5.5 The Sampling of Measles Cases and Interviewees

Within a limited and precious amount of time and with scant resources, talking to and obtaining data from everyone in the field is impossible. Hence, sampling works, but it should genuinely represent populations under study. Choosing to employ a specific sampling type and approach is always tricky in qualitative research until it is done. I also encountered such challenges. Despite my subjectivities to use probability sampling, it was not possible, as, in some instances, it did not seem applicable. This thesis, therefore, drew on "mixed sampling," including theoretical and probability sampling – where it seemed applicable. Diverse sampling types helped to cover different units and modes of data collection.

The convenience or haphazard sampling helped, as Bernard (2018, 149) rightly defines, in "grabbing whoever will stand still long enough to answer [my] questions" and curiosities. This method was especially suitable for collecting the data from those who were refusing and showing resistance against vaccination, which were emerging during the supplementary immunization activities (SIAs). The officials call them as "cases of refusals," that came under my observation while following the SIAs and through information received from vaccination teams. Observing the SIAs offered a chance to have an informal discussion with the parents who were bringing their children to be immunized. Trick enough, this interaction posed challenges for me in terms of me trying to avoid taking a pro-vaccination position since I was asked to mobilize people to receive the vaccine by vaccination teams. I could neither directly say that I would not do this to the vaccination teams, nor mobilize the community to receive the vaccine. In both situations, this would be against research ethics. I, therefore, tried to manage things carefully, in terms of asking questions to the people refusing to learn of their reasons and anxieties behind refusals. That communication, in some instances, mobilized parents to vaccinate their children; otherwise, vaccinators were ready to add those refusals into the refusal list to provide this information to their supervisors and so on.

The convenience sampling, since it was too close to purposive or judgment sampling, was also used to conduct unstructured, informal interviews with vaccination teams – supervisors, vaccinators, mobilizers. When participating in and observing the vaccination campaign, I traveled with the various supervisors on their government-provided bikes in the *Sakhar* district or in a Jeep in the *Tharpārkar* district and interacted with various fixed

and mobile teams in various clusters. During this time, I had numerous *Kachaharīon,* informal discussions, and interviews.

To fill the SEC, I used stratified sampling after making strata based on social groups, as mentioned earlier. Afterward, households were selected by systematic random sampling. Every fifth household was chosen for the survey. When conducting the SEC, other people of the village were also available; thus, the *Kachaharī* always continued. Each day, the possibility was to fill two to four forms.

Moreover, with the district health officials leading the EP), the WHO personnel, and local healers, there was indeed no need to use sampling since there were fewer of them. Therefore, all of them were covered to obtain relevant data from them.

3.6 Ethical Considerations

Analogous to other studies, the current project also has a few ethical considerations that are worth mentioning. The involvement of stakeholders makes the project sensitive because it contains, collects, and communicates the geopolitical and bio-political links and interests of those visible and invisible stakeholders located at various places. I was often engulfed by thoughts and anxieties about how this work should be conducted, processed, and presented. During a presentation of the project at a symposium, one commentator posed a thought-provoking question: for whom will this work be used? Another professor asked how this work would be perceived since it shows the connections of Hindu mythology in modern-day practices while considering the Indo-Pak partition—one of the central reasons for such a partition was the religion that Hindus and Muslims have different belief systems which make them two different nations (see Hoodbhoy and Nayyar 1985).

Whom the current research will serve and how it will be perceived, this significantly and largely depends on the readership. This research might serve both purposes--knowledge creation and transformative values—(a) since the anthropological literature on measles and vaccination, mainly from Pakistan, is scant, and (b) that data might be used by the government, policymakers and global stakeholder to increase the vaccination uptake.

Another aspect of limitation is related to ethics and the trustworthiness of the research that is how to respond to the respondents in terms of revisiting the information they have

given. Providing the thesis and the research articles drawing upon the present project and asking for feedback would be one way to get back to the interlocutors. This process of returning back to the respondents, in terms of the transcriptions of the data, could have increased the validity of the research. However, then the question is, who should be given this chance: all the respondents or a few? The stakeholders involved are several and yet they range from the local to the global level: e.g., people, the local healers, the government officials, and the (I)NGO personnel (to mention a few of them). Offering a chance to them to read their standpoint and revise the thesis, if they wanted to, would raise further issues concerning the complexities of power, reporting, privilege, and certainly be costly in terms of time and resources.

More importantly, the project raises critical issues of "truth" and "honesty": whose truth should be presented and to what extent? This is because every "truth" has a different entry point and is valid under certain circumstances. Should it be told metaphorically or detailed comprehensively? What consequences would it entail, not merely for respondents, but also the researcher? It means that the topic involves numerous ethical points, e.g., the ethics of "true" research, the ethics of protecting respondents, the ethics of refraining from aiding someone else's hidden and vested interests.

To deal with such ethical challenges, I have adopted the critical paradigm to describe and detail the situation as clearly as possible, primarily through narratives of my fieldwork experiences that I have transformed into the data (I already described these in this chapter and the following chapters also expound on these aspects related to my experiences) (see, for example, Stoller 1989). Moreover, to protect the respondents, I have anonymized their names, except those, which have been reported in the media.

3.7 Limitations of the Study

In addition to ethics, this research has some limitations. The first limitation is related to the "anthropology at home" debate. Working "at home" was an advantage and simultaneously a disadvantage. Researching home is like what I call "plug and play," as implied earlier in this chapter because it needs no extra time to build rapport with the informants, learn their language, go native and describe the view from inside. Such work also helps to avoid full reliance on translators, while we are overwhelmingly familiar with the challenges that occur during translations from one language to another. Rivers (1906,

9) a long-ago hinted about it that translators share their "own version" of hearing and comprehending because they do not have the same level of language proficiency in the second language when translating from their primary language. Simultaneously, neither the researcher nor the translators are proficient in each other's language. This can result in partial truths. Researching at home instead is relatively easy in this regard since the researcher is already attuned to the culture in advance through the process of enculturation while being a member of that society. The researcher does not merely work as a researcher but also as a member of society.

On the contrary, the disadvantages include that while working at home, a researcher avoids or misses some aspects and connections related to a topic, unintentionally and subjectively. He or she takes things for granted. The limitation of this study lies in the disadvantages. Despite making efforts to be objective, there are possible chances that subjectivity influenced my choice about selecting the topic and the locale. That means being at home in the field may have an effect on the nature and results of fieldwork. Also, I might have taken some phenomena for granted while undertaking the current fieldwork. The impact, nonetheless, is unknown to me, at least at the current stage.

The second limitation is linked to this first one, which is related to a prior local understanding of measles: that also seems to concurrently be helpful and a hindrance. Being a member of the Pakistani society and belonging to one of the district's subjects to the declared outbreak, I witnessed how measles is locally dealt with. I hold some subjective judgments. Family members always shared stories concerning "*Wadi-Mātā* or *Māī*" (a great deity used for smallpox)* and "*Mātā* or *Māī*" used for measles. My family members received an inoculation against smallpox, and my father has marks of smallpox on his face. Also, my father's father's mother was a local healer, who was invited by the inhabitants of our village and nearby villages to deal with measles. They always brought their children to diagnose it. If *Mātā* (measles) is present, the *Chillo*, including numerous "dos" and "don'ts," must be observed and (chapters 9 and 10 mainly illuminate this aspect). To observe the ritual of *Chando*, my father's grandmother often visited a house where *Mātā* had manifested in a child. I have observed occurrences of measles and entire ways of dealing with it. I contracted measles when I was an infant, and my mother's brother's son died due to it: we were treated according to local measures that were further shaped by the economic situation of our family (see prologue). It means my

childhood orientation has helped significantly to comprehend the phenomena of measles at a local level comprehensively. Simultaneously, this orientation might have made me biased in some ways, making me more sympathetic to people who observe such rituals and romanticizing the rituals themselves due to their cultural meanings. It might blur the lens. On the one hand, I am looking at measles from a critical perspective, in terms of why people hold such views, and on the other hand, I may not see measles as a genuine problem because I have witnessed countless people recovering from it through this ritual.

The third limitation is about multi-sited-ness. While developing the project, I was motivated and committed to studying measles in two different villages for observing if there were similarities or dissimilarities. This motivation led me to select two villages. However, during fieldwork due to time and resources related constraints, I realized that the project was too optimistic (see section 3.4. on the selection of the village). The wider and distant geographical focus of the study might have influenced the data collection. That means working at one village may also have affected the results in terms of the data collection and spending divided time in one place: the "multi-sited" focus and data analysis required follow-up visits and enough time to travel. The comparison, nevertheless, has brought a distinctive flavor to the project. Hence, the limitations and openness always depend on an angle and a context for looking at a phenomenon. It might simultaneously be advantageous and disadvantageous.

Fourth, the news reports and comments on them have limitations. Although I use them as data, I could not cross-check claims and facts commentators were putting forward because it was not possible to meet them, parents, and health officials. Nonetheless, these commentaries that call—an online dialogue—supplied enough data to understand and illustrate the conflict between and among various perceptions and practices, e.g., about the governance, the ethics and role of media, and the interventions of the global stakeholders (see chapter 12).

The fifth limitation is a gap in the present research that is related to children's voices. Children are the center of dealing with measles by all stakeholders, and an indirect focus of the research. Yet their perspective is missing: how do children feel after contracting measles and being vaccinated, or what are their fears, emotions, and views? The question of why I could not include children requires a brief explanation. First, the key reasons

include constraints related to time and resources, since working with children necessitates extra time and different research methodologies (e.g., Clark 1999, 2011). Second, children were not the main focus of this research, even though measles and vaccination are directly related to them. Focusing directly on children needs a separate project in terms of aims, time, and resources. Due to these reasons, this area of bringing children's voices into research demands and deserves further careful anthropological inquiries. Children have received less attention from researchers in terms of valuing and comprehending their standpoint. It means the voices of children and their experiences about vaccination are "missing" in the ethnographies in particular.

The sixth limitation is geographical. Since this study was conducted in Sindh, I see potential limits in relation to other provinces and areas of the country. This is because Pakistan is a country where subcultures prevail. Owing to these distinguishable subcultures, other provinces may have a different interpretation of measles and vaccination. In KPK province, the anti-vaccination sentiment is intense as compared to the rural parts of Sindh. And, almost in all Pashtun settled areas, resistance for vaccination and anti-Western, especially anti-American perceptions, are robust than areas of *Sindhī*, *Punjabī,* and *Baloch* settlements. That does not mean that these perceptions are non-existent in the following areas. Due to strong religious views in some parts of the country, one may also find local views that considering measles as a manifestation of *Mātā* un-Islamic and strong resentment for vaccination.

The seventh limitation of the study is thematic, as the project's central focus is on measles, and then it investigates the Expanded Programme on Immunization (EPI) in relation to it. Yet the thesis describes the EPI generally while paying close attention to measles, and aspects related to this disease, including measles vaccination (MV). The primary data for MV come from observing a 12-day SIAs against measles, which were administered in May 2014 (see photographs 1-22 in the annexure 1). Having said that there are good chances that one might find distinguishable findings in the case of specific vaccines such as polio and tetanus (for tetanus, for example, we have explored the reasons elsewhere see Iqbal et al. 2020).

The eighth limitation is related to sampling. The study employed non-probability sampling methods like theoretical and convenience sampling, which always carry specific limitations. In this sense, the results of this research cannot be generalized.

The ninth limitation is about its lack of meeting with all stakeholders. At the beginning of the project, the main focus of the research was to see how—mainly—local people deal with measles. However, over time, the focus changed after further literature review and some data collection that what local people believe about measles is provoking and distinct. It intrigued why do they hold such perception. The latter question stretched focus towards the critical events, especially related to the geopolitics, and other national and global stakeholders, who have played a significant role in structuring various forms of inequalities and violence. These forms shape specific perceptions and practices. Despite this shift, I could not manage—due to several genuine constraints related to time and resources—to hold interviews of the officials of the UN (for instance), who were sitting in Geneva or New York.

The final limitation is concerning time. The fieldwork on which this thesis draws on was conducted primarily in 2014. Since then, several new things have happened in the country in general and in the arena of infectious diseases and vaccination in particular. For instance, Pakistan has a new government; and mobile technology and the internet have widely spread in the country. And, the ongoing COVID-19 pandemic has overwhelmed the entire world, including Pakistan (I. Ali 2020a,b,c,d; I. Ali and Davis-Floyd 2020; Manderson and Levine 2020; I. Ali and Davis-Floyd 2020, unpublished).). Changes like these might have influenced the local perception of infectious diseases, including measles and vaccination. Moreover, the data about measles by the WHO has continuously been updated, and measles cases significantly increased in 2018. Although I have been revising the data in the light of new developments, it was not possible to accumulate the recent findings from the selected districts and villages.

3.8 Concluding Remarks

In this chapter, I attempted to write the methodological chapter like—that I call a "researchlogue"—to show my point of departure and illustrate challenges and circumstances under which the data were gathered and with what methods, strategies, and approaches. Following an ethnographic approach and commencing with an anecdote

from my fieldwork to highlight the circumstances in which the data was obtained, I described the complex ways, processes, and methods of gathering the required data. The data gathering at the beginning of the project were planned into three phases: (a) a preliminary phase to visit the field, (b) to gather the detailed data, and (c) the data analysis to compose the thesis. Nonetheless, after fieldwork's start, various unwanted and unexpected problems and emergencies lead to a revision of the plan. Most importantly, I learned about the governmental 12-day supplementary immunization activities (SIAs) against measles across the Sindh province that I wanted to document in any case. Resultantly, the first three-month phase was extended to a 10-month fieldwork phase in 2014. Besides, I had two short-field trips in 2015 and 2017.

Owing to conducting a "multi-sited" ethnographic project, I selected two villages– *Rāmpur* and *Rahīmpur* – from two different districts, i.e., *Sakhar* and *Tharpārkar* of Pakistan's Sindh province. Several criteria guided the selection (see Figure 4-1): (a) a different geographical location and religious practices, (b) distinguishable mode of production, infrastructure, political system, health amenities, and social organization, (c) the "epicenter" of the measles outbreak of 2012-13.

Moreover, I introduced a new qualitative research method: *Kachaharī*. It exists and functions as a social institution mainly in Sindh province due to its socio-cultural roots, and significance. Although it can be arranged on special occasions like marriage and death, *Kachaharī* is a—voluntarily and informal—social gathering, in which people sit, share, discuss and talk about life in the evening: the discussion can revolve around personal, collective, socio-economic, political, religious, news, and other affairs. Using *Kachaharī* allowed me not to invent the answers because it was led by a local person. In the later part, I have discussed the ethical considerations and potential limitations of the study.

CHAPTER 4: THE SETTINGS - FROM THE SINDH PROVINCE TO THE SELECTED VILLAGES

After describing the focus of this project and theoretical and methodological approaches in the previous chapters, I now move to the primary locale where the research was conducted. This chapter thus paints a thorough picture of Sindh with the primary emphasis on the selected districts, i.e., *Sakhar* and *Tharpārkar*, and villages, i.e., *Rahīmpur* and *Rāmpur*. It offers a short history and depiction of the present sociocultural, economic, and political characteristics—from cultural traits to the available governmental facilities—that are necessary to contextualize measles.

4.1 An Overview of Sindh Province

4.1.1 Sindh Under Invasion: A Brief Historical Account

This region, where the Indus Valley civilization prevailed, underwent several invasions that left prominent impressions on people's lives. These included the invasions of the Achaemenid Empire (Persian Empire – under Darius I in the 6th BCE) and Alexander's invasion (in 326 and 325 BCE with an army led by Macedonian Greeks). After Alexander's death, the rule of Seleucus I Nicator and the Mauryan Empire led by Chandragupta Maurya began in Sindh in 305 BCE, followed by the rule of Indo-Greeks and Parthians in the 3rd-2nd BCE. Then the rule of Scythians and the Kushāns started, which continued from 100 BCE to 200 BCE. Under the rule of Kushāns, Buddhism spread in the region. After that, Persian Sāsānids ruled from 3rd to 4th BCE.

Afterward, Islam arrived in the Indian subcontinent, when Muhammad-bin-Qasim – a Syrian Arab commander of the Umayyad Caliphate – invaded Sindh in 711. That invasion gave Sindh a title of *Bābul-Islam* (literally: the door of Islam). The Umayyad and Abbāsid caliphate (712 to 900) included Sindh in Al-Sind, which was the administrative province of Al-Mansūrah – the empire's capital. From the 10th to 16th centuries, Arab governors established their own dynastic rule due to weakening caliphate strongholds. After that, the *Mughals* invaded and ruled the region from 1591 to 1700. The *Soomrā* took the reins from *Mughals* and were defeated by the *Kalhorrā*. The *Tālpurs* replaced the *Kalhorrā* and ruled until the British arrived for trade. The British invaded in 1843 and made Sindh part of the Bombay presidency. In 1937, Sindh became a separate province. The British divided it into different administrative units – *Talukā* – to collect tax through chosen

Zamindars (landlords). According to a report, *Pakistan Emergency Situational Analysis: A Profile of District Tharpārkar,* of the United States Agency for International Development (USAID) (2014b), the British developed such areas into urban centers and provided roads and schools. This development attracted people from rural areas and other provinces. After the British departure and Indo-Pak partition in August 1947, Sindh became part of West Pakistan until the separation of Bangladesh in 1971.

These invasions left significant impacts on Sindh. Their deep marks can be seen on the socio-cultural, economic, and political landscape of the province. Briefly, the subsequent changes occurred in health-related ideas and practices, such as the practice of *Unānī-Tib*, the introduction of the biomedical healthcare system—all are related to the stated invasions one way or other (see chapters 6 and 7).

4.1.2 The Contemporary Local Colonization

Although the current government system is a parliamentary that was borrowed from British colonizers, several clans have entirely dominated political and economic patterns of the country, including the province. The style and forms of domination are similar to British colonization; hence, I call it *local colonization.* The clans include the *Mahar* family; the Syed or Shah families; the *Bhuttā* family (*Zulifqār Ali* and her daughter *Benazīr* served as Prime Ministers of the country); the *Wassān* family; the *Zardārī* family (*Asif Ali Zardārī* served as the 11th president of Pakistan from 2008 to 2013); the *Soomoro* family (Muhammad Mian was the president and Prime Minister of the country); the *Magsi* family; the *Jatoi* family; the *Jāmoot* family; the *Jjām* family and so forth. These families have created their *Jāgīr* (fields or zones) in which everything is under their control, and they have been hereditarily rulers of the province; hence, feudalism still prevails not only in the province but across the country. In their zones, nothing goes against their will, including the governmental institutions. They are the new dominant chiefs. They influence the provision of facilities as well as the induction of the staff. They are well-equipped to dominate and resist any growing threat.

Among other key factors, their vested interests and corruption considerably affect the establishment of necessary to institutions and infrastructure, e.g., healthcare facilities and services. They not only influence the building of facilities but also intervene in the hiring of health staff. To seek their health, they consult the competent doctors, the

properly established health private facilities, and also go abroad—most often the UK and USA—for their treatment. Specifically, the village of *Rahīmpur* is under the premises of one of the stated political families. The village has a half-constructed and deteriorated paved road, electricity with low voltage and not-for 24 hours, and a healthcare facility at around 10 kilometers (see section 4.2.1). In contrast, in the same geographical location that political—new chief—enjoys a properly constructed paved road, 24 hours high voltage electricity, and adequate and effective healthcare facilities of the country.

4.1.3 Geographic Features

Sindh lies in the south-eastern part of Pakistan. On its northeast is the *Punjāb* province, *Baluchistān* is on the western and northern sides. Two Indian states, Rajasthan, and Gujarat, surround its east side, and in the south is the Arabian Sea. The total geographical area of Sindh is 54,407 square miles, which makes it the third-largest province of Pakistan; its industrialized and densely populated capital is *Karāchī*—the most populous city in Pakistan and the fifth most populous city in the world (see figure 5-1).

Sindh's name most likely comes from *Sindhu Daryā*/*Nadī*, generally known as *Sindhu*: this is the name of the Indus River in *Sindhī* – the lingua-franca of the province. Some sources claim that over time the term Sindh underwent some phonetic changes: *Sindhu* into Hindu in *Pahlavi* and *Huddu* in Hebrew. That means that the original term was Sindh, which became Hind, or *Sindhī* became Hindi. In any case, the words "Sindh" and "*Sindhu*" both retain their existence as names of the province and the river, respectively. Locally the province is also called *Mehrānn*.

The Sindh sits within the heart of the old Indus Valley Civilization, dating from 5000 BC, as it contains three major historical and archaeological sites that are the remains of the ancient Indus Valley civilization: *Mohen-jo-Daro*, *Āmrī*, and *Kot Dijī*.

Figure 5-1 Map of Sindh

Source: (Government of Sindh 2020)

4.1.4 Topographic Characteristics

Sindh's topography is threefold. First, there is the *Khīrthar* Range of mountains in the west – with three parallel tiers of ridges that feature little soil, which is mostly dry and barren. Second, the central alluvial plain is adjacent to the *Sindhu*, which is around 360 miles long, comprising of 20 thousand square miles and is steep in structure upward from south to north. The third belt is the Thar Desert, which contains the Thar Desert on the south-east, low dunes, and flats on the north; the *Achhrro* Thar (literally: "White Sand Desert") on the south, and India on its east.

Each belt of Sindh has different flora and fauna. There is an irrigated valley, which produces different vegetables, grains, cotton, sugarcane, fruits, and prominent trees, including dwarf palms. Arid areas with scant vegetation depend heavily on rain. Nevertheless, in the Thar Desert, there are some trees and wild plants and around 800 species that have medicinal value (see Annexure 2) in abundance. Moreover, natural and human-made disasters have severely affected flora and fauna of this region. Wildlife has diminished over time due to a constant decrease in vegetation.

People keep a range of pets. For instance, partridges are kept as pets, and in some places, one can observe fighting or singing competitions in which two partridges either fight until one runs away or sing until one stops singing. Similarly, people also keep a special breed of cocks, which are best at fighting. Pets that are kept for racing include bulls, horses, and donkeys (in some cases). Dogs are used to fight against bears, some dogs are used not for fighting but hunting—of pigs, for example.

Such breeds of all pets are also considered as having some characteristics peculiar to them. They are neither mixed with other breeds nor given to someone, except in friendship obligations or sold for high sums of money. All stated pets are given exceptional food and training before participating in tournaments. It is said that a guardian and his family can stay hungry but not the pet.[39] The tournaments are arranged during village fairs in particular, which are observed at shrines.

Sindh's climate is subtropical: hot summers with maximum temperatures of around 50°C that gradually rise from May to August and peak in June-July; and relatively cold winters, in which temperatures fall to around 2°C, especially from December to January.[40] The highest precipitation, e.g., with a 7-inch average, occurs in July and August. Heavy monsoon rains occur in summer, sometimes leading to massive floods that devastated the province (as occurred most recently in 2010). Nowadays, one can also observe the impressions of climate change in the province, since in the last three to five years,

[39] I have used the masculine pronoun, since it is males who keep, rear, and bring such animals to the contests.

[40] These months are measured in lunar calendar. The following are names in Sindhi and their occurrence period with Gregorian calendar: *Chait* (March-April), *Waisākh*, *Waihau* (April-May), *Jaith* (May-June), *Ākharr*/*Āharr* (June-July), *Sānwann* (July-August), *Badu*/*Badru* (August-September), *Assu* (September-October), *Katī* (October-November), *Nahrī*/*Manghar* (November-December), *Poh* (December-January), *Māngh* (January-February) and *Faggann* (February-March).

especially from 2015 onwards, the temperature crossed 50°C during the summers--previously, this was quite rare. The resultant heatwaves, especially in *Karāchī* in 2015, caused havoc and over 1000 deaths (Mohsin and McKirdy 2015; Mansoor 2015a; Abubakar 2016).

4.1.5 Religion and Social Groups in Sindh

As it is the case for the country, Islam is the dominant religion of Sindh. In essence, around 90 percent of the population are Sunni-Islam, and the second-largest group is practitioners of Shia-Islam. Hindus, Christians, and Zoroastrians are far fewer in number. Around 8 percent are Hindu; 90 percent of the country's Hindu population lives in Sindh. Sufism is the "other face" of Islam, or "softcore" Islam (Frembgen 200, 2008, 2011), which has significantly influenced the province's culture, and it is known as the land of Sufis and mystics. Famous Sufi saints are *Qalandar Lal Shahbāz*, *Shāh Abdul Latīf*, *Sachal Sarmast*, *Shāh Ināyat Shahīd,* and many others, where one can observe the coexistence of the religions – Islam and Hinduism – including some rituals, such as those dealing with measles.[41] We shall return to saints and shrines later in the chapter.

In terms of inhabitants, this land had been home to various social groups. The older among them include Meh, or *Muhannā* descendants of the ancient *Mēd*; *Sammā* and the related *Lākhā*, *Lohānā*, *Nigamara*, *Kahah*, and *Channā*; *Sahtā*, *Bhattī*, and *Thākur* or *Rājput* origin. Thus, there are some Arabs, Persians and Turkish who migrated here during the 8th century and the Baloch who settled during the 13th century. After the partition, an influx of Muslim refugees – called *Muhājir* – came and settled in the province. Besides, there are Afghan refugees who migrated during the Union of Soviet Socialist Republics' (USSR) invasion of Afghanistan (see chapter 3) and Pathan migrants from the Khyber Pakhtunkhwa (KPK) province. There is a local expression that Sindh is the land of Sufis and is inclusive; it thus provides shelter to everyone. Nevertheless, *Sindhī-Muhājir* tensions tell a different story, which is mostly based on eco-political and ethnic factors.

The constant migration has made the province a place of many different identities. Since 1947, the population and the urban settlements have rapidly increased, which is visible in *Karāchī* – again, the country's most highly-populated city with around 14.9 million inhabitants (Government of Pakistan 2017a). In terms of population, Sindh is the second

[41] See for example an interesting book of Frembgen (2011) on this shrine of Qalandar.

largest province of the country after *Punjāb* province. According to the last census survey conducted in 2017, the population is around 47.9 million. Nonetheless, an unofficial figure states that the population is more than 55 million: the rural population is around 1 million higher than the urban one.

4.1.6 Languages, Education and Economy of Sindh

Language: Linguistically, *Sindhī* is the lingua-franca in the province. Other prominent languages include *Serāikī* (some consider it as a dialect of *Sindhī*), Urdu and *Balochī*. The census survey of 1998 reported that around 60 percent of people are Sindh speakers. Urdu follows with around 20 percent, then *Serāikī*, *Balochī*, *Mārwarrī*, *Pashto*, *Punjābī*, *Shina*, *Dari*, *Bengali*, and others. The *Sindhī* language is taught in schools, and in most cases, until secondary education is imparted in *Sindhī* (at least in the government institutions except a few in a few big cities), which makes the province distinctive from other provinces of the country. Urdu, Arabic, and English are also taught in schools. Owing to the intense sounds of the *Sindhī* language, *Sindhī* speakers really cannot quickly adopt the accent of other languages. On the contrary, speakers of other languages usually have difficulties pronouncing certain sounds of *Sindhī*, e.g., ɖ (a form of a voiced retroflex stop).[42]

The language was politically used as an identity marker during *Sindhī-Muhājir* tensions in *Karāchī* in the 1990s, in which some sharp sounds of *Sindhī*, e.g., dd (ɖ), were used to identify whether a person was a "native" or *Muhājir*. Based on the identification, the person was treated accordingly. Some of them were killed. As discussed at several places, *Muhājir* were a result of colonization because the latter caused the separation of Hindustan.

Colonialism is always at the forefront when one explores the causes of current crises. Adeel Kahn (2002), a Pakistani sociologist, argues that colonialism made Sindh an agriculture hinterland, where colonizers exploited its resources and ignored the service sector. After partition, Sindh became a center for refugees who came from India, and the federation allocated its land to outsiders and channeled resources to the center of the country and *Punjāb* province.

[42] Phonetically, it is a stop sound that is also called a plosive or oral occlusive, in which the vocal tract is blocked so that all airflow ceases.

The partition caused problems for *Sindhī* Hindus when the new state began to persecute them that forced many of them to migrate to India (Bhavnani 2014, 2016b, 2016a). According to Kennedy (1991), governmental policies favored *Muhājir*. In 1972, a severe riot occurred between them due to "injustice and favoritism" perpetrated by both colonizers and the government (Khatwani and Abbasi 2014; Verkaaik 2016). Likewise, in Sindh, the *Sindhī-Muhājir* tussle wreaked historical havoc.

These political and structural changes certainly need full scholarly attention. The reasons to briefly mention this here are to show the institutionalized forms of violence committed at diverse levels. The partition did not merely cause migration and riots but also impacted the province's economy substantially. Hence, the impact of partition is mainly two-fold.

The first is that the *Sindhī* Hindu were mainly engaged in business: their migration took away the earning hands and minds. The small enterprises – cotton industries, flour mills – were permanently shut down, as the owners were Hindu. The closure of such industries ended the survival of the numerous people working there. Secondly, ethnic tensions and riots erupted, which cost vast resources, including human resources. The eruption disturbed the peace entirely. The tension never went away. Nowadays, the *Muhājir* are demanding a separate province while dividing the Sindh.

Formal Education: Education – quality as well as quantity – has been a great concern and problem in the province. Merely 55 percent of the total population – 67 percent male and 44 percent female – over 10 years old can read and write. Moreover, there is a significant difference when it comes to rural and urban settings, as the ratio there is 36 percent and 73 percent respectively, which further is alarming in terms of gender: in rural areas, it is 51 percent male and 19 percent female, and in urban areas, 80 percent male and 65 percent female (Government of Pakistan 2017b).

Economy: The province has an industrial sector, a service economy, and an agriculture sector. With the second-largest economy in the country, its capital, *Karāchī*, has two commercial seaports: Port Bin Qāsim and *Karāchī* Port. This city also encompasses the headquarters of certain multinationals. The province is considered the center of the country's pharmaceutical industry. Besides, there are cotton mills, cement factories, sugar mills, and plants to produce steel and automobiles. Agriculture is "the lifeline" of the country's economy, as it contributes 19.5 percent of its GDP, engages 42.3 percent of

the country's labor, and plays a central role in the country's development, food security, and poverty reduction (Government of Pakistan 2017b, 18).[43]

Moreover, people also depend on livestock, which makes up around a 60 percent share in the country's agriculture sector (Government of Pakistan 2017b). According to a report of USAID (2014b), livestock is considered as a "secure" source of livelihood for the people of Thar. Primarily the landless or small landowners in rural areas significantly subsist on the livestock. Common animals are cows, buffalo, sheep, goats, and camels. Presently, the poultry sector has also emerged as an active subsistence source for local people, who are seeking interest in it.

4.2 Profile of *Sakhar* District

Historically, the district features the characteristics of diverse invaders, such as the Greeks, Arabs, and the British. Remaining an important administrative unit of the province, *Sakhar* has played a pivotal role in the economy, trade, and history of *Uttar* (upper) Sindh.

4.2.1 Administration, Geography and Seasons

Administratively, the district has five *Talukā* (subdistricts): *Sakhar* City, New *Sakhar*, *Rohrri*, *Sāleh Pat,* and *Pano Āqil*. *Sakhar* city and new *Sakhar* are the urban centers; *Pano Aqil* has one of the largest military cantonments of the country. *Rohrri* is the smallest *Taluko*, in terms of area and population but is one of the oldest areas (the old name was *Arorr*, and *Kālkā-Devī Mandar* is also in this *Taluko*)[44] with a major railway junction. *Taluko* is further divided into union councils (UCs) and micro-units, *Mouza* (revenue villages) (see Information Management and Mine Action Programs 2014a). The District Coordination Officer (DCO) is the head that the provincial government appoints through a competitive examination. He assists and is accountable to the Divisional Commissioner

[43] There are two main agriculture seasons. First, *Kharīf*, which starts from April-June and harvests during October-December. This season's major crops include barely, rice, maize, sugarcane and pulses. The second season is *Rabī*, which begins in October-December and harvests in April-May. *Rabī*'s main crops includes wheat, barley, gram, lentils, and several oilseeds, e.g. mustard. The produced vegetables include cabbage, cauliflower, turnip, green peas, French beans, tomatoes, celery, beetroots, onions, spinach, ladyfinger, carrot, brinjal, and so on. Moreover, the popular fruits are mango, banana, watermelon, melon, dates, lemon, berries and papaya.

[44] The capital of a Hindu Brahman dynasty that thrived just prior to the Arab invasion

(DC). This officer further coordinates with the Executive District Officers (EDOs), who head the district's different departments such as EDO health.

Sakhar's total geographical area is 5.165 square km. Other districts that surround it include the *Ghotkī* district on the east side (India also lies on the same side), the *Kashmor* and *Shikarpur* districts are on its north and north-west side, respectively. The *Khairpur* district is on the west. The *Sindhu Daryā* (Indus River) flows on its north-western side, and *Sakhar* city is on the western bank of this river. *Sakhar* city is the third-largest city of the Sindh province after *Hyderābād* and *Karāchī*. The district's western and northern parts feature irrigated agriculture fields – because of the flow of *Sindhu*. The eastern side contains barren areas, due to the inaccessibility of water and prevalence of dunes. The southern side has both cultivatable and barren land.

Sakhar has four seasons. Spring arrives in February and is pleasant, followed by summer beginning in March to April and ending around September. During the summer, *Sakhar*'s temperature remains above 30°C and may exceed 50°C. The autumn continues from October to November. The winter season arrives from December to January. In winter, the weather becomes dry and cold: 7°C to 22°C. The average rainfall here has been reported at around 88 mm per annum with some monthly variations such as 0.59 mm to 25.62 mm.

4.2.2 Subsistence Patterns

For its subsistence, according to one report, *Pakistan Emergency Situational Analysis: District Sukkur*, 51 percent of the population of *Sakhar*, residing in the urban areas, depends on trade (*Sakhar* city is the main trading center), services (government and private jobs) and personal business (Information Management and Mine Action Programs 2014a). However, the remaining 49 percent of the population, mainly settled in rural areas, uses agriculture as a means to fulfill its basic needs. This next category has three further categories: (a) agricultural households that operate the land as owner-cultivators or tenants; (b) livestock owners; and (c) non-agricultural households. The major crops include cotton, rice, sorghum, and sugarcane in *Kharīf* and wheat, gram, and oilseeds in *Rabī*. The *Khairpur* district is adjacent to *Sakhar*. *Khairpur* produces a significant amount of famous date-palm varieties: *Asīl*, *Faslī*, *Karbalāin*, *Kuprro,* and

Mithrrī. Moreover, *Sakhar* city has the largest market of fresh and dry dates in South Asia. The leading importers of dates are India, Australia, and America (ibid.).

As mentioned earlier, livestock is a significant source of livelihood for small farmers and the landless poor. It includes animal husbandry either at home or in the small farms. The available products contain milk, homemade ghee, and trade in animals that not solely earns income, but at home also function as a leading source of nutritious food.

Furthermore, there are two industrial estates. First, Sindh Industrial Trading Estate (SITE) – established in 1963 over an area of about 1060 acres – includes several industries: ghee, oil, biscuits, soap, beverages, flour, straw paper board, poultry, farm, dates, and sulphuric acid. It has cold storage. Second, the Small Industries Estate (SIE) – comprises of 110 acres and works under the Sindh Small Industries Corporation – encompasses cottonseed crushing units, pipes, paints and varnishes, biscuits, flour, rice husking, printing presses, ceramic wares, and light engineering. Some of them are currently working, and yet others are closed (ibid.).

The role of women is significant and undeniable. In both urban and rural areas, they mostly homeworkers: they perform childrearing and caring duties. However, rural women significantly support men in harvesting wheat, picking cotton, gathering fodder for the animals; making embroidery and sewing *Rillī* (traditional bed sheets that are sewn with a constellation of various colors).* In contrast, men work as government servants, daily wage laborers, and farmers.

4.2.3 Population, Religion, and Education

Moreover, according to the *6th Population and Housing Census* conducted by the government of Pakistan (2017a), the district's total population is around 1.49million and the number of males is slightly higher than that of females. The estimated growth rate is 2.80 percent per annum, which indicates that the population will double in the next 20 years. Analogous to the province, most of the *Sakhar* district's inhabitants are Muslims with Suni-Muslims in higher numbers than the Shia-Muslims. Around 96 percent are Muslims, around 3 percent are Hindus, and the rest one percent practice other religions such as Christianity (ibid.).[45] According to USAID (2014a), *Sakhar* district's overall

[45] In *Sakhar* city, there is a Christian mission hospital.

literacy rate for 10 years of age and above is 56 percent: for males, it is 74 percent and for females, 36 percent. This international report further mentions that the literacy rate of the rural areas is 46 percent (21 percent female, 68 percent male) as compared to 68 percent in urban areas (54 percent for females and 81 percent for males. The adult literacy rate – for those 15 years and above – is 54 percent; females (quantitatively) are less literate than males.

4.2.4 Provision of Basic Facilities: Healthcare, Roads, and Electricity

In terms of roads, the total road network in the district is about 26,745 km, which is inadequate for the area and its population.[46] The National Highway or Indus Highway (N55) connects *Sakhar* with other major cities of the province and the country, whilst paved roads connect the district headquarters with its *Talukā* headquarters. Electricity is available as there is a grid station in the *Sakhar* city, but low-voltage, power outage and load-shedding (power cuts) are prominent problems. Its provision further deteriorates in summer, particularly in the rural areas. Both electricity and roads are axiomatically related to the preservation of the vaccine, which help maintaining the cold chain and area coverage (see chapters 10, 11, and 12).

This report, *Pakistan Emergency Situational Analysis: District Sukkur*, further mentions that there are 72 government provided biomedical health facilities. The biggest hospital is a teaching hospital that contains 330 beds (see figure 5-2 created by me on this data). These facilities can serve around 29 percent of the estimated population of 2010. However, according to the WHO standards, the requirement to serve a population of 10,000 is two health facilities and 25 beds.

[46] In this regard, a review article of Brian Larkin (2013), *The Politics and Poetics of Infrastructure*, is a thought-provoking read on the infrastructure, in which Larkin theorises infrastructure as well as describes its role in daily lives.

Figure 5-2 Total Number of Available Health Facilities[47]

Type of Facility	Total Number	Bed Capacity
Teaching Hospitals	1	330
District headquarter hospital	0	0
Tehsil headquarters hospitals	2	36
Rural health centers	3	34
Basic Health Units	26	52
Govt. Rural Dispensaries	37	0
MCH centers	3	0
Total	72	452

I now detail the immunization profile of the district. Considering the definition of an immunized child—the one who is aged between 12-23 months has received all the doses of the Bacillus Calmette–Guérin (BCG) vaccine; three doses of polio and pentavalent vaccines; and one dose of the measles vaccine in a year (ul Haque et al. 2016, ix)—in 2014, a total of 15 percent – 17 percent female and 14 percent male – of children aged 12-23 months have received vaccines against childhood tuberculosis, poliomyelitis, diphtheria, pertussis, tetanus, hepatitis B, Hemophilus influenza type b, pneumonia, and measles as per the EPI targets (Information Management and Mine Action Programs 2014a). This percentage differs further in rural and urban areas. In rural areas, this is 5 percent (male 3 percent and female 9 percent) as compared to urban areas' 31 percent (female 30 percent and male 32 percent). Furthermore, around 55 percent of pregnant women (40 percent in rural areas and 76 in urban areas) are vaccinated against tetanus (ibid.,).

After briefly discussing major socio-cultural and economic characteristics of the district Sakhar, in the following section, I provide important details about the ethnographic characteristics of the village *Rahīmpur*.

4.2.5 *Rahīmpur* Village: Ethnographic Features

Geography: *Rahīmpur* is located in *Sakhar* district; it is almost 40 km away from *Rohrrī* and *Sakhar* city. The village is on the northern side of the province, situated in the alluvial plain and desert, close to the Indian border, which is approximately 200 km away (see

[47] I have created this table while using the data of Information Management and Mine Action Programs 2014a.

the topography of the district). As mentioned earlier, this village attracted media and political attention due to the intensity of the measles outbreak with high morbidity and mortality rates.

Social Groups and their sociocultural patterns: Three social groups, *Bhanbharā*, *Mallāh,* and *Mārraichā*, are settled here. According to the socio-economic census (SEC), the village has 72 households: 40 *Bhanbharā*, 20 *Mārraichā,* and 12 *Mallāh*. The total population comprises approximately 500 individuals. The number of people who live in a joint family system is comprised of 10-15 members. Although there are a few nuclear families consisting of four to five members, the biggest extended family includes 30 members. The head of a household is always a male member, which demonstrates that males (elders, especially while keeping male gender as a point of reference) enjoy power and position; take decisions (sometimes elder women, especially mothers, influence the decisions); and are responsible for earning money. Female counterparts do the homework: the child-rearing and caring duties, cooking, washing, and cleaning.

In terms of marriage patterns, although monogamy and endogamy are the preferred practices and choices for Muslims, there are a few cases of exogamy and polygamy. Parents make the nuptial decisions. The first option is to marry a cousin (father's or mother's siblings' child), and in the case of unavailability, the next choice is to find a partner from relatives, and thus the same social group. No one marries outside of the social group; they are endogamous. In contrast, the *Mārraichā* do not opt for endogamy, but exogamy. To them, all girls and boys of a family and relatives are siblings; therefore, they search for a marriage partner entirely out of family and relatives. For them, unknowns are the only choices.

Female Purdah or locally called *Parrdo* (female seclusion) is strongly observed in *Bhanbharā*, and *Mallāh*, as compared to Mārraichā. Women stay inside the houses and interaction with *Nāmehram* (an outsider, and religiously forbidden to meet and talk) is predominantly forbidden. The purpose of this is to observe *Parrdo* and reduce the chances of illegitimate relations and *Zana* (adultery), which are great in Islamic teachings. A woman's body, it is believed, has several attraction points to enchant the opposite sex and some supernatural beings such as Jinn. Therefore, the women of Muslim social groups are advised to stay inside the boundary walls of their houses and cover their

whole body either with a headscarf or a black Burqa in case they need to go out (for healthcare, for instance). These values are determined by religious teachings, yet sometimes one can observe breaching such values too. In contrast, the women of the *Mārraichā* social group can go outside without any restriction, but they have a paradoxical type of *Parrdo* system. The females always keep their faces covered with a headscarf, especially from their husband's father and brothers, but social mobility is quite flexible, as they can go outside.

Religion: This village has a predominantly Shia-Islam population with a smaller number of Hindu. Almost in the center, the village has a *Masjid* (lit. mosque) that is used to call *Āzān* (Arabic: Adhan) and perform *Namāz* (lit. prayers) three times a day though only male members can observe *Namāz*.[48] During the month of *Ramazān* (Ramadhan, the month of fasting), the villagers are expected to perform communal prayers. They also communally hire a *Maulvī* (a religious person), who plays a preponderant role in leading *Namāz*, calling *Āzān*, teaching the Holy *Qurān*, especially to children, and inculcating Islamic knowledge (on purity and danger for example). Every evening, almost all male members come to the mosque to observe *Namāz* and end the fast with food such as dates, apples, *Pakorry* (fried snacks made up of several ingredients such as onions, tomatoes, green chilies, red chilies, salt)* and *Sharbat* (handmade syrup).* In other months, the number of people observing *Namāz* decreases, but someone from the village calls *Āzān* regularly. Moreover, *Mārraichā* being *Ādīvāsī* and practitioners of Hinduism have sacred pictures or statues of gods and goddesses for worshipping on altars reserved for this inside their houses.

Moreover, all social groups believe in saints and visit their shrines for seeking help, including healing any illness miraculously. There is a shrine of a saint nearby in the village and a sacred place called *Qalmī Qurān* (handwritten Holy *Qurān*). They also visit other shrines in the province, such as *Shahbaz Qalandar*, and *Shah Abdul Latif Bhittaī*.

Moreover, *Bhanbharā* and *Mallāh* go for *Zayārāt* to visit shrines of *Hazrat* Ali, Imam Hussain, and their families in Iran, Iraq, and Syria. The visitors are titled *Zawār* (for male) and *Zawārann* (for female), which becomes a prefix to their names. When they return,

[48] This is because practitioners of Shia-Islam call *Āzān* three times a day and perform five-times prayers in three times: *Fajir* (morning); *Zuhar* and *Asar* (afternoon and day afternoon); and *Magharib* and *Ishā* (sunset and later in sunset).

they are always warmly welcomed by the villagers and the relatives, who put garlands on them and give them some cash. They make vows for anything such as health, children, good fortune, and economic sustainability. According to them, only the luckiest people are called by the Imams to go there. People keep saving money and sing particular songs to show respect, attachment, and beg for the invitation from the Imams. In one of the *Otāq* (a guest and meeting room for male members),* there was a banner (20x15 meter) on the wall concerning the communal visit to these places under a person ordinarily called *Aggwānn* (lit. the leader). It is like a company of travel agents who advertise trips with a fixed amount to pay to mobilize people, since paying visits to such places is always considered both a blessing and the culmination of a dream. Everyone hopes to visit at least once in a lifetime.

In contrast, *Mārraichā* only visit shrines in the province. *Bhanbharā* and *Mallāh* do not worship *Kālkā Devī Mandar* (a temple) that is at a distance of around 60 km (see photographs 29-30 in the annexure 1). Yet during the days of the outbreak, they include, *Mārraichā* either took their children to this shrine or brought them water from it (see chapter 6).

Language: *Sindhī* is the primary language (see details on the province and districts), which is used for communication, taught in schools, and is the language of the newspapers. This is the mother-tongue of all Muslim social groups. Even the *Mārraichā*, whose mother-tongue is *Mārwarrī*, speak *Sindhī* proficiently as they learn it from childhood.

Housing patterns: The village has *Pakā* houses – made of fired bricks, cement or mud with a roof of bricks with the support of iron girders – and Semi-*Pakā* houses – built with bricks (fired and unfired), mud, and roofs made with wood from with bushes obtained from the nearby sand dunes and their agricultural fields. Yet there is a third type of housing called *Katchā*, in which *Mārraichā* live, constructed with mud, wood, and bushes. The first two types have a boundary wall (mostly made of clay) for protection from thieves and to observe *Parrdo* (women seclusion and as a boundary of the property). The *Katchā* house does have a boundary, but it is made of plants and branches of trees like *Bbabbur* (botanical name: Acacia nilotica) and *Bbair* (botanical name: Ziziphus vulagaris) that have thorns. All houses are single story and have a big courtyard with a kitchen built

of Semi-*Katchā* (in *Pakā* and semi-*Pakā* houses). Almost in every house has a hand-pump in the corner and a place for the animals that can be semi-*Katchā* or completely *Katchā*. Animals, however, are also tied outside their houses under trees during the summer season in the daytime.

Sleeping patterns: A day starts at dawn when people wake and give fodder to their animals. After that, male members head towards the agriculture fields for excretion purposes with an ewer in their hands to clean their lower body parts afterward or use water from a watercourse. Some of them, thereafter, return to their houses to drink *Chānh* and get tools to go into the fields though most of them already carry tools with them for gathering fodder for animals – cows, buffalos, goats, and sheep. They visit their fields to tend the crops, pick weeds, and harvest the crops (depending on the season).

On the contrary, women do have reserved space or a latrine inside their houses to meet their excretion requirements. Some fold the bedsheets used during the night, bring the *Khat*[49] (lit. charpoy) inside (depending on the season); clean the house; prepare *Lassī*, food; and some join their male counterparts in the fields to help with gathering fodder and crop harvesting. However, a few of them who work in the nearby town or as teachers get ready early in the morning and do other chores in the evening. During the summer season, the afternoon is for resting if it is not a wheat-harvesting season, while in the winter season they continue working at intervals.

Subsistence patterns: As previously noted, most inhabitants are engaged in the agriculture sector, more than half of them have land, and the rest of them work as farmers on someone else's land. However, *Mārraichā* are entirely landless as the *Mārraichā* migrated a decade ago. Even their residential space, which consists of white dunes with no agricultural use, belongs to *Bhanbharā*. In the past, this whole area encompassed white dunes that have been transformed into fields for agriculture over the last two decades with the building of canals and migration. Yet there are dunes of white sand (this is semi-desert).

As mentioned above, many inhabitants are farmers, day laborer, and women are mostly homeworkers. Only two men from the village are teachers; one used to work in print

[49] Its plural is *Khattun*, that is wooden frame having four legs woven with handmade ropes from bushes

media as a reporter.[50] Those who are engaged in farming have a seasonal income, while teachers have a monthly income. Laborer's, however, have a daily or weekly income. The average income of the villagers is 50-100 USD per month, depending on occupation and profession.

Food patterns: Their means of subsistence significantly shape their food choices though religion plays a fundamental role in determining food patterns in terms of *Halāl* and *Harām* categories (yet these are not limited to food). The *Bhanbharā* and *Mallāh* social groups keep their own produced wheat – an essential ingredient of their food – for an entire year in round tin barrels. *Mārraichā*, however, receive 3-6 mounds of wheat as a labor per acre that hardly is sufficient for six months. Therefore, they buy wheat flour or wheat from the market on a weekly or monthly basis.

The essential food items include *Mānī*,[51] or rice, and curry. *Mānī* is cooked of wheat flour, while curry varies and may include chicken, beef, fish, eggs, vegetables, pulses (a type of legume), chickpeas, and importantly *Sāgg*[52] (green leaves of specific plants, especially mustard leaves gathered from the fields). Some of these are home-grown such as eggs and vegetables. There are three primary mealtimes for food intake. The first is *Nairan* (breakfast),* which starts early in the morning around 8:00 am, and comprises *Manī*, butter, Lassi, and maybe curry – all homemade and homegrown. Some also drink *Chānh* in the morning, which was uncommon in the past. Second, *Mānjhāndo* (lit. lunch)* that starts around 2:00 pm and often contains *Mānī* with some curry. The third meal, dinner, begins in the evening around 7:00 pm and includes bread with curry or milk obtained from buffalo or cows. The second and third mealtimes sometimes contain *Bhat* or *Pulāo* (rice with potatoes), *Biryānī* (rice with chicken or meat or beef), and white rice with pulses or *Sāgg*.

The cooking and serving of food are women's responsibility, and male members are served first, although, in some cases (ideally), children and older people are served first. On the arrival of a guest(s), or a marriage or death events, the food significantly differs in

[50] During my last follow-up visit in 2017, I came to know that he has left this job of reporter and now manages his land.
[51] The term *Mānī* denotes homemade bread as well as being a general term for food. People may inquire if someone has eaten food with '*Mānī Khadhi Aaahy?* Or *Mānī Khaibi*? [Have you taken your meal, or would you like to have a meal?]
[52] [/sa:ɠ/]. This food is highly romanticised, especially by the older generation.

terms of type and quantity. For guests, lunch and dinner must contain chicken or fish or meat or beef, and *Mānī*, though rice or something else, is an optional course. *Chānh* is also compulsory in the morning, or during the day. The *Nairan* is, however, the same as previously mentioned. Before sleeping, milk is served to guest(s). During the marriage and death ceremonies, cooking *Biryānī* is typical (see the section on marriage and death patterns).[53]

Political organization: Briefly describing the political organization in *Rahīmpur* village, there is an influential person locally called a *Waddairo* who settles any disputes. The issues can include, (1) familial issues when someone refuses to give or take a girl for marriage or if a marriage does not go well; (2) issues of illegitimate relations, or (3) issues of land distribution and the encroachment of territory. In other words, he settles disputes and blood feuds. The level of intensity determines the participants, solutions, and punishments. Yet some issues are solved by families without publicizing them to avoid shame; some involve politicians, *Pīr*[54] and *Waddairā* (plural of Waddairo) of other villages. The following is a scene from the field that gives an example of a dispute.

> *Nabīl*, who is an elder brother, has been seriously sick for a couple of years. He was the breadwinner of his family and reared his younger four siblings – two brothers and two sisters. His parents are dead, and his younger brothers are grown up and dominating the home affairs. In his 40s, he returns home, as he is no longer in a physical position to earn money. He is frustrated because he cannot earn money, and his younger siblings are not respecting him. After the constant frustration of some years, he expresses this grudge one day while loudly asking his brothers to pay him the share of building the house a decade ago. Nonetheless, his brothers refused to pay the share, which created a dispute among them.
>
> Without involving a *Waddairo*, all the siblings sit together and listen to his concerns to solve the dispute. He shares his life struggle to feed the entire family even when their father was alive but old enough to earn money, and once their father died. *Nabīl*'s sisters, who are married, together decided that they (sisters) have not acquired their due share of the property, so the younger brothers should obey them and in return look after *Nabīl*, who is in dire need of care. This way, they settled the dispute, which in most cases becomes intense and results in a blood feud. Thereafter, *Nabīl* stays at home, receives a room, and is looked after.

[53] See Mintz and Du Bois (2002), who have published an extensive review of food to discuss it as subject matter and an analytical tool to expand the anthropological debates further.
[54] Syed and *Pīr* are believed to be the descendants of the holy Prophet Muhammad, who draw their lineage from the Prophets daughter Fatima.

Moreover, another dispute occurred, in which a married girl was murdered by his husband's brothers in the name of "honor," considering her relations with another man. To solve this dispute, a *Faislo* (a local justice system)* was called in which several *Waddairā*, local politicians, and local people participated. During *Faislo*, both parties shared their concerns, in which the killers were found guilty and a monetary fine was fixed on them to pay to the deceased woman's parents.

Education: In terms of literacy and education, formal education levels differ according to age and gender. Children receive formal education and religious teachings, including how to recite the Holy *Qurān*. In adults, a small number of people are formally educated. The maximum education is the master's level—only four men hold this degree. A few adults do have a religious education but not formal education. Gender-wise, a smaller number of females have a formal (as well as higher) education compared to males. The younger generation, however, has obtained primary education. The highest education level in females is a secondary school certificate (12th grade). Among adult women, there is only one 18-year old girl who has reached that level. Nonetheless, the girls and adult women (not all, but a few) do know how to recite the Holy *Qurān* and observe prayers.

Dealing with health and illness: Local people do not merely consult a single health sector, but most often seek multiple, pluralistic consultations: they consult a *Hakīm*, visit shrines, go to religious leaders or a person who knows the Holy *Qurān* for verbal healing and visit a biomedical healthcare facility. This consultation nevertheless depends upon the given etiology of illness and their economic situation.

For *Sāyā* or what is called "spirit possession"—in which someone is believed to be inhabited by a specific spirit or spirits, the voice and agency of the possessed are associated with the spirits (Boddy 1994)—a suitable option is to visit a shrine and a faith-healer for chanting specific verses. For the orthopedic problems, they visit a bonesetter who is famous in the area. They visit a *Hakīm* for illnesses, such as fever, cough, and measles. Although in the village there is no *Hakīm*, there are two Hindu *Hakīm* in a nearby small town at 10 km distance, where a BHU, private clinics, and a school are available. These *Hakīm* have been practicing *Hikmat* (lit. wisdom) for the last few generations. One *Hakīm* is almost 70 years old, and the other one is around 50 years old. It was highly thought-provoking to observe in their clinics that they do not merely refer and use their

homemade herbal medicines such as *Phakī*, *Kakh,* and a *Sharbat* prepared from several plants, gold or pearls, but that they also use aspects of biomedicine such as paracetamol, syrup, injections, and drips. The following description from the field highlights that coexistence of medical knowledge and practices at one of *Hakīm*'s clinics:

> It is an afternoon in winter. Although it is not too cold, one still needs a sweater or a shawl to keep warm. The small bazaar of various shops – with groceries, clothes – is full of people and motorbikes. A police vehicle is beeping a horn or has switched on a siren, which usually declares a state of "emergency," but it was not like that. Over time, this sounding of a siren has emerged as a practice that police vehicles and also some private vehicles of "affluent and politically backed" people do often show off or to have "fun". My RA and I turn our bike into a small street, which is around 6-8 feet wide and find the clinic after approximately 20 meters. We take the stairs. The *Hakīm* is sitting in his rolling chair. As we enter, people present there, including the *Hakīm*, look at us. We meet the *Hakīm* and introduce ourselves. He offers us the chairs to sit. He quickly inquires about our purpose for visiting him. He is quite busy in dealing with the patients. He warmly welcomes us and offers tea. Following is the brief scene of the clinic.
>
> An older man is on an oxygen machine. One medical representative – of a pharmaceutical company – wearing trousers and a shirt with a tie is sitting in a nearby chair facing the *Hakīm*. Some boxes of medicine, which he brought as a sample, are placed on the glass top table. The wall behind the *Hakīm*'s chair displays pictures of *Mātā*, other Hindu gods and goddesses, verses of the Holy *Qurān* and modern medicine brochures, e.g., with tables, injections with smiling faces of white-skinned and golden-haired children and women, as well as brochures for prevention of infectious diseases, made by INGO, e.g., World Vision. The *Hakīm* quite often goes into the women's patient room, where otherwise only women are allowed.

This stated setting of one *Hakīm*'s clinic certainly shows many aspects of health-seeking behavior in the area. The boundary-crossing coexistence of religious and modern medicine there – which have been created and put in place for many purposes – is highly significant. During the onset of measles (or an outbreak), the *Hakīm* are significantly consulted for healing.

As noted earlier, people of the village strongly believe in the power of the saints to heal any illness miraculously. Most often, it is a parallel choice of dealing with an illness. There is a shrine of a saint nearby in the village and a sacred place called *Qalmī Qurān* (handwritten Holy *Qurān*). * A *Qurān*, which is quite old and put in a glass box, is believed to have flown to this place. Not only people of this village but from the whole area and

other districts visit and make vows. However, these are not the only choices; they also visit other shrines in the province, such as *Shahbaz Qalandar*, *Shah Abdul Latif Bhittaī*, *Sachal Sarmast*, and *Ubhan Shah*. In the whole province, one can observe several *Muqbrā* (shrines), which are believed to be saints. Most people respect them, and certain saints are famous for specific illnesses. *Bhanbharā* and *Mallāh* also pay a visit to shrines of *Hazrat* Ali (the cousin of the Prophet Muhammad and husband of his daughter Fatima), Imam Hussain, and their families in Iran, Iraq, and Syria. Moreover, *Bhanbharā* and *Mallāh* do not worship *Kālkā Devī Mandar* (a temple), yet during the days of the measles outbreak, they including *Mārraichā* either took their children to this shrine or brought them water from it (see chapter 6) to seek their health.

Moreover, the local people prefer to consult a *Dai* (a traditional midwife and healer) during pregnancy, delivery, and to deal with measles. A *Dai*, who is an old lady of another social group from a nearby village, visits the village often to check and know if somebody is pregnant. She remembers the days and trimesters. These people also, in some cases, go and pick her up, especially to attend births. It is essential to mention that she is not chosen in extreme circumstances. For example, if the situation of a pregnant woman is critical, then local men bring her to a biomedical private or government hospital. A basic health unit (BHU) is consulted for an antenatal check-up or especially to learn the gender of the conceived baby through an ultrasound. However, a woman healer, who observes the rituals for measles, lives in this village. She has memorized the lyrics of *Bhajjan* (see chapter 9).

4.2.5.1 Available Amenities in Rahīmpur Village

School: The village, as mentioned earlier, has one primary school, where the total number of enrolled students is 110. There are around 35 little children who go to school but are not yet formally enrolled. There are two teachers – both are male. For further education, students need to attend middle school and college, which are 10 km from the village.

The biomedical health facility: The village has no biomedical health facility. The nearest BHU is around 10 km that provides medicine for the promotion of health, prevention, cures, and referrals. This facility operates community-based or outreach programs such as vaccination and offers support to the Lady Health Workers (LHWs) in clinical,

logistical, and managerial terms. Other available services are Acute Respiratory Infection (ARI), malaria, tuberculosis (TB) control, and Mother and Child Healthcare Centers (MCHCs). Approximately 85 staff members work there, who are comprised of physicians, dentists, technicians, vaccinators, and LHWs.

During the fieldwork, this center was under a limbo state to become a Rural Health Centre (RHC). One staff member – whose village is around 100 km away from there – told me that the induction of new staff in this facility had been approved, but a promotion of the unit is still pending. According to him, this limbo state has created a sense of confusion and uncertainty among the staff, and indeed, working at an RHC is better than a BHU due to facilities and benefits available for the staff. This unit has a catchment population of vaccination of around 30,000. Moreover, inhabitants of this village consult this BHU, although the first response for dealing with measles occurs at a household level. Concerning the vaccination routine, inhabitants of the village shared that a vaccination team visits the village every second or third month of a year.

Animal husbandry and human-animal relationship: People keep their cattle in the house's courtyard, and share their own living space with cattle during the winter season to protect the latter from the cold. The social groups that are economically weak, such as *Mallāh* and especially *Mārraichā*, also share the same space with the cattle, and even sleeping there at night. People do not feel cynical about animals or consider the feces of animals as unhygienic or harmful to health. They dry dung and use it as a fuel for cooking food.

Roads: To reach the village that we have already been mentioned, there is a half-constructed paved road, which is in a deteriorated condition at the moment. This passage is linked to another paved road that links to the district and the health facility. Since there is no public transport, the preferred way of transportation is motorbike. In the area, people rent their bikes. Influential people, however, have a car, a jeep, a tractor, and a few motorbikes.

Drinking water, sanitary, and hygienic patterns: The village has subsoil water – which tastes good – available for drinking. Every household has an installed hand-pump, and a few have electric motor-pumps for taking a bath, washing clothes, and sometimes for

providing animals with drinking water. The *Mārraichā* people, however, fetch water from handpumps of *Bhanbharā,* and their women wash their clothes at a nearby watercourse.

There is no adequately developed sanitary system. Some of the houses do have toilet facilities, and there are self-constructed trenches for drainage, which are open. The low maintenance of this system, hence, invites flies and mosquitoes. The rainwater also flows and sometimes makes difficulties for the pedestrians. Most male members of all social groups and women of *Mallāh* and *Mārraichā* go to agricultural fields for defecation. The timing, usually, is early morning or late evening when it is quite dark.

Electricity and communication: I discussed earlier that although electricity is available, the voltage is always low with prominent load-shedding. During summertime, the voltage drops further, and fans run slowly and blub light dim. A few people have installed solar plates to produce solar energy, as the sunlight is quite strong in terms of heat and stays longer in the region, especially in the summer. The nearest post office and police station are at a distance of 10 km. To receive a letter, people prefer to give a "care-of" address.

In olden days, especially before the internet and mobile phones, the primary sources of information and entertainment were radio, word of mouth (still an active channel of information flow and sharing), and television. Presently, a few people have android mobile phones, some of the villagers have simple mobile phones, and a few of the houses have televisions. Educated people, e.g., teachers, buy newspapers produced in the *Sindhī* language (but not daily).

4.3 Profile of *Tharpārkar* District

Imagining and describing the everyday human life of Thar Desert is highly challenging, especially for those who are unacquainted with its characteristics (see photographs 23-27 and 31-53 in the annexure 1). Some of these include how water tastes; how a drought feels; how it feels to eat *Singrī*/*Sangrī* (seed pods obtained from a few local trees) when there is no other food available; what are the meanings of rain; how peacock and peahens and people celebrate happiness when it rains; how it feels during summer and how to live in a *Chanworo* (hut). The feeling and facing realities are always different from the way in which they are read. Precisely, to be an observer (of) and to experience reality are only loosely connected, and sometimes the gap between these two modalities of encountering

the world cannot be resolved at all. Yet situating the village of *Rāmpur* within that great desert, I try below to present some helpful insights about these characteristics.

The vast Thar Desert lies in India and Pakistan, and most of it is in India – from the Rajasthan state to Haryana and Gujarat.[55] In Pakistan, the desert is situated on the eastern border of Sindh, which goes along to the south-eastern parts of *Punjāb* and is connected to its *Cholistān* desert. Without painting a thorough picture of the desert here, let me describe some details of its *Tharpārkar* district, in which the village of *Rāmpur* lies.

Geography and etymology: The name *Tharpārkar* consists of two words: Thar, meaning desert, and *Pārkar,* meaning to cross. Administratively, it has six *Talukā*, usually called *Mithī*, *Ddīplo*, *Chāchro*, *Nangarpārkar*, *Islāmkot* and *Dahlī* with a total of 64 UCs and 166 *Mouza* (revenue villages). The majority of *Mouza* (157) are in rural areas, three are in urban settings, and six are partly urban. The total area of the district is 19,638 square km. In the east is India, in the south *Kachh-jo-Rann* (Rann of Kuch), in the north the *Umerkot* district, and in the west, there are two other districts, *Badīn* and *Mīrpurkhās*. Most of the district's area is desert, comprising barren tracts of monotonous brown dunes covered with thorny shrubs. Sweet water is scant and just found in some areas of *Nangarpārkar* and *Chāchro*. The rest of the area contains brackish water for drinking and cooking. *Nangarpārkar Taluko* is relatively fertile. The climate is tropical, where summers are sweltering during the day, with slightly cooler nights. The hottest months include April, May, and June, while December, January, and February are the coldest. The yearly average of rainfall for some areas is as low as 100 mm, and mostly it occurs between July and September, during the south-west monsoon.

[55] There are different versions concerning the origin of this desert. First, some historians think that this region was fertile and changed into a desert during 2000 to 1500 BC. At that time, a river used to flow in the region that was a main water source for the Indus Valley Civilization. The name of the river was *Sarasvati,* which is one of the main rivers mentioned in Hindi texts. Also, there is a discussion about the region in the *Ramayana* (Hindu mythology), where it is mentioned as *Lavanasagara*, which means salt ocean. Since various dynasties that ruled Sindh province were mentioned earlier, the focus is placed on this district, which did not remain a great concern for the rulers. However, Charles Napier appended *Tharpārkar* to Hyderabad. In 1860, this region was named the "Eastern Sindh Frontier" with its headquarters at *Umerkot*. Similar to other areas, in 1882 British colonisers assigned this area after making *Umerkot* a district for collecting the taxes through *Zamindars* (landlords). However, the headquarters of this district were shifted to *Mīrpurkhās* in 1906. Later on, in 1990, *Mīrpurkhas* was divided into two districts named *Thar* and *Mīrpurkhās*. Again, *Umerkot* received the status of a district in 1994. Presently, in terms of area *Tharpārkar* is the largest district in the province (Information Management and Mine Action Programs 2014b). It is considered one of the most underdeveloped districts of the county according to the Human Development Index (HDI).

Subsistence pattern: Livestock is the primary source of livelihood. Often-used expressions are, "Thar depends upon animals, not crops" and "a poor man [person] was one who owned no cattle or goat" (Herani et al. 2008, n.a). These expressions illuminate the importance of animals for the inhabitants and the human-animal relationship.[56] The livestock encompasses buffaloes, goats, sheep, and camels, horses, donkeys, and poultry.[57] According to a report, *Pakistan Emergency Situational Analysis: District Tharpārkar*, 96 percent of Thar's population lives in the rural areas, has livestock for nutritional – milk, butter, ghee and yogurt – and commercial purposes – selling animals, their wool, leather, ghee, and butter (Information Management and Mine Action Programs 2014b). Local people, usually called *Tharī*, use yogurt as a substitute for curry and can pass the entire day on it (Herani et al. 2008). There are local markets to sell animals. Thar's livestock contribution to the country's economy includes milk, butter, ghee, providing meat, leather, furs, hides, bones, and manure. In contrast, camels, bulls, donkeys, and horses are "working animals" for transport to carry loads, to plow, and for personal transport.[58]

People respect their livestock, and deem cows are sacred. Even in cities like Mithī—the district capital—cows roam around freely, walk in the streets, peep into doors, and enter houses. Sometimes it seems as though they are knocking at the doors with their horns. People give them something to eat, which includes leftovers of *Chapāti* or cooked or uncooked vegetables. The reasons why cows can roam freely are to be found in the belief system that cows are sacred and peacefulness of the area with very few instances of robbery and thievery (see photographs 32-33 and 44 in the annexure 1). The animal, nonetheless, carries an identification mark of the owner, which can be a small cut on the ear or drawings of different symbols on the thighs that are made on the birth of an animal

[56] It is because the topography of the area consists of sand dunes and scarce rainfall, it is highly conducive for rearing livestock. On the relationship between humans and ecology, (see Freilich 1967).

[57] In the district, there are 26 per cent sheep (1,185,122), 48 per cent goat (2,217,876), 16 per cent cattle (752,265), 5 per cent ass (246,657), 3 per cent camel (135,356), 1 per cent buffalo (46,328), less than 1 per cent horse (8,519), and per cent mule (1,475) (Information Management and Mine Action Programs 2014b).

[58] Camels are called "the ships of the desert", and used to carry heavy loads, e.g. wood, grass, and for ploughing in the desert. Bulls are also used for carrying weight with the help of a cart and for ploughing in the fields. Donkeys work as a means to take water out from the well and bring plastic containers filled with water to the houses. Horse carts are used as a transport to carry people. In some places, camels, bulls and donkeys are used for taking water and transporting it. In the targeted village, camels and donkeys were in use.

or at the time of purchase. The cuts and symbols vary with slight or significant differences in forms and shapes, which indicate whose property they are.

During my fieldwork, people were perturbed about their animals that were dying in substantial numbers. To them, this was also *Mātā*, as there were rashes on the bodies of animals: "(…) although *Mātā* (referring to smallpox) disappeared from humans for a while, she has returned to animals." They asked several times if I could be of any help to them. Although smallpox has been eradicated in humans, these people were thinking that since animals are developing rashes on their bodies and then dying. That is why it is *Mātā*.

This district performs dismally in agriculture, as solely nine *Mouza* have an irrigation system available (Information Management and Mine Action Programs 2014b). Severe drought occurs almost every second year, which challenges people significantly in terms of lack of drinking water, enough water to cultivate crops, and a dearth of fodder for animals. The principal crops are pulses due to environmental conditions, except in the nine irrigated *Mouza*, where it is possible to produce cotton, wheat, and vegetables, especially green chilis and onions. *Kunrī* – a *Taluko* of this district – is considered as one of the biggest red pepper markets in South Asia, as green chilis are part of the key products of this area.

Furthermore, *Tharpārkar* contains natural resources such as china clay, granite, coal, and salt. *Tharpārkar* coal or Thar coal fields stretch 90,000 square km; they are the largest coal deposits of Pakistan, constituting 80 percent of coal deposits. Since the country is confronted with an endemic energy crisis, it is therefore believed that Thar coal has the potential to fulfill energy-related needs for centuries (Information Management and Mine Action Programs 2014b).

4.3.1 Food, Education, Health and Sanitation in *Tharpārkar* District

Food availability and patterns: Since measles was linked to malnutrition in the district, it is essential to elaborate on the state of the food supply there. After analyzing the food situation, a report concluded that with all the indicators of food security – i.e., availability, access, utilization, and stability – the *Tharpārkar* district is the district with the highest food insecurity in Pakistan (Information Management and Mine Action Programs 2014b, 19). Environmental conditions, as just mentioned, never allow cotton and sugarcane or cereals such as wheat (10 percent of the *Mouzas*) and rice (1.20 percent of the *Mouza*) to

be produced; hence, production of pulses is the first option. The consequence is a deficit of crop-based food production in the district (ibid.); nonetheless, animal-based food is available in surplus. This district highly depends on its neighboring districts for crop-based food.

Furthermore, it is not merely the availability of food that ensures and defines food (in)security; socio-economic characteristics of the inhabitants also play significant roles in ensuring the accessibility of food. The above-cited report shows that across Sindh province, household expenditures on food are around 62 percent of the total income. Economically, an inadequate level of income, high food expenditures, and high inflation (particularly food inflation) impede access to food. In other words, although sociocultural patters shape the food choice, the affordability significantly determines choices (not) to eat. A household with a monthly PKR 11,000 (approximately US$90) hardly has choices (ibid.). Yet Another factor related to food includes the dependent population: children and elders. The number of family members and economic resources, hence, significantly shape choices about what food to eat.

Population, religion, and language: The total population, according to Pakistan's (2017a), *6th Population and Housing Census 2017*, is around 1.650 million, and 92 percent live in rural areas. The current growth rate of 2.45 percent hints at a doubling of the population after almost 28.5 years (ibid.). The proportion of females and males is 45 and 55 percent, respectively (ibid.). Most of the provincial Hindu population including *Ādīvāsī*, like *Menghwārr* and *Bhīl,* live here. Sixty percent follow Islam and the remaining practice Hinduism (ibid.).[59] The spoken languages are *Sindhī*, which functions as lingua franca in the region, *Tharī*, *Mārwarrī*, and Urdu (understood in some parts).

Education: The overall literacy rate for 10-years old and above is 46 percent: out of this, males are 65 percent and females 25 percent (Information Management and Mine Action Programs 2014b, 19). In rural areas, the literacy rate is 45 percent (females 23 and males 64), as compared to 69 percent in urban areas (54 females and 81 males). Such figures

[59] The original calculation of this report is 60 percent Muslims and 41 percent Hindus and if we add this percentage then it becomes 101 percent. The calculation shows how quantification can depict a situation that is even more than 100 percent.

show a considerable difference in terms of gender and the rural vs. urban divide. The adult literacy rate for those 15-years old and above, however, is merely 37 percent (ibid.).

Healthcare system: Concerning health, one question always dominated in my mind: how do people conceive of and manage health and deal with various illnesses while living in a "harsh" environment with a low level of biomedical health facilities? I have been asking myself if they have been falling sick, which is "normal," how do they restore their health? From what I can tell from my fieldwork, the use of home remedies prepared from herbs and shrubs tends to prevail. This is because the Thar Desert of Sindh contains plants with medicinal value and importance, which have been part of indigenous ways of treatment for a long time. For therapeutic purposes, Ethnobotanists Yaseen and colleagues (2015) found that 87 plant species (see Annexure 2) belonging to 32 botanical families are used by local communities of the Thar Desert. They use herbs, leaves, and seeds in powdered form.

According to this study, almost 26 percent is used in powdered form, and 74 percent as fresh plant material (ibid). Yet other ethnobotanists, Ahmad and colleagues (2006), claim that in seeking primary healthcare, over 95 percent of the rural population depends upon folk medicine with plant origins. The study sums up the underlying reasons as "(i) the strong association of people with the local flora and their traditional knowledge regarding plant use, (ii) economical and easy availability of medicinal plants, (iii) poor access to allopathic drugs, and (iv) lower economic profile of the desert communities" (H. Ahmad, Bhatti, and Latif 2006, 77).

Moreover, there are *Hakīm* and *Bhopa* in the district, in addition to 140 biomedical facilities – which are enough to serve merely 54 percent of the population (Information Management and Mine Action Programs 2014b, 19). The facilities include one District Headquarters (DHQ) with 50 beds; three *Talukā* Headquarters (THQs)with 80 beds; two Rural Health Centers (RHCs)with fourteen beds; 31 Basic Health Units (BHUs) with 62 beds; 101 dispensaries and two Mother and Child Healthcare Centers (MCHCs) (ibid.). The available 206 beds can only serve to six percent of the population (ibid.).

According to the same report, in terms of the immunization profile, 21 percent of children (12-23 months, boys 20 percent, girls 16 percent) are fully immunized, i.e., having received all the doses of the BCG vaccine, three doses of polio and pentavalent vaccines

as well as one dose of measles vaccine in a given year. This report claims that only 32 percent of children are immunized in the urban areas (48 percent of girls and 16 percent of boys). Nonetheless, in rural areas, the percentage of immunized children is 20: 26 percent for boys and 14 percent for girls. Twenty-five percent of women have received a tetanus vaccine: Of this, 37 percent are from urban areas, and 25 percent from rural areas (ibid.).

The difference in immunization based on geography and gender is visible, as in urban areas, the percentage of "fully immunized" girls is higher than for boys, despite a higher percentage of boys than girls, i.e., 58 percent boys, and 42 percent girls. However, in rural areas, boys make up 54 percent and girls 46 percent; accordingly, more boys are "fully immunized." The difference is related to the level of education, awareness, and availability of and accessibility to facilities – whether parents can bring their children quickly to the centers or vaccination teams can comfortably reach the families.

Sanitation and hygiene patterns: The same report mentions that in terms of sanitation conditions, around 51 percent of the population uses non-flush toilets and open spaces (Information Management and Mine Action Programs 2014b, 19). These figures can be questioned as most of the population lives in rural areas, and most of them do not have such facilities. The report calls these conditions "extremely poor" since merely seven percent of the households use flush toilets (ibid.). In rural settings, as previously mentioned, people use open spaces for excretion either around dawn or post-sunset.

Roads: As far as infrastructure is concerned, the district has 743 km of a network of paved roads – some are good and some in bad condition with their surfaces having ripples or undulations. Also, owing to the scattered geographical area (19,638 km^2), the roads are inadequate. A highway connects this district with other districts and cities, including *Thattā*, *Mīrpurkhās*, and *Karāchī*. Surfaced roads connect *Mithī* – the district headquarters – with its *Talukā* headquarters of *Ddīplo*, *Nangarpārkar*, and *Chāchro*.

Across the province, awarding infrastructure projects such as roads has remained everyday politics at a local level, where politicians allocate to their particular contractors in most cases and simultaneously indebt their voters. This way, they make a name for themselves and use the grants as a card for forthcoming elections. Every road, including any government-given infrastructure such as a school, contains a nameplate of the

politician who supported it. Notably, as elections approach, such projects get accelerated to earn votes. Local people also interpret receiving such projects, i.e., roads, electricity, and school buildings/furniture, as an *Ihsān* or *Thoro* (literally: indebtedness and kindness)* of the politicians.

Drinking water: In relation to drinking water, the water quality is terrible in terms of taste, color, and odor, and the quantity is low, as only 47 percent of the population can fulfill its water needs (Information Management and Mine Action Programs 2014b). Sixty percent of the households wait for their turn for more than one hour to fetch drinking water at wells. Almost 85 percent of households use camels and donkeys to obtain water. Twenty-five percent of households fetches water using camels and donkeys with rubber buckets (see photographs 50-51 in the annexure 1). Fetching water is the responsibility of women, as 75 percent of women bring water on their heads and hands in unfired pottery pots or using animals to do so. That report shows that as the average journey to fetch water is around three km, it accounts for 52 percent of their working hours. In some areas, fetching water takes two days.

Moreover, 30 percent of households need to pay around PKR 30 ($0.15) for two rubber buckets of water. According to a government's (2016a) survey, the *Pakistan Social and Living Standard Measurement* (PSLM) 2014-15, 27 percent of the households in Pakistan use tap water, which is mostly available in the urban areas. A similar survey (2011) for 2010-2011 found that 86 percent of inhabitants of *Tharpārkar* have poor sources of drinking water. As two percent of households obtain water through hand pumps; two percent through motor pumps; 77 percent obtain water from wells and five percent through other sources (Information Management and Mine Action Programs 2014b, 19). The water obtained from wells has a sour taste. To save this water, almost every household (in the rural areas) has a reservoir – a small well. The groundwater of *Tharpārkar* is contaminated with different chemicals such as Fluoride and consumption of that water that affects the health of people (Khuhawar, Ursani, Khuhawar, et al. 2019). Soomro and colleagues (2017) claim that it is severely contaminated with high nitrate concentrations.

4.3.2 *Rāmpur* Village's Ethnographic Characteristics

Geographical location: This village is around 50 km away from *Mithī* – where the district headquarters (DHQ) hospital lies and many children suffering from measles and malnutrition outbreaks were brought for medication during 2012-13. Located in the Thar Desert, the village is situated in the monotonous mounds of sand. Other villages in its surroundings include *Godyār*, *Miyār*, *Khākīno*, *Gopatār*, *Āsār*, *Gomānā* and *Dhanī*. Most often and especially for the "outsider," making a village boundary is challenging, as one village encompasses dispersed *Chanworā* (huts). The first mistake an observer may make is to treat the scattered buildings as more than one village that can only be corrected by local people.

After entering the village, as noted in chapter 3, one observes scattered *Chanworā*—newly and old constructed—on the dunes. Cattle, peacocks, peahens, and children make up part of the first impressions (see photographs 27, 43-44 in the annexure 1). The location of *Chanworā* indicates the social groups: *Bhīl* and *Menghwārr* are on the outskirts (at the entrance of the village) and then the *Thākur* are on both sides of a paved road, and the *Kumbhar* inside. Facing the sunrise, the *Menghwārr* are on the right side at a quite a distance away.

According to the socio-economic census (SEC), this village has over 1,000 inhabitants living in around approximately 150 households—around 80 households of *Thākur*, 50 of *Menghwārr*, 15 of *Bhīl,* and 10 of *Kumbhar*.

Religion and social groups: The Hindu population is predominant in this district. One might expect there to be no social hierarchies among them, yet these become apparent after living there for a time. The discrimination against *Menghwārr* and *Bhīl* though is not as strong as it used to be stated that when a Brahmin sees and meets an *Ādīvāsī* and then observes rituals of "purification." Local people themselves do not seem to feel the discrimination against them; nonetheless, *Thākur* (to my understanding) enjoy the top position, and the next two groups are *Ādīvāsī*. Without claiming to be superior openly, *Thākur* certainly does not consider *Menghwārr* and *Bhīl* equal to them. The lower social rank of *Menghwārr* and *Bhīl* appears when one sees specific pots kept on walls reserved in *Chanworā* of *Thākur* (see photograph 36 in the annexure). An *Ādīvāsī* can come inside

Chanworā without any discrimination, yet they would be served in different pots than those used by *Thākur*.

Nonetheless, there was no visible difference or treatment towards the Muslim social group – the *Kumbhar*, whose members prepare unfired earthenware for usage for all groups. A *Thākur* shares pots with *Kumbhar*. Interestingly, the *Menghwārr* do not consider *Bhīl* equal to them; because the latter group does not merely eat meat, but also eats the meat of dead animals that may die a few days ago due to any other reason and give off odors.

The village has several sacred places, which include *Mandar*, shrines, *Marrhī*, *Thān,* and memorial stones (see photographs 37-38 in the annexure 1). However, there is a hierarchy among them; in descending order, it goes as follows: the Mandar of *Malhann*; the shrine of *Hārīo* – who was a devotee of *Malhann Devī*; *Marrhī* of *Kaisar Purī*; *Māujī Thān*, *Manbhan Thān*, *Gogo Thān*; and the memorial stones (of Sati and heroes) (see Kalhoro 2015). Apart from these sacred places, there are reserved spaces in the houses of *Thākur*, *Menghwārr,* and *Bhīl* for worship, which contain small altars for pictures and statues. The *Kumbhar* observe prayers in their houses as the village is without a Masjid. The languages spoken in this village include *Dhātkī* (linked to *Mārwarrī* and *Sindhī*), and the inhabitants are proficient in the *Sindhī* language and can communicate effectively.

Political organization: The village head – usually known as a *Patel* – is an older man who solves problems. The chances of occurrences of problems are, however, quite minimal. In the Thar Desert, feuds rarely exist, except for some disputes and quarrels. People here live peacefully. As noted earlier, animals are always unchained and unaccompanied by the owner. There is no fear of thieves. Moreover, the *Patel* comes from the *Rājput* social group, and other social groups also have their influential people called *Mukhī*. For small issues, each social group first consults its influential person.

Family and marriage patterns: Joint, as well as nuclear families (less common), prevail in this village. According to the socio-economic census (SEC), the largest family has 13 family members, and the smallest has four. A male member is the head of the family; however, in decision-making activities, older women such as mothers and grandmothers of the head also play a significant role: *Rājput* and *Kumbhar* practice endogamy. To them, the underlying logic includes being easy to accommodate with a known person, family,

and knowing the character of each other, considering their social groups better than others. Owing to exogamy, daughters will go to "outsiders" and will suffer if they are away from sight. In contrast, the *Bhīl* and *Menghwārr* opt for exogamy, considering cousins (from mother or father's side) equal to siblings, as it was observed in *Rahīmpur*. They search for matches in far-flung areas to ensure that there have been no blood ties between the two families for generations. Some mediators also help to search for a proper match.

Housing patterns: As stated previously, houses are locally called *Chanworo* or *Jhuggī*, built from bushes, branches of trees, wood, mud, and in some cases, of unfired bricks (see photographs 39-42 in the annexure 1). The bushes, branches, and wood come from the trees available in the area. According to local people, *Mātā* recommended some specific trees and bushes that include *Kandī/Khejrī/Jhand/Sangrī* (Prosopis cineraria), *Kumbhāt/Kumātiyo* (gum Arabic) (Acacia Senegal), *Bbair* (Indian Iujube) (Ziziphus vulagaris), *Aku/Aakado/Aakra* (Giant milkweed) (*Caliotropis procera*), *Kirarr/Kair/Ker/Kareel* (*Capparis decidua)*, *Khabarr/Khāro Jaal/Bada Peelu* (*Salvadora oleoides)* and *Khip/Kheemp* (broom brush) (*Leptadenia pyrotechnica)*. Both male, as well as female members, go to gather the material and bring it on donkeys and camels or also on their heads and shoulders. Family members and some relatives work together to construct the *Chanworo*. Creating its circular shape, they build a wall with mud and unfired bricks or clay though there are also houses built by fixing the wood in the ground (see photographs 39-42 in the annexure 1), and they are then covered with mud or houses built purely with bushes, branches, and wood. The size of a house varies, but the general size is around 10-12 feet inside. The roof is conical and skillfully thatched with stalks of locally available plants and trees. In the center, there is a pillar of wood – obtained from trees such as *Kandī Khejrī/Jhand/Sangrī* to support the whole *Jhuggi*. The houses also reflect the economic and social position of the people. One may have more than one *Jhuggi* or one built with fired bricks and colorful ropes (e.g., some houses of the *Thākur*). One family may own from one to six *Jhuggion* (plural of *Jhuggi*).

Not merely the material and trees are recommended by *Mālhann Mātā* for constructing a *Chanworo*, but also what and how to construct it (see photographs 39-42 in the annexure 1). Circular shape with a conical roof using local bushes, branches, and wood is permissible. Material to be avoided includes cement, fired bricks, and rectangle shapes.

Failing to follow the codes brings harm. For instance, during my fieldwork, almost 50 houses caught fire and burned down. People were saying that the fire occurred because these people violated the codes as they used cement and bricks to build walls: The fires were a punishment from *Mātā*.

Subsistence patterns: In terms of economic and subsistence patterns, people predominantly depend on the rain because of the unavailability of an irrigation system. The rain helps them to grow crops such as millet, pulses, chilis, tomatoes, and watermelon. Camels are mostly used to plow the land. Chemical fertilizers are used minimally (or not at all). As already mentioned, the primary source of subsistence is animals such as cows, sheep, camels, and donkeys. Cows are treated as sacred animals and are the highest yielder of milk. Sheep are a source of wool, and camels are a primary source of transport. People also work as laborers in nearby cities and prepare handmade crafts. Making embroidery, *Rillī*, is quite popular, especially among females. The *Kumbhar* are engaged in the making of unglazed pottery (see photograph 28 in the annexure).

Food patterns: Staple food includes Bajra and wheat. People prepare *Manī* (bread) with the flour obtained from millet or wheat; and serve it with pulses, vegetables, beans and *Sangrī* (seed pods obtained from local *Kandī*/*Khejrī*, *Rohirrā*/*Luar*, and *Kumbhat*/*Kumatiyo* trees. During the extreme summer and the days of drought, people extensively rely on *Sangrī*. Animals and people simultaneously depend on these two trees which, despite the extreme temperature, remain green and provide this fruit. The economic position of a family also considerably shapes food patterns. Eating vegetables, for instance, is not affordable for all the village inhabitants. As in the *Rahīmpur* village, food is eaten three times a day– in the morning, at noon and in the evening. Yet the type of food eaten at noon and in the evening differs significantly between these two villages. As in the time of drought, these people only eat *Sangrī* or vegetables with water. Due to food shortage, the curry contains more water than ingredients. One day I was given *Manī* at a *Thākur* house, after playing a local game usually called *Shīhan-ain-Bbakrī* (literally: lion and goat)* at noon. It included *Chapāti* and Indian baby pumpkin.[60] The bowl contained more water than pumpkin. Similar to *Rahīmpur*, cooking and serving are the

[60] Two people play with two pieces each on drawn lines on the ground. You first place one piece, then the other player places his/her piece, and then it is your turn and the other players' turns. The central purpose is to block the pieces from moving further.

responsibilities of women. Men eat first; however, children and elders receive food as soon as possible, or children and fathers eat together while the women eat last.

Education: Many inhabitants have no formal education. *Thākur* have more formal education than other social groups because they are slightly better off economically. Overall, there are around 70 individuals who have formal education, and most of them are children attending school. The highest level of education in the village is the higher secondary school certificate (HSSC). There are two individuals with higher secondary school certificate (HSSC), five with secondary school certificates (SSC), six with middle school (eighth grade) education, and around ten with primary education. The rest out of seventy are presently enrolled in the school. For education and school-going enrollment, the male ratio is higher than females.

Interestingly, the ratio of educated women was higher in the *Menghwārr* social group. Among the adult population, the older literate male is in his 50s, as compared to the literate female who is a teenager. Moreover, there is one primary school 1 km from the village, with three teachers. Children do not only come to school from this village but also from nearby villages that have no school. The college for grades 11 and 12 is around 25 away.

Patterns of dress: Gender and religion significantly influence dress patterns. Females wear *Ghāgharā* (shirt) and *Pothīo* (a small shirt) for the upper part of the body. Married females also wear white bangles up and down their whole arm, covering everything from the shoulder to the hand – and a nose ring. An unmarried female wears bangles from elbow to hand and wears no *Nath* (nose ring that goes from nose to one year).* The male members wear *Dhotī* or *Lungī* (a type of sarong) and *Pothīo* – shirts different from the female ones.

Most importantly, dresses patterns of Hindu and Muslim vary. *Kumbhar* females wear loose *Shalwār-Qamīs* (loose trousers and shirt) and wear colorful and thinner bangles. The male members also use *Shalwār-Qamīs* and *Dhotī*, but the wearing style is different. Used as a source of identification, dress patterns reveal to which social group an individual belongs.

4.3.2.1 Available Facilities in Rāmpur Village

One private bus, locally called coaster, runs as a leading public transport provider between the district headquarters, other cities, and villages. It was old in condition, yet fully decorated with locally produced handicrafts such as handkerchiefs and decorations made from beads see photograph 47 in the annexure 1). Bollywood music (most of the time), or *Sindhī* songs are regularly played with a high volume during the ride. The front half of the seats is reserved for women and the second half for men. However, if the number of women increases, then men offer seats to women. The conductor of the bus asks men to stand up, or men intentionally do that, as offering a seat is considered a gentleman's act. Men also sit on the roof of the bus if needed. The interval between the two buses is always 1-2 hours. Besides the bus, a few people have motorbikes. Apart from road transport, people use camels and *Kekrro* (a local name for trucks) to travel across the mounds of sands. Trucks, which are also quite old, have distinct types of tiers and are used for carrying the weight and as public transport. There is one truck available in the village that is used for the stated purposes (see photographs 48-49 of the Annexure 1).

Drinking water: As I described earlier under the description of the district *Tharpārkar*, since the water is scarce, people considerably depend on rainwater, accumulated in the reservoirs in the form of ponds and wells (in the district headquarters, there is a famous well of sweet water owned by a family, who sells and supplies it in the whole city using donkeys and camels). This water is consumed for drinking (by humans and animals) and domestic purposes. Donkeys and camels help fetch water from the wells, and after that, people either take it in earthenware or rubber bags – made up of tubes of tires – which are carried with the help of donkeys and camels (see photographs 50-51 in the annexure 1). Women can also go to fetch water and bring in on their head or waist. They reserve that water in a small dig in the courtyard of their houses; the dug-well is either made of cement or is a big pot of glazed pottery (see photograph 51 in the annexure 1). As noted earlier, the quality of water has a strange color, taste, and odor. The groundwater is saline to brackish and contains a high concentration of several salts and minerals that are considered harmful to humans and animals. Despite that, people use it for drinking, cooking, washing, and bathing.

Sanitation and hygienic patterns: In *Rāmpur* village, the houses are without a bathroom or latrine. For defecation, people go to the open fields and mounds of sand, preferably

during the darkness either early in the morning or late evening. For the children, however, there is no time limit. The sanitary system is entirely non-existent. As far as hygienic conditions are concerned, animals also have close abodes to where the humans living. People do not avoid animals such as buffalo, cows, goats, and sheep. Kitchens are mostly open; thus, the wind easily brings particles of sand into the curry or *Mānī*. And, house cleanliness is the responsibility of women who clean their houses daily.

Electricity supply: The village has a low-voltage electricity supply; some people own simple non-android mobile phones—there are no smartphones at all. To charge them, people have 8-10-inch solar plates. Usually, communication occurs through word of mouth. The news reaches people via radio, or sometimes, people bring Sindh newspapers from the city. Television is non-existent here. There is no police station nearby, except one in the district headquarters as mentioned above

Healthcare system: The village of *Rāmpur* has no biomedical healthcare facility. Local people, like many in the desert, use home remedies, especially plants to deal with health and illness. To say healthy, most people sleep and rise early. For pregnant women, each social group has a *Daī* (a traditional skilled birth attendant) who provides care right from conception. Deliveries of women take place at home, not at hospitals. One local woman gives vaccinations against tetanus to the pregnant women along with her husband. During my fieldwork, this vaccination was organized. Her husband (one of my key interlocutors) hung a banner at his small shop in the village and started vaccination (see photograph 53 in the annexure 1). He had a register containing the names of candidates to receive the vaccination.

4.4 Concluding Remarks

In this chapter, I described the locale where the research was mainly conducted. After drawing a vivid ethnographic sketch of Sindh province, the primary emphasis was on the selected districts, i.e., *Sakhar* and *Tharpārkar*, and the two villages, i.e. *Rahīmpur* and *Rāmpur*. I provided a short history and depiction of the present sociocultural, economic, and political characteristics, as well as the available governmental health facilities in these districts and villages. It is because these characteristics are necessary to contextualize measles. In other words, the chapter not merely detailed the ethnographic features of the selected locale, but it also described the available governmental facilities,

health, education, and roads in particular. This illustrated a dearth of necessary facilities—for instance, concerning health and education—and infrastructure, which are a result of various forms of organized inequalities and that further result in severe consequences, such as outbreaks of measles. In the next chapter, I will describe the conceptualization of health and illness.

CHAPTER 5: THE CRITICAL GEOPOLITICAL EVENTS: MAKING SENSE OF ANTI-VACCINATION SENTIMENT

This chapter revisits the critical geopolitical events that have significantly impacted on Pakistan. It not only traces indelible impressions of geopolitics but also provides a substantial analysis of those that are visible in regard to the current state of Pakistan: socio-culturally, politically, and economically. The current chapter, therefore, focuses on how geopolitical regimes have appropriated more favorable circumstances for rumors, conspiracy theories, and resistance, as well as caused socio-economic and political disparities, eventually resulting in several crises, including health problems. The chapter deals explicitly with how geopolitics has impacted on the immunization programmed in the country, which has importantly contributed a set of obstacles to eliminating infectious diseases. The immunization programmed has received resistance from the "extremist" segments, e.g., religious leaders (not all of them) and *Tālibān*, and from the society, which relates vaccination to the ongoing geopolitics (see chapters 3, 11 and 12). Government officials and global stakeholders hold extremists accountable for the low uptake of vaccination and killing of the vaccinators: Their opinions and actions, therefore, are responsible for the prevalence of various microorganisms in causing outbreaks and suffering. However, broader geopolitical and economic factors have germinated the seeds of extremism in the country, thus, these lie behind these specific perceptions.

Considering that every event is inexorably intertwined, revisiting the critical geopolitics is profoundly necessary to achieve considerable and historical insights to trace the roots of current local perceptions related to the vaccine in the country.

According to Tariq Ali (1983, 164), a British-Pakistani historian and journalist, such dramatic changes shaped global and regional priorities, which are essential to analyses the quandary of the Clerico-military dictatorship in Pakistan. This chapter posits a historical account of Pak-Afghan relations; the USSR invasion; Zia's *Jihād*; production of *Mujāhidīn* as villains; then it follows their intricate interconnection with Anti-American, anti-Western and anti-vaccination sentiments.

5.1 British Colonization: A Brief Overview

The rise of extremism in the country is a result of—present and past events—geopolitics. Colonizers subjugated the colonies and dehumanized the colonized regularly and treated

them as commodities in the world market. Pakistan (when it was part of the same country as India) long remained under British colonization. Although the colonization ended, the damage it caused has continually persisted in terms of weaker economic and political systems (see sections on Pak-Afghan relations; Indo-Pak relations) (e.g., Zaidi 1988; Imran Ali 2002; Easterly 2006). Zaidi (1988) has explicitly documented the impact of British colonization on the healthcare system of Pakistan, explaining how "Brown-Englishmen" affected the systems once the British left India (see chapter 7). After the colonization, new forms of imperialism emerged (see the section on Pak-US relations).

Over time, the strategic importance of the territory that is now Pakistan and its resources attracted the British colonizers and other prior invaders such as Greeks and Mongols. For the resources, the British colonizers came to India and ultimately established the East India Company or the English East India Company in 1600. Taking advantage of India's fragile economic and political situation, they invaded India to rule. Precisely, the British enormously impacted the socio-cultural, economic, and political situation of South Asia: internally and externally. Internally, the countries were involved in civil wars and separated. The old India separated into three countries--India, Pakistan, and Bangladesh. Indo-Pak partition occurred in 1947, and Pak-Bangladesh separation in 1971. Externally, animosities emerged between neighboring countries such as Pakistan vs. Afghanistan, specifically due to the Durand line (see the next section), and Hindustan vs. Pakistan (there are several reasons), mainly due to the Kashmir issue. The latter relations are less related to this project on measles. Hence, I focus instead on the former events and relations for tracing the roots of extremism or anti-West, anti-American, and anti-vaccination sentiments.

5.1.1 Pak-Afghan Relations

The British triggered a critical event when they divided the borders of Afghanistan and the old India (present-day Pakistan) in accordance with the Durand Line,[61] which created unfriendly relations between the two countries. The British's 1893 division sketched the 2,640 km border between Afghanistan and British India that separated the region of Pashtun or Pathān settlements. Bruce Riedel (2011, 22) – who is an American expert on the US security, South Asia, and counter-terrorism – views that for Afghanistan, it was an

[61] That division received the name after Henry Mortimer Durand who was its architect and the foreign secretary for India.

injustice with the country; therefore, since then neither the people nor any Afghan government has ever recognized the legitimacy of this British-drawn line.

After the departure of the British colonizers from the old India in 1947, Afghanistan was the mere country that refused to accept Pakistan's independence in the United Nations (UN). Riedel (2011, 21) mentions that more importantly, Afghanistan demanded the revision of this division and voted against Pakistan receiving a seat in the UN while demanding an independent *Pashtunistān* to be carved out of Pakistan. Such events aroused animosity between these two countries, which was worsened during the USSR invasion in 1978 when the Marxist officers in the Afghan army overthrew the Afghanistan government to introduce the communist ideology and politics there (ibid.). As an event, this invasion ignited rebelliousness in Afghanistan's rural parts and mainly in the areas with long-standing contacts with Pakistan's Inter-Service Intelligence (ISI) and religious parties, especially the *Jamāt-i-Islamī*. During this movement, rebels received arms from the ISI while the USSR supported the new communist government in terms of arms and advisers (ibid., 23).

Nirode Mohanty (2013) traces the roots of this intervention to the "Great Game" that was a political and diplomatic confrontation between the British and Russian Empires over Afghanistan and other neighboring countries.[62] The game commenced in the 19th century when the Soviets extended their empire in the south to the border of Afghanistan, and British imperialists wanted to halt the Soviet's continued expansion in the direction of India. Mohanty (2013, xii) claims that the British aimed to make Afghanistan a buffer state between both these empires. Notwithstanding, the Union of Soviet Socialist Republics (USSR) restarted this game in 1979, but after that, America revitalized it during 1989 after the Soviets departed from Afghanistan (ibid.).

5.2 Making Pakistan an Ally

After British colonization, imperialism dominated South Asia.[63] Tariq Ali (1983, 188-89) stated that the area seemed vital due to two main reasons: (a) its geographical location adjacent to the USSR, China; and (b) close to the oil-rich Arab Gulf that held a crucial significance for the resources and was vulnerable to any regional political unrest. He

[62] To elucidate the rivalry between these two countries, Rudyard Kipling used the term "Great Game," for the first time in his novel Kim in 1901.
[63] By that I never mean that imperialism ceased to exist elsewhere, except South Asia.

further argued that in the South Asian region, Pakistan emerged as a suitable country to approach; thus, the new Western imperialists moved to make it an ally in the 1980s. We can classify the underlying reasons into four categories: (i) Pakistan's internal situation; (ii) Pakistan's geographical location; (iii) the Iranian Revolution; and (iv) the USSR's invasion of Afghanistan.

The first, after independence in 1947, Pakistan encountered huge socioeconomic and political problems, especially after two big wars with India in 1965 and 1971 and a civil war in which Bangladesh separated in 1971. Both events overwhelmed Pakistan's confidence to develop its significantly affected economy. Ali (1983) claimed that the country was on a quest for the resources and support to recover and progress, and to achieve parity with India in particular. As soon as the USA offered its support in the 1980s, Pakistan accepted it.

Second, as already mentioned, Pakistan was believed to hold an essential strategic position in South Asia, as it shares borders with Afghanistan and Iran in particular where new political events were happening, mainly the fall of the Shah of Iran – an American ally – and the gradual spread of communism.

Third, the Iranian revolution overthrew Nadir Shah despite the West's material aid, the USSR's tacit support, and China's public endorsement (T. Ali 1983, 182). The people throughout this geographical region celebrated Shah's collapse as a victory because Shah interfered in the internal political life of Afghanistan and Pakistan (ibid., 181). In contrast, in the collapse of the Shah, the US lost its old loyal friend, and a great ally in a vital zone for influencing events throughout the region and America also saw the Shia-Islam's government as a significant threat due to an emerging anti-American sentiment in Iran (ibid.). Hence, the US wanted an ally in that geographical area—the weakest ally was the most desirable to manipulate. As noted earlier, the US approached Pakistan.

Fourth, during these substantial changes in the regional power structures, the USSR invaded Afghanistan, which was yet another threat: the spread of communism. In December 1979, Leonid Brezhnev – who was the Secretary-General of the Community Party and the de facto leader of the country – issued orders to the Soviet forces to invade Afghanistan. He initially did this to support the communist regime of Hāfizullah Amin in Afghanistan. Despite its reluctancy to engage in an emerging civil war and a possible

quagmire, the deteriorating situation compelled the Union to protect a client state through an intervention (Riedel 2011). Subsequently, on the evening of 25 December 1979, around 85,000 Soviet troops entered Afghanistan by advancing the army to Pakistan's western frontier (ibid., 23) to fight against the tribal resistance groups. In particular, it conducted a rapid surgical operation to secure Kabul – the Afghan capital – and safeguard communication lines linking Afghanistan and the Soviet Union (Mohanty 2013, 68; Wynbrandt 2009, 218). Soon after the invasion, the Soviets wanted to have a more compliant leader. Amin was therefore assassinated on 28 December 1979, and Babrak Kamal became the new president, who was a Soviet protégé and puppet (ibid.).

Such regional political events cultivated a context in which Pakistan received a massive amount of attention from the strong geopolitical actors, especially the USA and the USSR. Pakistan was already standing at a crossroads to seek external support. Hence, besides the big players, the third and fourth events mentioned above—the Shia-Islam's dominance in Iran and the arrival of communism in Afghanistan—emerged as rising threats to Pakistan. Ali (1983, 164) notes that for Pakistan, (i) the Iranian revolution that occurred after defeating the Shah in February 1979, (ii) the left-wing coup in Kabul in 1978, and (iii) Mrs. Gandhi's re-emergence as a head of a victorious Congress Party in India, posed new challenges that led Pakistan to seek external assistance to deal with them. In this search, "the military-bureaucratic complex," and its favored politicians, "sold their souls" to the USA (ibid., 189).

Contrary to Pakistan, India cultivated the idea of "positive neutralism" from right after the Indo-Pak partition (ibid.). India kept a distance from joining the American-sponsored military alliances, and the orientations of the Soviet leadership, and Jawaharlal Nehru – an Indian leader – made efforts for a "Third-World" nationalism, which was "anti-imperialist".

The internal and external challenges made Pakistan a suitable ally. America approached Pakistan and supported it from 1954 to 1965 in the shape of weapons and vivid infiltration of armed forces to defend "communist aggression". The USA promised to India that the weapons would not be used against it, but the weapons were used in Indo-Pak wars, e.g., 1965 and 1971. Harrison (1981) states that for breaching this promise and seeking India's sympathy, the USA cut its military aid to Pakistan, which resumed after

Kissinger and Nixon softened towards Pakistan. America also supported the Pakistan army during the civil war in Bengal in 1970-72 while considering it "as a more reliable defender of [the] US interests in the region" (T. Ali 1983, 189). This American backing made Pakistan's army more influential than the civilian governments, who then ruled the country.

Support was given to the dictators to receive their cooperation, which was required for strategic American interests. The Central Intelligence Agency (CIA) intervened, Ali (1983) argues, because of America's dominant regional obsession with maintaining its status quo in the Gulf. The support arrived to defeat an enemy, not to support a friend. Countries encouraging Pakistan to stand against the USSR were following their vested interests and playing their politics. The USA, James Wynbrandt (2009) notes, was engulfed with the Iranian hostage crisis when the USSR was invading Afghanistan; thus, it was challenging for the States to take more decisive steps. Despite that, Carter had signed a secret deal to support the rebels fighting against the Communist government in Afghanistan six months earlier. As soon as the Soviets invaded Afghanistan, the USA mobilized Muslim countries around the world to lead a propaganda campaign and provide covert aid to work against the Soviets. This move was intended to trigger the Muslims' religious fervor in terms of believing that the Soviets are infidels and that fighting against them would be a holy war (ibid., 218). For the US and its allies, no other country was as suitable as Pakistan to fight that holy war. Soon after the Soviets invaded, the USA approached Pakistan to be its ally to wage war against the USSR through its assistance to produce "*Mujāhidīn*: the holy warriors" (Mohanty 2013, 68; Cordovez, Harrison, and Harrison 1995). According to Wynbrandt (2009, 218-19), Pakistan accepted the generous offer and consequently "money and matériel were routed through Pakistan" to support the *Mujāhidīn*, "who were organized to battle the infidel invaders" and the country "received most-favored-nation [sic] trading status" for supporting the US plans.

Moreover, after the Union of Soviet Socialist Republics (USSR) invasion in Afghanistan, it was not only the US, but Saudi Arabia and its allies were also extremely concerned about Soviet designs in the region. They significantly supported Pakistan in deepening its activities against the Soviet invasion (S.G. Jones and Fair 2010, 11; Mohanty 2013, xiv). Riedel (2011, 23) notes that the Saudis were already panicked due to an expected Marxist threat in Afghanistan. Therefore, Prince Turki, Saudi Intelligence Chief, immediately

agreed to engage his General Intelligence Directorate (GID) with the ISI and provide funds to support the Mujahedeen. Furthermore, the Saudi government also stimulated citizens to lend private financial support to the *Mujāhidīn* to join an ongoing *Jihād* (ibid., 23). Concerning the aid to Pakistan, Yousaf and Adkhin (1992) indicate that approximately half of this money came from US taxpayers, and the rest came from the Saudi government and its wealthy Arab individuals.

Mohanty (2013) mentions that Pakistan's Directorate for Inter-Service Intelligence (ISI), worked as a liaison between the governments of Pakistan, the US, and the *Mujāhidīn* to maintain the relationship. He further (2013, xiii) claims that the military dictator General Zia-ul-Haq, a Pakistan's President, used *Jihād* to defeat the Soviets – the *Kafir* (infidels) – with an enormous amount of external support in terms of "money, military hardware, and training" to produce *Mujāhidīn* (holy warriors) so that radical Islam resurged with thousands of radical madrassas and mosques.

Riedel (2011) ascertains that with the support of the Saudis and the CIA, the ISI became able to train *Mujāhidīn* by arranging training camps along the Durand Line to fight against the Soviet invaders effectively. Pakistan engaged its elite Special Services Group (SSG) in the training camps to train around 100,000 Muslims who came from a dozen countries to fight a "holy war" (Wynbrandt 2009; Riedel 2011).

According to Riedel (2011), the Soviet invasion offered Washington an opportunity to renew its cold war "love affair" with the Pakistan army and its intelligence agency. Carter's national security adviser, Zbigniew Brzezinski, visited Pakistan and offered more assistance for the *Mujāhidīn* and Pakistan. General Zia refused the first offer, considering it "peanuts," which was subsequently increased and took the form of trilateral relations – the American CIA, Saudi's General Intelligence Directorate (GID), and Pakistan's Inter-Services Intelligence (ISI). As a result, Washington and Riyadh provided matching grants of money and arms, and *Islāmābād* dealt with distribution and training (ibid., 27).

Riedel (2011) additionally claims that Charles Nesbitt Wilson was an early enthusiast of the war effort, the Afghans, and especially of General Zia. He was part of the US White House committees for funding covert operations, providing the CIA with more money than they demanded, and equipping the *Mujāhidīn* with the Stinger surface-to-air missile system to ensure the defeat of the USSR by making it difficult for the Russians to control

air traffic (ibid., 28).[64] Moreover, American President Ronald Reagan "waived the aid sanctions imposed on Pakistan under the Symington Amendment", that "assistance" "helped Pakistan's economy, removing the financial problems that had beset earlier regimes" and made the Pakistani army "able" to be modernized "with a $3.2 billion military-assistance package and the US provided weapons and training" (Wynbrandt 2009, 219).

A decade's involvement in the Afghan war made the USSR no longer able to continue the war that it was losing due to massive international support provided to the *Mujāhidīn*. Thus, the Union started negotiations to withdraw from the war under Zia's tenure (S.G. Jones and Fair 2010; Wynbrandt 2009). As a result, the Geneva Accords – an agreement to end the war – were signed on 14 April 1988. The USSR faced a defeat in Afghanistan in 1989 and disintegrated in 1990. The Soviets departed while leaving behind an unstable Communist regime, which was hardly in control of Kabul. Wynbrandt (2009, 219) states that the *Mujāhidīn* and the West interpreted this collapse of the Kabul government in April 1992 as a grand victory for Islam and a significant defeat for communism, respectively. With the enormous external support of the US and its allies, the trained *Mujāhidīn* made Afghanistan into what became known as the USSR's Vietnam, as the war killed over one million Afghans, and created five million refugees (ibid., 219).

5.3 Impact of the USSR Invasion on Pakistan

The war ended in 1988. Notwithstanding, its adverse impacts remained in the region. The effects resonated continuously across Pakistan in the form of drug trafficking and gunrunning, which had formerly played a role in the fight against the USSR. Wynbrandt (2013) argues that the *Mujāhidīn* or "freedom fighters" started fighting with each other in Afghanistan and transformed the country into a lawless society. Eventually, the *Tālibān* "Islamic fundamentalists" controlled Afghanistan and created a safe abode for the "militant Islamists" (ibid., 219). Mohanty (2013) argues that the *Tālibān* – a mixture of *Mujāhidīn* – fought in Afghanistan against the Soviets in the 1980s, they emerged as a

[64] Charles Nesbitt Wilson (1933-2010) – a representative and naval officer and former 12-term Democratic US Representative from Texas – almost had 'three dozen trips to the region, stopping in Cairo, Jerusalem, Riyadh, and Islamabad each time to get backing from America's key allies. Usually accompanied by a beautiful woman, Charlie flattered the allies, and they flattered him, even to the point of making him a secret field marshal in the Pakistani army' (Riedel 2011, 28). At the time of Zia's death in August 1988, "Wilson wept, telling Akhtar's successor, Hamid Gul, "I have lost my Father on this day." (George Crile III cited by Riedel, 2011, p.28).

significant force in Afghan politics amid a civil war between forces in northern and southern Afghanistan in 1994. *Tālibān* initially controlled the southern city of Kandahar, and in 1996, they reached Kabul through a mixture of force, negotiation, and payoffs to form the national government (ibid., 82). After that, the *Tālibān* took over Afghanistan.

According to Mohanty (2013), in 1976, with the support of the Inter-Services Intelligence (ISI) and the Central Intelligence Agency (CIA), Gulbuddin Hekmatyar – the Prime Minister of Afghanistan in 1993-94 – founded the *Hizb-e-Islamī* (Party of Islam, HeI) in Pakistan. Mohanty also writes that during the Soviet invasion, Hekmatyar received substantial American and Saudi aid to fight against the Soviets. Then he was involved in drug trafficking and advocated for a centralized Islamic State. Once the Soviets departed from Afghanistan, he declared the USA as Afghanistan's greatest enemy (ibid.). The HeI was associated with the deaths and destruction that paved the way to the *Tālibān* rule. After that, during the *Tālibān* regime, Hekmatyar took refuge in Iran and declared to fight against the coalition forces until foreign troops left Afghanistan, and an Islamic government ruled Afghans. Meanwhile, Hekmatyar attempted to assassinate Afghan President Karzai, and in December 2002, the CIA revealed he had joined Al-Qāidā and helped Osama-bin-Ladin to escape to Pakistan. In 2003, the US declared him a terrorist (ibid., 84).

The micro-story mentioned above illustrates the production and spread of the *Tālibān* in the region, mainly in Afghanistan and Pakistan. It was "the defeat and departure of the Soviet Union", and on the other hand, the USA abandoned Pakistan with "thousands of weapons, training camps, and hundreds of thousands of well-trained *Mujāhidīn* terrorists," who caused havoc in this region such as suicide bombings (Mohanty 2013, xiv). This war helped Pakistan to expand its armed forces merely through the weapons given by the USA. To pursue the *Jihād*, the country employed religious institutions and parties, e.g. the *Jamāt-e-Islamī* (JI) and the *Jamīat-e-Ulemā Islamī* (JUI) to establish Pakistan-based militant groups for operation in Afghanistan (S.G. Jones and Fair 2010, 11).

After the war, yesterday's *Mujāhidīn* have posed extreme challenges for the country. As on 8 June 2014, the TTP and the Islamic Movement of Uzbekistan (IMU) – an Al-Qaeda linked military organization – claimed responsibility for an attack on Pakistan's Jinnah

International Airport in *Karāchī* (Golovnina 2014). Consequently, on June 15, 2014, the country's army launched Operation *Zarb-i-Azab* – a joint military offensive – against several militant groups in the North Waziristan region of Pakistan along the Afghanistan border. This operation targeted the TTP, the IMU, the East Turkestan Islamic Movement, *Lashkar-e-Jhangvi*, *Al-Qaeda*, *Jundullah,* and the Haqqani network.

Against this operation, six militants carried out an appalling massacre of schoolchildren of the Army Public School of Peshawar that occurred on December 16, 2014. Many media reported that the militants were foreign nationals: one Chechen, three Arabs, and two Afghans. This deadly inhumane assault killed around 150 people, including 132 schoolchildren. The *Guardian* – a UK's newspaper – called this attack "Pakistan's 9/11" (Fishwick 2014). Afterward, several changes took place in the country; they included, among others, lifting its moratorium on the death penalty and authorizing military courts by a constitutional amendment. The army launched a country-wide operation called Operation *Raddul Fassad* that targeted these radicals.

5.3.1 Zia's Islamization and Beginning of Extremism

After seizing power from a democratic government, General Zia ul-Haq became the president of Pakistan, and in the name of restoring public order, suspended the promised elections to set the country on "an Islamic course." The Soviet invasion significantly fueled the realization of Zia's dream. Mohanty (2013, 68) maintains that the country, through waging a holy war (*Jihād*), nurtured Saudi Arabian Wahabi school, in which the Saudi government financed several critical projects in Pakistan, alongside the insurgency in Afghanistan. During this enthusiastic engagement in the Afghan operation, according to Riedel (2011, 28), the US remained inattentive to the other plans of General Zia, such as nurturing *Jihād* in Pakistan, i.e., the flocking of volunteers from other countries to Pakistan to help the *Mujāhidīn*.

Riedel (2011) illustrates that Zia had already planned for the "next stage of *Jihād*," to wage wars with India and in Kashmir, since the inception of the Afghan war. In the early 1980s, Zia secretly met with Maulana Abdul Bari – a *Jamāt* leader and veteran *Jihādist* who fought in Operation Gibraltar in 1965 and promised that he would use the war against the Soviet invaders to build a support base for a Kashmiri insurgency (ibid., 25-6). To achieve this aim, Zia consulted the *Jamāt-i-Islamī* Party, whose founder Maulana Sayyid Abul A'ala

Mawdudi, already advocated using force to make a Muslim state within India and opposed the secular vision of Jinnah and Jinnah's independence movement; later on, the party became the army's enthusiastic and active ally during the war against Bengali freedom in 1971.

Tariq Ali (1983, 164) notes that Ronald Reagan's winning of the US election in November 1980 occurred "as a sorely needed relief for military dictators" across the world, including Zia of Pakistan. As noted earlier, the Soviet invasion in December 1979 created an opportunity for both the US and Pakistan to support each other against their rising enemies. During this time, Zia made substantial efforts to strengthen the influence of Islamic parties and the *Ulemā* (religious scholars)* on the government and society with implicit American support for the formation and activities of militant extremist groups (Wynbrandt 2009, 215-16).

In his first address to the nation, Zia promised to make an exemplary Islamic society. He formed a government Sharia committee or religious law court for dealing with the cases according to the Holy *Qurān* and the Sunna.[65] The council was responsible for adjusting the legal statutes of the country, such as putting in place the Islamic ban on paying interest (literally: Riba), performing prayers five times daily, and avoiding food and drinks during Ramadan (ibid., 216).

Creation of a "real" Islamic society continued through introducing the Islamic Hadood (boundaries or limits)* into the country's law to deal with "the drinking and manufacturing of alcohol, theft, adultery, false accusations of adultery, and highway robbery" (ibid., 216). General Zia passed this Hadood Ordinance in February 1979, to order punishments such as floggings, amputations, and death by stoning. Explicitly, the third ordinance adversely impacted women so that if a woman is raped and becomes pregnant as a result, she could be charged with adultery, and in that case, a testimony of two women together would invalidate the testimony of one man (ibid., 216).

Later, the *Zakāt* and *Ushr* Ordinance was passed and adopted in June 1980 to engage Islamic scholars to incorporate the Islamic principles and laws relating to finance and the economy. This ordinance introduced an annual deduction of 2.5 percent as *Zakāt* — a

[65] The book of conventions of the Prophet's axioms and deeds to follow Islamic law

form of alms for the poor —from the bank accounts of all Muslims irrespective of a sect[66] that held more than 3,000 PKR (almost 25$) (Wynbrandt 2009). *Ushr* was implemented for the landowners and farmers in the form of a levy of 10 percent of the total produce. To oversee the distribution of the collected funds, *Zakāt* committees were constituted.

These significant changes continued with the implementation of the blasphemy law. As of 1986, if someone says something against the Prophet Muhammad, they risk life imprisonment or death. Islamic studies and the Arabic language became compulsory courses for numerous degree programs. The broadcasting of news in the Arabic language on television and radio started. Compulsory veiling was introduced for female newsreaders on television. Religious teachers were also promoted to the rank of commissioned officers in the army for the first time. Citizens protested against growing Islamization, but the Zia manipulated the Soviet invasion to present it as an emerging threat to Islam from the infidel forces just across the border and called for the necessary Islamization to govern Pakistan based on Islamic ideals (ibid., 217).

For his position, Mohanty elucidates that the world praised "Zia for standing against the mighty Soviets and for giving shelter to three million refugees from war-torn Afghanistan" (Mohanty 2013, 89). As Casey's deputy for operations in Afghanistan would later recount, "Zia was a believer [and] without Zia, there would have been no Afghan war, and no Afghan victory" (Riedel 2011, 18).

The Soviet invasion provided Zia with an excellent opportunity to transform the country and alter the course of its future more than any other ruler since Jinnah – the country's founder. Zia can, therefore, rightly be called the grandfather of global Islamic *Jihād* (Riedel 2011, 20). Since he was an Islamist, he affiliated himself with *Jamāt-i-Islam* – a religious party in the country – and did as much as he could to Islamicize the country's army (Ibid., 20). Riedel (2011, 21) cites Shuja Nawaz – an expert on the Pakistani army – who says that "Islamization was the legacy [Zia] left Pakistan," but this was undoubtedly possible with external support.

Moreover, during Zia's transformation, Riedel (2011, 21) quotes Steve Coll, who counts the formation of Madrassa – of the Islamic schools – which multiplied from 900 to 8,000

[66] Here, it is essential to mention that the Shia sect has a different interpretation of Zakat. This implementation brought different forms of resentment across the country.

official religious schools and 25,000 unregistered within 17 years from 1971 to 1988. Diplomas awarded by the Madrassas were made equivalent to university degrees. Needless to say, the series of external "events" provided Zia with the best chances to Islamicize the country, which caused internal chaos within, as Pakistan's second-largest Islamic sect, i.e., the Shia (in terms of number, the Shia are more than those who either practice other sects of Islam or other religions) came under attack as Zia attempted to use force against them after the Shia revolution in Iran (ibid., 22). More importantly, Nasar (1994) critically writes that – under Zia's support – the anti-Shia militant Sunni groups such as the *Sipāh-e-Sahābā* Pakistan (the Army of the Prophet's Companions) blossomed and attacked Shia mosques and religious festivities to intimidate the Shia community into quiescence.

During my upbringing in Pakistan, I observed how intense this chaos was. The Shia population came under attack. The Shia *Kafir* (Shia infidels) slogans loomed around the country. The hate speeches started; the slogans appeared in the form of chalk markings on walls. The targeted killings of Shia intellectuals and famous personalities commenced. Major Shia gatherings and processions were attacked, especially with suicide bombs. The repercussion included the Hazara community, who came to Europe, including Austria, for refuge during this decade owing to those historical events. Hundreds of Hazara, being the practitioners of Shia-Islam, were killed. These refugees are a result of a seed of Islamization that the Zia germinated, and external forces watered to grow.

Moreover, there are different standpoints on the Soviet invasion event. On the one hand, the USA has been considered as "partly responsible for Pakistan's overreliance on the military, rather than civilian power, because it has provided so much assistance to the Ministry of Defense" (S.G. Jones and Fair 2010, xv). On the other hand, Mohanty (2013, 81) cites Ayaz Amir – a Pakistani freelance writer and a politician – bluntly writes: "These people [*Tālibān*] were certified as God's holy warriors by the White House itself. Now they have been transformed into the world's darkest villains. That is complicated. However, the opinion that Pakistan has no choice other than to fight these people is becoming stronger."[67]

[67] I have made a few changes to maintain the formatting such as from 'that's' to 'that is' or 'they've' to 'they have.'

Hence, the war against the invasion of the USSR in Afghanistan ended with what I call a great "leftover." For this involvement, Pakistan has to pay the "costs" in the form of "Kalashnikov culture"— especially the Soviet's Kalashnikov or AK-47s (Avtomat Kalashnikov 1947) and similar Eastern Bloc rifles that were used to drive the Soviet army—that people started using arms to settle any dispute. The easy availability of arms created a different set of attitudes and behaviors of using force.[68] Besides, Pakistan witnessed around 4 million Afghan refugees who entered Pakistan to escape war; thus, the war caused depopulation in Afghanistan (Riedel 2011, 24; Wynbrandt 2009, 218-19) and "over" population in Pakistan—an already overpopulated country.

In terms of Pakistan needing to pay the price of the leftover aspects, Wynbrandt (2009) mentions that an influx of Afghan refugees crossed the border and mainly settled into *Baluchistān* and Khyber Pakhtunkhwa (KPK) provinces. This influx aggravated the destabilization in an already unstable territory because both the regions became part of Pakistan in the name of economic benefit and Muslim solidarity (Wynbrandt 2009, 219). The federation's inequitable distribution and sharing of revenues and benefits from the provincial natural resources was one of the significant grievances of *Baluchistān*. Natural gas (Sui-northern-gas) discovered in *Baluchistān* in 1953 was available for the cities in *Punjāb* province by 1964. However, it did not reach the Quetta – the *Baluchistān* capital – until 1986, except for gas supply to a military garrison in the province (ibid., 220).

Wynbrandt (2009) claims that the federal government foresaw "little need to placate" the population in *Baluchistān,* which was five percent of the country's population despite being a geographically bigger province that constitutes 40 percent of the whole country's land. With 45 percent Baloch and 38 percent Pashtun, the arrival of Afghan refugees to make up one-quarter of *Baluchistān* ignited a conflict between the Baloch and Pashtun. It is because refugees changed the ethnic composition in the province while making the Baloch less in number in their "homeland." Resultantly, the Baloch were devastated, and clashes started between these two social groups. In 1988, over disaffection with the federal government, Baluch hijacked a Pakistan International Airlines (PIA) aircraft to protest against the discrimination and "what they believed were planned tests of nuclear weapons" in their province (ibid., 221).

[68] On this impact of guns in Pakistan, the *Washington Post* (1996) published an interesting editorial.

In contrast, similar agitation occurred in the Khyber Pakhtunkhwa (KPK) province in the Pashtun population who wanted to achieve more autonomy, since there were also some movements for an independent Pashtun nation, and the federal government's continuous negligence of the provinces aggravated the discontent. Therefore, the shift of refugees to KPK made the call for an independent Pashtun area more visible (ibid.).

Riedel (2011, 18) cites Robert Gates, who was a deputy director for intelligence and responsible for all intelligence analysis during William Casey's tenure (the CIA director), saying in 1996: "We examined ways to increase their [*Tālibān*] participation, perhaps in the form of some 'international brigade,' but nothing came of it. Years later, these fundamentalist fighters trained by the Mujahedin in Afghanistan would begin to show up around the world, from the Middle East to New York City, still fighting their Holy War—only now including the United States among their enemies".

Externally, the cost of being part of that holy war that Pakistan needs to pay includes the interventions which the Soviet Union and its Afghan communist allies took "to destabilize Pakistan". Both countries hired agents to explode bombs in the refugee camps, assassinate *Mujāhidīn* leaders, and attack the ISI training facilities (ibid., 24-5).

Summing this historical sketch, the Reagan administration strengthened "the most revanchist elements inside the army, with a political short-sightedness that borders on suicide" (T. Ali 1983, 192-93). The current movements and the past "events" are directly connected, and "how much those events have affected, it seems difficult to answer with a clear certainty" (ibid., 190). Yet one can see their significant implications for the country, including its life-saving endeavor: the vaccination program.

The extremism often causes a "tug of war" between Pakistan and the US. In 2017, the *Dawn* (2017) newspaper published, "Don't blame Pakistan, Haqqanis were your 'darlings' at one time: Asif tells [the] US. While indicating to the US, do not blame Pakistan for the Haqqanis (the Haqqani Network) and the Hafiz Saeeds (referring to the head of the banned Jamaatud Dawah). 20 to 30 years ago, they were "your darlings", who were "dined and wined in the White House, and now you say, "go to hell Pakistanis because you are nurturing these people." The words used in the paper reveal the strength of opinion. Nonetheless, the same news report also contains the willingness of Pakistan to work with the US for peace maintenance in Afghanistan.

5.4 Concluding Remarks

Significantly impacting the country, the critical events related to (geo)politics that I specified above, have shaped the general perceptions and practices that people in Pakistan hold and perform, including about vaccination. Consequently, they maintain their intransigent hostilities and positions against it. Historically, external problems and internal crises have gone hand in hand in Pakistan's short but critical history. External events have caused as well as aggravated the internal crises. The impact of colonization, as described by the renowned economist William Easterly (2006, 298), resulted in "the massacre during partition, four international wars, two genocides, six secessionist[s], and umpteen communal massacres later". The results of the aftermath still appear in one form or another.

Thereafter, I describe how during the USSR invasion, Pakistan became a vital ally of the US in a massive covert program to raise and equip an army of Islamic fighters – *Mujāhidīn* – that caused global terrorism at the end of the century (Wynbrandt 2009, 202). Zia's impudent attempts to Islamize the country supported substantially by the external events, led towards a difficult-to-repair rift among the masses. These events are still creating further fractions in the country in diverse forms. Since then, the running of Pakistan, as Ian Talbot argues, never goes beyond the cliché of the three "As": *Allāh*, the Army, and America (Cohen 2004, 267).

The same *Mujāhidīn,* later on, called Pakistani *Tehrik-i-Tālibān* (TTP), has overwhelmingly challenged the country. In 2008, they took over the Swat region of Pakistan and executed several people. They also conducted numerous assaults on the vaccinators, and suicide bombings and assaults at public gatherings, mosques, shrines, airports, educational institutions, and army installments. During these assaults, over 100 vaccinators and their escorting personnel have been killed. *Mujāhidīn* have openly opposed the vaccination in the country. Studies have demonstrated that the poliovirus is highly prevalent in those areas of *Mujāhidīn*'s stronghold in the country.

CHAPTER 6: HEALTH AND ILLNESS: SOCIO-CULTURAL UNDERSTANDING

Understanding the medical culture or its context is vital to decipher dealing with measles and to trace their roots. This chapter describes the socio-cultural understanding of health and illness: how people make sense of health and illness, and how do they define and maintain it? How do they deal with an illness in terms of knowing its causes or etiology and proposing decisions on whether to ignore illness or consult a specific medical system? What necessary preventive measures are taken to maintain health or to take any further actions(s) to reinstate impaired health? How do people seek health measures by consulting a specific medical system such as *Ayurvedā*, *Unānī-Tib* or biomedicine, and how factors—such as beliefs, perceptions, economic situation, education, gender, and the geographical area—shape these health-seeking measures?

6.1 Conceptualizing and Maintaining Health

Local people conceptualize health as the greatest blessing of a supernatural being. The Muslim population considers it a blessing of *Allāh,* and Hindu perceive it as a blessing of their gods and goddesses. Nonetheless, they do relate it to supernatural beings. Being healthy in that perspective means the supernatural being(s) is happy from that individual. The healthy one is richer than the others. This is because the blessing permits the predefined roles and responsibilities to be performed, and essential elements of existence, such as food and sleep to be accomplished smoothly (I. Ali 2011). Performances of roles and accomplishment of elements of existence are signs of healthiness and relate to the second perspective. People judge an individual's health by his or her physical appearance. Here, a slim person is believed to be ill and a chubby healthy. The slimness is considered as a form of malnourishment, and it also reveals someone's economic state. To stay healthy, there are numerous ideas and practices—that may be about specific prescriptions and regimens related to food patterns; routine activities; sleeping patterns; hygienic patterns; dress patterns; visiting sacred spaces; time-space relationships; symbolic protection; propitiation and worship—which one should perform in daily life. Local people believe that failing in any of such practices can cause illness. For explaining the causes to decide about treatment type, family members examine an individual in the light of the above-mentioned cultural perspective of healthiness to draw an etiology and decide about treatment type.

Local people deal with health in a triad relationship: human to human; human to the natural environment; and human to the supernatural beings. To maintain their health, they practice the above-mentioned socio-cultural stock of knowledge and practices. More importantly, one can find connections of the local socio-cultural ideas and practices of health and illness to their religion as well as *Ayurvedā* and *Unānī-Tib*. People think about health and illness in terms of elements and humors and then adopt the related measures to recover lost health (see chapter 7) (see, Rafatullah and Alqasoumi 2008; Sheehan and Hussain 2002).

6.1.1 Food Patterns and Health

The food-related guidelines include the type of food; how to cook and eat, the timing of eating; the combinations of food, and the type of food. The food prepared at home is regarded as healthy as compared to food available at the market. People who often eat by choice at hotels are seen as not "good" for mainly two reasons: (a) the food is unhealthy due to improper usage of spices and non-freshness that disturbs the health, and (b) it is a waste of money. Eating food in a proper routine is necessary. The best timing of food comprises a breakfast early in the morning until 9:00 am, *Mānjhāndo* (lunch) around 1 to 3 pm and dinner around 5 to 6 pm.

Similarly, a combination of a particular food is avoided; for example, fish, beef, other meat, and chiefly chicken are not eaten after drinking milk. Food such as butter, milk, fish, meat, and specifically beef is considered as healthy in *Rahīmpur* village. In contrast, in the *Rāmpur* village with a higher number of Hindu population, everything remains the same, except for the meat that is replaced by vegetables.

Following these food patterns play a pivotal role in staying healthy. In contrast, those who breach the stated guidelines may get sick. Yet eating healthy food is not the only source to remain healthy, but other practices are equally important.

6.1.2 Conducting Life Affects Health

Widely regarded, health is related to the way one conducts life. Emotions, intentions, and concrete actions can influence health. There are many abstract actions, such as *Sārr*, *Hasad*, *Baimānī* and *Munāfiqat* (literally: jealousy, envy; dishonesty and hypocrisy) that are not only perceived bad for one's overall life, but they are harmful due to their significant effects on one's health. It is indispensable not to have these negative states of

emotions. Other practices include performing physical activities regularly, such as walking and doing physical work. Local people use an expression "*Hadd-Harām*" (one who is lazy and does not perform physical tasks such as cutting grass, carrying some weight and cultivating crops in order to support his family in survival)* that also has sociocultural and health-related implications. Believing that a working (physically) body is a healthy body, one should actively participate in the stated activities and not lie in bed during the day (for a longer time) as it brings misfortune and ill-health.

6.1.3 Sleeping Patterns and Health

Sleeping patterns relate to timing and space. Sleeping late or not sleeping during the night are unhealthy. Deliberately sleeping late is highly discouraged, as people in the villages follow the routine of sleeping and rising early. The majority fall asleep by 9:00 pm and wake up before sunrise, i.e., around 5:00 am. Someone who sleeps until sunrise, unless they are ill, is highly criticized and considered as a source of attracting misfortune and troubles. Some local expressions and proverbs exist related to sleeping patterns (metaphorically). The expressions are not limited to the villages, but one may observe across the province and the country. These include "[*Sindhī*] *Sawaīr Sumho Ain Sawaīr Utho*" (sleep early and rise early)* or "[*Sindhī*] *Sutā Uthī Jāgg Nind Na Kajy Aitrī, Sultānī Suhāgg Nindon Kandy Na Mili*" (avoid excessive sleepiness, if you want to achieve the crown).* A change to sleeping behavior indicates that either the person is ill or will fall ill. Hence, if someone sleeps longer than a culturally prescribed routine, family members inquire about the person's health. Besides, spaces for sleeping change seasonally to protect against seasonal changes such as heat and cold. During summer and winter, they sleep under an open sky in the premises of the house and inside the house, respectively.

6.1.4 Hygiene Patterns and Health

Locally, hygiene patterns are related to cleanliness, purity, and pollution. Semen, excretion, dogs and pigs, dead animals, and menstrual blood are among the impure entities. After releasing semen through any means, a person is considered *Mathy-Mero* (a person who has not taken the necessary ritualistic bath after intercourse).* It is because this said person can be harmful to the person him/herself and also others and bring misfortune until ritualistic ablution is observed. Likewise, the menstruation period makes a woman impure. In both the mentioned states, an individual must not visit a child

that has contracted measles. Furthermore, to maintain cleanliness, people use water after excretion. Water, sunlight, air, and fire are the sources for obtaining purity.

Moreover, human-animal relations draw a different picture. Touching specific animals such as dogs or cats is strictly avoided; if so, then washing hands is studiously necessary. On the contrary, it is reasonable to touch, live with, and share spaces – and even sleep– with buffalos, cows, camels, goats, and sheep (as discussed in the previous chapter). The dung of cows and buffalos is used, after drying under the sun, to fire the oven for cooking food, and as fertilizer on agricultural fields.

Flies that fly inside the house, or sit on food, and children, which emerge in the thousands, during the summer season are another hygiene-related aspect. People, who are weak in terms of economic resources, even do not consider that flies might be harmful to spread viruses (as the etic perspective says). Pictures of children, circulated in the media during the measles outbreaks in 2012-13, show the flies sitting on their bodies, and exhibit the circumstances under which people are living. Contrarily, the flies perhaps are non-existent in the houses of rich people – those who can afford bungalows, air-conditioning, and vehicles. These economically rich people are also well aware of the harms that such flies can bring.

6.1.5 Dress Patterns and Health

People also directly link health to the use of dress patterns. There are recommendations for dress patterns in terms of colors, designs, and wearing patterns. These recommendations vary further according to age and gender. For little children, bright colors, e.g., green, red, are avoided; otherwise, children can easily catch *Nazar* (literally. sight, however, it reflects a belief that every human contains a power which is often transmitted through eyes; thus, a person can be affected by anyone else and become ill by the evil eye).* The colors make children extra attractive, as they are already innocent and beautiful. For women, such bright colors are acceptable. However, women should be highly careful, mainly when they go to the graveyard as well as dark and unpopulated places. Because such places are abodes of supernatural beings, e.g., *Jinn-Bhut*, women can enchant them and ultimately can be possessed by them. For men, light colors are recommended. In the village of *Rahīmpur*, wearing green and black dresses are subject to specific conditions. People prefer not to wear them, but if they do, they take strict purity

measures. It is because the former color is associated with the color of the Prophet Muhammad's tomb, and the black with the color of *Qabā,* the sacred building for Muslims in Mecca. Yet during Islamic month, Muharram, they usually wear black clothes to show pain and sadness in relation to the event of Karbala, in which Prophet Muhammad's sister's son Hazrat Hussain along with his family and friends was martyred. The strictness of green and black is further uncompromising for a woman who must not wear these colors during the menstrual cycle.

Additionally, gender and age significantly shape the recommendations about covering certain body parts. A woman must wear a headscarf, cover her chest, avoid exposing the body, and wear trousers down to her ankles. A man must wear a vest and sarong. He must not visit a graveyard, especially in the evenings, without wearing a full-sleeve shirt and trousers or a sarong.

The prescribed patterns of dressing are considerably related to religious teachings and practices. For instance, if a woman ignores such recommendations, *Allāh* will be angry and may punish her. The punishment may be ill-health. Although punishment is not limited to ill-health, it can have other adverse consequences such as poverty, illness to her children, and family members (see section 6.2.1).

6.1.6 Supernatural Beings and Health

Moreover, people believe in supernatural beings, e.g., Jinn, who live in dark and unpopulated places such as thick forests, ancient trees, and graveyards. These beings return to their abodes at sunsets. They do not deliberately intervene in human affairs until disrupted. They especially get disturbed after the sunset, which makes them malicious. Therefore, going with specific dresses, colors, and in particular at a specific time—e.g., after the sunset—is strictly avoided. Women and, specifically, children must not go to such places because they can enchant a Jinn on his way back to the abode. Jinn most commonly possesses women though can possess a man and child too. It is always a Jinn (masculine) that possesses a woman and a *Jinrrī* (feminine) that possesses a man. When the volume of a voice increases, such as during music or crying at death, a possessed woman faints, dances, and enters a trance, and then she speaks with a different voice. For people, it is not the woman, but the supernatural being speaks: Jinn called *Faqīr* (a term used to address the male Jinn), or *Jinrrī* called *Faqīryannī* (a term used to address

the female Jinn). During that trance, the people (who are present there) ask *Faqīr* via the possessed person for prayers or inquire about their problems and misfortunes. After the trance, the woman falls to the ground, and a family member accompanies her until she comes to herself. Usually, these are women who are possessed as compared to men. Also, whenever a possessed woman visits a shrine, she goes into a trance.[69]

6.1.7 Sacred Spaces: Shrines as Centers of Hope and Health

Visiting sacred spaces such as shrines of saints are sources for attracting fortune, good health, and solutions to all sorts of problems. Shrines function as centers of hope and health across the country. People visit shrines to receive blessings to avoid misfortunes and solve problems. They may be sociocultural (such as issues in getting married), economic (e.g., poverty), political (for example unresolved disputes) and biological (having a baby and especially a male baby) problems, or the aim may be to treat illnesses. The shrines prove to be the last hopeful resorts to seek miraculous help when everything else has failed. The devotees visit and observe *Manat* (literally: imploration or beseech),* make a vow, perform specific rituals, and give votive offerings.

As noted in chapter 4, the inhabitants of *Rahīmpur* village do not merely visit the shrines in the province. However, each year some – not always the same ones – travel to Iran, Iraq, and Syria to pay visits to the shrines of *Ahal-Bait* (the family of the holy prophet Muhammad)* such as the shrines of Imam Ali (Prophet's cousin), Imam Hussain (Prophet's daughter Fatima's son), and Hazrat Zainab (Prophet's daughter Fatima's daughter). The visitors are considered the luckiest. People share stories of miracles of the *Ahal-Bait*. It is, for instance, a famous narration that Hazrat Ali gave eyes of a blind person or he gave seven sons to a barren woman. A common perception is that the seeker's intention and way of making vows matter most; otherwise, the *Ahal-Bait* are kind. On the other hand, in *Rāmpur* village, people visit shrines of saints – irrespective of religion – in the province and go to *Mandar*.

People of various religions visit shrines. The shrines are synchronized centers where Islam, Hinduism, Sikhism, and Christianity intersect. The province is home to famous saints – such as *Qalandar Lāl Shahbāz*, *Shāh Abdul Latīf Bhittaī*, *Sachal Sarmast*, and *Shāh*

[69] Pirani (2009) has studied several therapeutic measures related to this possession which are taken at shrines in Pakistan.

Ināyat Shahīd – where people come from across the country. Similarly, there are also *Mandar* in the province such as the *Kālkā Devī Mandar* near to the village of *Rahīmpur*; and the Shiva *Mandar* in the mountains of *Kārunjhar*. Moreover, the Thar Desert also contains several shrines, temples, "memorial stones," and *Marrhī* and *Māth,* where people make vows about their good health and fortune (see Kalhoro 2015). There are further details in chapter 5.

Zayārāt, meaning pilgrimage, is a local concept of paying a visit to a shrine. During *Zayārāt*, people pay respect by kneeling, touching, and kissing the shrine, especially the saint's grave. According to them, saints are closer to *Allāh* than ordinary people. Saints become God's friends through unceasing worship. In return, God bestows them *Karamat* (miraculous power).* People specifically visit shrines when they remain ill despite treatment at a healthcare facility.[70] A single visit to a shrine is sufficient in some cases; otherwise, staying for three, five, or seven (or more) nights is a prerequisite.

Although not a single person from the selected villages stayed at a shrine during fieldwork, while living in the province (since my childhood), I observed shrine-related rituals and practices. By visiting a few shrines during fieldwork, I also observed numerous people staying there. After interacting with people, I knew that people who had hepatitis, cancer, and ulcers were staying for healing through *Karamat*. The stay continues until these people receive *Niā* (we can call it a piece of news).* The Nia reaches them through dreams during sleep, irrespective of timing, i.e., the day or night. The dreams often include a saint, mostly with a white beard, who comes to the person carrying something in his hands. The saint operates on or touches the problematic part of the body and permits the person to go afterward, as everything will now be all right.

During the stay, people do not take any preventive measures pertaining to eating. They eat whatever food – called *Langar* – is distributed there. This applies even if the food is otherwise prohibited. People avoid eating rice during some internal or external injuries, but at a shrine, rice in the form of *Langar* is regarded as sacred and potent for healing. They drink *Sabīl* (it can be explained as water served at the sacred places and associated

[70] See Pirani (2009). Pfleiderer (2006) has described the procedures and occurrences at a Muslim shrine called *Mira Datar Dargah* in northern India. Another significant work on the shrine behaviour is from Frembgen (2011), who elaborates on one of the famous saints of the country situated in the Sindh province, called Qalandar Lal Shahbaz.

with the saints)[71], eat *Khāk* (clay) available at the shrine. The association with the saint makes this food, water, and clay sacred and a remedial measure. Moreover, they clean the premises of shrine, offer prayers, make vows, and sleep waiting for a remedy. They also receive verbal healing from the *Mujāwar* or *Faqīr* (a religious ascetic with some mystical powers) of such shrines.

Besides *Zayārt*, *Faqīr* at shrines do verbal healing. They chant some verses and blow over the body of the person. They also give people threads, on which they blow some verses. In return, people pay them some money. Consider the following vignette from my fieldwork:

> I am with one interlocutor, *Dil Murad* (pseudonym) from *Rahīmpur* village, at his *Katchā* (literally: unbricked) house. He is in his late 30s, works as daily wage labor, and cultivates his land. The temperature is above 40^0C. Although it is a sweltering summer's evening, children are playing hide and seek: the silence and yelling occur at intervals. The hen with her fledglings, which nowadays is called an organic chicken in the West, especially in Europe, is moving here and there. Countless flies are sitting, flying. One brown-colored dog is half-sleep under a small neem tree. Her mother, who is around 50 years of age, was wearing floral printed lawn clothes with the dominant blue.
>
> While having a cup of tea and having *Kachaharī* generally about the usual daily activities and measles, the discussion came to fever. We start talking concerning fever because *Dil's* wife, Ms. *Sārān* (v) has a fever – locally called *Purānno Bukhār* (literally: an old fever).* On the one hand, she is not recovering, and on the other hand, she performs her routine work. Through word of mouth, they learned about a *Faqīryānnī* (a female religious ascetic with some mystical powers),* who performs verbal healing at a nearby shrine. She recites some chants to heal the *Purānno Bukhār*. These days they are visiting her. I ask regarding the reasons behind the preference, as they could afford biomedicine.
>
> Her mother, Ms. *Gulān* (pseudonym), – who is a gentle lady, in her fifties – the skin of her face and hands was losing its grip, but she still seemed a healthy person as she brings the grass and fodder for the animals (two buffalos, one cow, and seven goats). She does this work, especially for the goats. She today is wearing cotton, floral-printed lawn clothes that are predominantly blue. She joins the *Kachaharī* and shares the underlying reasons to visit the *Faqīryānnī*. "I tell you, my son, that we have been consulting government hospitals and private doctors, but they are of no

[71] During *Muhram* (the first Islamic month), the practitioners of Shia-Islam distribute water, syrup made of milk, sugar, and juices in the memory of the event of *Karbala*, in which the *Ahal-Bait* (family) of the prophet Mohammad was martyred. They also distribute *Langar-Niaz*. They use terms *Sabīl* and Langar during this entire month for all drinks and food.

benefit, including the expensive doctors, who charge 200 PKR just for the receipt to allocate a waiting number. We have done all *Hīlā-Wasīlā* (made all possible efforts),* but nothing has worked. The fever is complicated now and has turned into a *Purānno Bukhār* or *Waddo Bukhār* That is when fever remains hidden in the bones and makes a person weaker There are two other types of fever: *Mudy Jo Bukhār* when fever occurs with an interval; and *Halko Bukhār* is a slight fever, which lasts for one or two days, and the person recovers without any medication." This specific type of fever is explained below.

Ms. *Gulān* continues, since last month, my *Nuhn* (daughter-in-law) is suffering from a *Purānno Bukhār*. We have consulted a doctor, first at a government-run-dispensary, and then a private MBBS doctor, but her fever continues. She is not eating due to sour saliva in her mouth as in this fever saliva becomes sour. Due to not eating, she has lost weight.

Eventually, some of our relatives informed us of a girl who recites some verses and blows over the person. She belongs to a *Faqīr* family of a Dargah (shrine) named *Ubhan Shāh*. His father was a healer, too. He died around a year ago, and now she has that *Hudo* (power, skill, authority). She is in her thirties. After holding the right hand of the person, she recites verses and blows over him/her. The minimum requirement is three visits: morning, evening, and the next morning. We (she, her son and her *Nuhn*) went yesterday in the morning and evening but missed the visit the next morning due to the marriage of our relatives. We will, therefore, go this evening. After two visits, my daughter-in-law is much better. During our visits, we paid the girl some money. Yesterday we paid 100 PKR in the morning and 50 in the evening. Since we pay in the hospitals, why not pay her. She neither asks for nor checks the given amount. This girl is popular. Many people visit her. Yesterday, two women brought their little children.

The described case shows people's belief in shrine behavior and verbal healing. The local people visit shrines for illnesses, mostly, when biomedical doctors dismiss a patient after declaring as incurable, or what local people call *Ley-Dāwā* (literally: unclaimed).* But it connotes a state, in which the biomedical doctors consider a person as incurable and refuse to treat him/her any longer and suggest bringing the patient home. Thereafter, family members bring that person (sometimes due to a person's desire) to a shrine for *Karāmat* to heal illness. Some people spend a maximum number of *Ākhrī Dīnh* (could be translated as last days to live as people utter) at a shrine with the belief that the saint will cure illness, or otherwise, he will be a source of *Nijāt* or *Chutkāro* (lit. forgiveness) in the grave and on the day of judgment. There are some famous shrines across the Sindh, where people go to seek health. The famous shrines include *Qalandar Lāl Shahbāz*, *Shāh Abdul Latīf,* and *Saeedī Mussānī*. During my fieldwork, I met two persons. One of them was from *Rahīmpur* village, who was suffering from stomach cancer, and the other person was from

another nearby village who was suffering from hepatitis. Both were in critical condition. The biomedical doctors declared them *Ley-Dāwā*. As a result, both the persons visited shrines. The former spent a couple of weeks of his life at *Ubhan Shah* (he also died), and the latter person stayed at a shrine until the night he died. These anecdotes illustrate the local belief of people in the shrines that how people consider the shrines as a last resort to seek health. They believe that saints can heal them.

6.1.8 Symbolic Objects, Chanting, Worship, and Health

Symbolic objects such as *Tavīz* (amulets) or certain verbal spells are used primarily to avoid a Jinn attack, misfortune, and to ward off a *Nazar*. It also attracts luck. A *Tavīz* is created by a religious person or a person who has some *Hudo* (required skills, knowledge, and permission). * The *Tavīz* contains the holy verses, names of *Allāh*, the holy prophet, and *Ahal-Bait*. Packed in a small box of steel or enveloped in a leather piece, it is tied around an arm, waist, or neck. *Tavīz* is commonly used for children.

Although verbal chanting also has the same purpose, this mostly occurs more for health than protection. Prayers and supplications – a form of verbal chanting – serve both prevention and healing. Mostly, the old people recite *Tasbih* (a set or string of 33 or, mostly, 99 beads to recite) specific phrases such as "*Allāh-u-Akbar; Shukur Al-Hamd-u-Lillāh*; *Subhān Allāh* (God is great; all thanks to *Allāh*; and glory to *Allāh*).* Furthermore, with a similar purpose, houses contain objects such as horseshoes, posters of the holy verses and pictures of shrines and saints. The charts in *Rahīmpur* contain the Quranic verses, and names of *Allāh*, the prophet, and his family; while in *Rāmpur*, the posters carry pictures and motifs from Hinduism, such as gods and goddesses.

The propitiation and worship, such as *Namāz*, function as a protection against evil, troubles, and as a source to attract blessings, luck, and good health. In the *Rahīmpur* village, there is a mosque where people observe daily *Namāz*. However, in *Rāmpur* village, people worship gods and goddesses at home and the nearby *Mandar* (see chapter 5).

Furthermore, alms, giving charity, and sacrifices protect against or ward off troubles, tensions, and misfortunes. In *Rahīmpur* village, one 30-year old male respondent shared the following story on the importance of these practices.

The prophet Moses used to communicate to God daily on the Mountain Sinai. One day, a wood collector asked him about his death. Moses replied, 'Yes, today, I will inquire from God and will tell you tomorrow.' On the very next day, the Prophet Moses informed the person that tomorrow morning he would die. The person was shocked but accepted the revelation. As usual, on the next morning, he went to collect wood for his home. On his way back, he was engulfed in deep thoughts about his approaching death.

Meanwhile, a beggar shouted, 'Please give me something in the name of *Allāh*.' The person offered him something valuable as a charity. The whole day passed, but he was still alive with a bundle of wood, carrying it on his head. He met the Prophet, Moses, by chance. He asked the prophet why he was still alive, while the prophet informed him about his death. Moses was surprised to see him alive. Promptly, the Prophet Moses ordered him to bring the bundle of wood down and open it. After opening it, both saw a big snake with a stone in its mouth. Moses told him that your death has been traveling with you, and you could have been dead by now. However, you have done something extraordinary that has consequently protected you and prolonged your life. Now please tell me what you have done after meeting me since yesterday. The person shared each detail, including giving *Sadqā* to the beggar. Moses replied: 'This is the leading cause that you are alive.'

6.2 Dealing with Illness

As stated earlier, illness is the opposite state of health, which shows that something wrong has happened in maintaining the triad relationships: human to the supernatural, human to the natural environment, and human to human. Thus, people raise questions to determine the reasons for illness. The leading question can be, why did a specific illness occur to that specific person at that specific time? The preliminary conclusions may be that the illness is due to an *Imtehān* (lit. test); a *Sazā* (lit. punishment, curse); *Qismat* or *Taqdīr* (lit. fatalism); *Sāyā* (lit. invasion, possession); *Nazar*; *Jādu* or *Ddooh* (lit. magic); or due to consuming improper food, wearing an inappropriate dress or a result of seasonal variations.

6.2.1 Imtehān, Sazā, Qismat and Illness

Imtehān is a belief in *Allāh*. He conducts an *Imtehān* to test someone's tolerance, strength, or relationship with Him. *Allāh* thus makes a person ill. A true believer shows strong faith in *Allāh*. S/he remains calm, thankful, never complains, and considers an illness an act of charity through the body. Nonetheless, *Allāh* also punishes evil deeds – individual and communal – e.g., dishonesty, deception, lying, oppression, and murder.

Qismat (lit. fatalism) is also a prominent discourse related to life events, including illness. It is written in the *Qismat* that illness is unavoidable. There are several expressions on this, but I merely mention two of them, which are directly related here. First, "[*Sindhī*] *Jaiko Qismat Jo/Me Likhio/Likhyal Huyo*" (God already wrote it in fate),* and second "[*Sindhī*] *Qismat Jo Likhyo Kair Tāry*" (no one can avert a decided fate).* Muslims commonly believe that fate is decided on the evening of *Chatthī*. The *Chatthī* is a ritual. It is performed for a new-born on the evening of its sixth day to give it a name. The celebration depends much upon the baby's gender, sibling order, and the socioeconomic position of the family. If the new-born is a son, particularly the first son, first child, or a long-awaited one, then, the celebration engages many participants. Likewise, the socioeconomic standing of the family determines the scale of *Chatthī*. Except for the extent, the content of *Chatthī* remains the same. The following is a description of the *Chatthī* of a baby boy that I attended to offer an idea. My choice is not gender-based but selected to exhibit both the content and scale of a *Chatthī*.

The first step is to invite relatives and break the news. The Dai (the traditional birth attendant) invites the guests by visiting each house while simultaneously distributing locally made sweets such as sugar candies or jaggery. The receiver of the sweet pays some money (PKR 10 to 50). On the sixth day, close relatives such as siblings of the baby's mother and father arrive, either a day before *Chatthī* or at least in the morning of a *Chatthī*.[72] The remaining relatives arrive in the evening to eat or collect the food.

For the food, a male member slaughters a rooster, buck or bull (from his animals). Otherwise, he buys beef, other meat, or fish from the market in addition to rice, oil, spices, and sugar. Fabric is provided to be sewn for dresses. This is white for the baby, and there is also fabric for the mother and Dai to wear on that day. When the baby wears new clothes, the women sing folk songs. In the evening, food is prepared to be ready around 6:00 pm. There are two options for meals. The meal either comprises sweet rice called *Chāshnī* (cooked with rice, sugar, oil, and cardamom) and spicy rice called Biryani (cooked with rice, meat, beef, spices). Alternatively, there is *Chāshnī*, curry with beef, goat, buffalo or fish, and *Chapāti* and Biryani.[73] *Chāshnī* is an essential part, in any case. The food is then distributed among the participants. Those villagers, who are not close

[72] As in most cases, baby's grandparents from father side live together in a joint family.
[73] It purely depends upon the socioeconomic position of a family.

relatives, send a child to bring money and a pot of sweet rice. Dai distributes the sweet, which is mandatory, or at least stays there to collect the money. After that, the discussion revolves around choosing the name. Different proposals for a suitable name are offered. The parents and grandparents have the right to select the name. Around 9:00 pm, the naming ceremony begins. A small pot carrying the *Chāshnī* and milk is kept beside the head of the baby.

Every relative comes; gives pocket-money (not obligatory) to the baby; dips five fingers of the right hand into the pot and places the fingers on the forehead of the baby; chants the chosen name and supplicates. The common supplication is "*Chatthī Māī*, *Tun* … [Given Name] Jo *Sutho Likhyo Kajāns*. *Sehat*, *Izat, Shuhrat, Ilam Dijāns. Bhāgg Bakhat Wāro Kajāns. Kehn Jo Muhtāj Na Kajāns*." (Oh! Mother *Chatthī*, may you decide the best for the (name of baby).* Please bestow upon him health, prestige, popularity, and knowledge. Please make him the luckiest person. May you please make him an independent person). Once the naming is over, the ceremony ends, and the baby has a name. There is a tragic story pertaining to *Qismat* that people share in the village of *Rahīmpur*, about how fate is decided during a *Chatthī*.

> One day, a king met a contented and beautiful old lady and asked her who she was. The lady replied that she is called *Chatthī*. The king asked what she does. "I decide the fate of a person on the evening of *Chatthī*. What's more, I am now coming back from doing the same task," *Chatthī* replied. The king inquired, "What have you decided, then?" "On his marriage day, the person will die from a lion's attack," she answered. "Oh! However, I will not allow it to happen. I will keep the person safe," the king replied. After that, the king always looked after the family by providing resources, food, and security. Finally, the child becomes an adult, and his marriage day comes. Without sharing the reasons with this family, the king comes to them, brings his whole army along with weapons to surround the house. There was a belief that when a lion attacks, the attacked person quickly dies if he sees a mouse. To avoid this danger, the king also ordered four cats to be tethered at each pillar of the groom's *Khat* (Charpoy). Everything is under surveillance. So far, so good. The king is proactive and worried. It is midnight now. The escorting security is vigilant, ready to hunt the lion when it arrives.
>
> All the rituals have been performed. The groom has brought his bride to his room. The bride and groom converse. During this, the bride asks the groom if he can create a model lion. The groom happily replies with yes. Both ask someone to bring wet wheat flour. Receiving the flour, he makes a lion. Once he finishes putting the tail to the lion, it becomes a real lion and severely attacks him. Although the cats are present, a mouse quickly jumps

over the groom, and he dies. The bride loudly laments. Everyone arrives, including the king. The bride tells the whole story. The king is shocked and now shares the whole story with the bereaved family. The king salutes *Chatthī*, repents and confesses in front of *Allāh* to seek forgiveness for intervening in the act of God.

This story depicts a systematic appropriation of certain beliefs to relate to every good or bad thing in life to fate. Similarly, as before mentioned, health is also believed to be decided on the evening of the naming ritual. However, this is not merely limited to health or illness but extends to other desired or undesired happenings in life. Considering an unwanted event as fate and accepting its occurrence reduces the pain or suffering and helps divert attention towards the solutions. This belief in fatalism is structured by influential stakeholders so that an ordinary person can justify all suffering without holding those who cause the suffering accountable. The aforementioned event of *Chatthī* clearly shows how such structures have been created, which nonetheless can be seen in the light of critical theories of anthropology – the theories which question these structures in order to explore the root causes of any suffering.

6.2.2 *Sāyā*, *Nazar*, and Illness

Sāyā is when someone is possessed by supernatural beings; these can cause illness. Mull (1991) found that *Sāyā* is a cause of malnutrition in *Katchī Ābādī* (a ghetto)* of *Karāchī*. *Nazar* means a gaze, with the belief that everyone carries invisible energy that can exert an effect on other people. The energy is released through the eyes in a state of jealousy or happiness. That is to say, that may not merely be an evil eye, but also an eye that is pleased. In specific situations, someone catches the attention of someone else and becomes vulnerable to *Nazar*. These situations include wearing attractive clothes (especially for children) or performing an activity in a very precise way makes someone vulnerable. A child who is wearing new, attractive, and washed clothes and performs a *Nakhrā* – in which a child copies someone or is playful – catches the *Nazar* of others. A person's own family, neighbors, relatives, or even an unknown person can cast *Nazar*. In the villages, there are a few individuals best known for *Nazar*-casting.

To avoid a *Nazar*, a *Tavīz* works as a great protector. However, there are different ways to heal or what is locally called *Nazar Khan'an* (lit. absorbing *Nazar* to undo it)* — to ask the *Nazar*-casting person to put saliva on the body of the *Nazar* receiver or to chant

something and blow on the water for the latter to drink, or to visit a faith healer for chanting and *Tavīz*.

Gender and age make a significant difference in etiology and treatment choices. The etiology regulates decisions of whether and what treatment is required. It determines the suitable medical system(s) to be consulted for the treatment. People may consult one or several types of healthcare.

6.3 Concluding Remarks

This chapter dealt with those guidelines and orientations that culture provides to live, which are learned, shared, and passed on from one generation to another. These specific ways can be a source of health since the guidelines can encourage adopting and avoiding specific guidelines, which are related to daily life activities: e.g., food, dress, character, sleep, hygiene, and supernatural beings. Not following them may result in ill-health. I described: (a) conceptualizing and maintaining health, (b) dealing with illness to recover the lost state of health. Needless to say, these ideas and practices related to health and illness are substantially shaped by socio-cultural and economic and political factors, which again are a result of the current as well as past circumstances. One can also find the roots of such guidelines and orientations in *Ayurvedā* and *Unānī-Tib*. People dealing with ill health can sometimes involve only one or more medical systems: *Ayurvedā*, *Unānī-Tib*, biomedicine, and homeopathy, home-based remedies, and shrine behaviors. For the sake of better readability, I discuss the richness of ideas and practices to restore health in a new (the next) chapter of its own.

CHAPTER 7: MEDICAL PLURALISM IN PAKISTAN: COMPETING HEALTHCARE SYSTEMS

The present chapter offers an overview of medical pluralism in Pakistan. Based on the literature, it briefly describes each existing system – the historical roots of practices and knowledge – aiming to provide context information on people's treatment choices. Each system holds a specific, sometimes overlapping, body of knowledge and practices around questions of conceptualizing, sustaining, and restoring health. Dealing with an "illness," "sickness," or "disease" differs in the form and content of the related etiology, diagnostics, and therapeutic practices. The apparent intention of all the mentioned systems, nonetheless, is the same: alleviating illness-related suffering and restoring people's health. This brief introduction is necessary to illustrate the similarities and dissimilarities among them to situate the case of measles into a context since this contextualization has unveiled the roots of responses given by several stakeholders. Otherwise, it would rather be difficult to know why measles is simultaneously a necessary sacred illness and an infectious disease that should be avoided.

7.1 Indigenous Systems of Medicine

Analogous to many other places of the world, indigenous systems have prevailed in the Indian subcontinent since centuries: e.g., *Ayurvedā*, *Siddhā*, *Unānī-Tib*, homeopathy, and home-based measures. According to Zaidi (1988), before several invasions—by the Greeks; the Arabs; the Turks; the Khiljis; the Tughlaqs; the Syed and Lodhi; the Mughals; the Portuguese; and the British—*Mohen-jo-Daro* and the Indus Valley civilizations had a medical system with a focus on preventive medicine. Banerji (1974, 1333) considers this emphasis on prevention as a "mature attitude of the society towards the health problems". That means indigenous ideas and practices of health are a thousand years old.

Subbarayappa (2001) mentions that *Ayurvedā* started in the first millennium AD with the help of sages and physicians, who recognized various potential herbs that were helpful for health promotion, prevention, and cures. This knowledge laid a theoretical and conceptual foundation for the Indian medical systems. For Che and colleagues (2017, 21), this system profoundly reflects the culture – traditions and religion– and the civilization of Indians. These authors have categorized it into two types of systems: the classical and the traditional. The first comprises of *Ayurvedā*, *Siddhā*, *Amchī*, *Unānī-Tib*, Yoga, and Naturopathy, which are not specific geographically or linguistically but can be found in

different countries. These systems are well-codified in Indian scripted treatises. In the past, there were mentors for it, and presently there are schools to promote this classical system. The second system is specific geographically, linguistically, ethnically, familial and individually, and is embedded in "the tribal, folkloristic, local health, and household remedies, as well as bonesetters, practitioners in the treatment of poisonous bites, and birth attendants" (ibid., 21).

With a different culture, all the invasions, as mentioned above, affected the society and culture of Hindustan at the time. Likewise, they also affected the existing medical system by introducing their ideas and methods of healthcare and medicine (Zaidi 1988; Banerji 1974). On the British invasion, Banerji (1974, 1334) argues that "every facet of Indian life including the medical and public health services were subordinated to the commercial, political and administrative interests of the imperial government in London". Imposing Western medicine on the local people, the British colonizers significantly impacted the indigenous medical ideas and practices. Consequently, the pre-existing medical system faced a vicious cycle in terms of neglect of it; negligence then made it gradually tough for the indigenous system to compete with the powerful—economically and politically—Western system. This new flourishing system was highly favored among the emerging Indian elites, who received education in the "Western" style. Thus, Banerji (2004, 125) claims that when "Western" medicine flourished with spectacular developments, people with limited competence and resources controlled the indigenous medical systems, which ruined the scientific or empirical basis of the local systems.

Advocates of *Ayurvedā* started referring to its Golden Age before the Islamic invaders introduced *Unānī* medicine (Leslie 1989). Yet they significantly criticized British-imposed allopathic medicine for "denigrating Hindu medicine" and "promoting an alien system" (ibid., 240). The introduction of an alien system caused disturbances and resentment in society. People continued using the old medical practices. In my field, two indigenous medical systems were prominent: *Ayurvedā* and *Unānī-Tib*. It is not only people who practice *Tib*, but the government has also taken measures for functioning, acceptance, integration, and incorporation of *Unānī-Tib*, but not for *Ayurvedā*. However, India has recognized both systems at the policy level (see upcoming sections).

7.1.1 Ayurvedā

Composed of two Sanskrit words – *Ayur* meaning life and Veda meaning science, knowledge, or wisdom – it translates as a "science of life" (Che et al. 2017, 21). According to Che and colleagues (2017), this science originated around 6000B.C. in the Indian subcontinent. *Ayurvedā* is a "comprehensive" and "holistic" healing system that deals with physical, mental, and spiritual well-being (Che et al. 2017; Subbarayappa 2001; Kurup 1983).

The codification of *Ayurvedā* in Sanskrit occurred between the 2nd and 7th centuries B.C. According to Hindu mythology, gods transferred the *Ayurvedā* to humans (Leslie 1989). Bagde and colleagues (2013) claim that Brahma transferred *Ayurvedā* to the God Daksha Prajapati, and then to twin brothers named Ashvin Kumars.[74] After that, transference continued, and it reached human beings (ibid.). The primary source of *Ayurvedā* is *Charaka Samhita*, available in the Vedas, the Hindu sacred texts, written in the Indus Valley around 1,000 BC. Che and colleagues (2017, 21) view *Ayurvedā* as "a prevention-oriented holistic science of natural healing" that prescribes diet, medicinal herbs, physical exercise, and meditation. It is appropriately codified and rooted in the culture of the people of India (ibid.). In *Ayurvedā*, the human body is an amalgamation of *"Pancha Mahabhutas*" (literally meaning *five humours*): *Prithivi* (earth), *Apas* (water), *Tejas* or *Agni* (fire), *Vayu* (air or wind) and *Akasha* (aether or void) (Ranade 2001). These elements have specific physiological expressions: chyle, blood, flesh, fat, bone, marrow, and semen (Ranade 2001; Leslie 1963).

According to Vedic philosophy, there is an inherent connection between the universe and human beings. Changes in the climate, society, economic patterns, lifestyle, food patterns, emotions, and relationships create an imbalance among the elements mentioned. They can adversely impact an individual's state of mind, body, and soul.

Ayurvedic texts describe three states of the human body based on *Tridosha*, i.e., *Kapha*, *Pittā,* and *Vatā*, which resemble the present concepts of motion, energy, and inertia (Kurup 1983; Che et al. 2017). Synchronization among these states or *Doshā* guarantees

[74] In Hindu mythology, the *Ashvins* or Ashwini Kumaras are two Vedic gods. In the Rigveda they are described as divine twin horsemen. Their mother is *Saranyu* – a goddess of the clouds – and their father's name is Surya. They are symbols of the shining of sunrise and sunset and appear in the sky prior to *Dawn* in a golden chariot. They are believed to bring treasures to human beings and avert misfortune as well as sickness.

good health, even if a causative organism is present in the body; but an imbalance among them causes illness, which requires the holistic healing of *Ayurvedā* (Kurup 1983). *Kapha Doshā* (inertia) synthesizes the cells by maintaining the body's cellular and intracellular structures; *Pittā Doshā* (energy) is responsible for the metabolic and biochemical processes in the body such as producing heat and energy, and *Vatā Doshā* (motion) regulates the energy flow through and among the cellular structures and controls the other two *Doshā* (Che et al. 2017). The elements air and ether are dominant in *Vatā*, making this first state responsible for movement and activity. *Pittā*, the second state, includes fire, producing heat, and helping with appetite and digestion. *Kaphā*, the last state, contains earth and water, and it is responsible for water and other bodily fluids (ibid.). There are further five types of each *Doshā* responsible for distinct functions (Kurup 1983; Ranade 2001) (Ranade 2001; Kurup 1983), which I do not describe here in detail.

Subbarayappa (2001) has mentioned three major types of Ayurvedic *Cikistsa* (therapy): (a) *Daiva Vyapasrayd* (divine therapy), (b) *Vukti Vyapdsraya* (rational therapy), and (c) *Sattvdvajaya* (psychotherapy). Initial divine therapy is for illnesses caused by an unseen phenomenon, such as *Karmā*. This therapy is done in terms of prayers, incantations, amulets, and propitiation of certain gods and goddesses. In *Vukti Vyapdsraya Cikitsa Tridosha* is analyzed for the etiology, and the treatment is according to five elements to restore the disturbed balance. *Sattvdvajaya*, according to Sudarshan (2005, 226), is about "mastering the mind" by restraining oneself from excessive or unnecessary sensory functions, which is done through meditation, yoga, chanting, breathing exercises, *Pancha Karmā*, and herbs. The herbs are the heart of this healing. They may be flowers, fruit, roots, stems, and leaves, and require a process for use. Without a proper process, however, they are just herbs: nothing more. The scriptures discuss more than 15,000 herbs. However, approximately 850 are in everyday use so far. For its practice in Pakistan, see the next section).

7.1.2 Unānī-Tib

Charles Leslie (1963) views *Unānī-Tib* as an Arabic translation of Greek medicine of the ancient world that reached India through the spread of Islamic civilizations and culture.

Yet, it is debatable who originally founded this form of medicine.[75] This term contains the history in its etymology, i.e., *Unānī,* meaning "Greek" (Ionian) and *Tib* (Arabic), meaning "medicine" (Sheehan and Hussain 2002). Its practitioners are called *Hakīm* or *Tabīb*. *Tib* prevails in the subcontinent, Arabian, Central Asian, and Middle Eastern regions, as well as many other countries (Sheehan and Hussain 2002; Rafatullah and Alqasoumi 2008). Nonetheless, according to Husain and colleagues (2010), some variations exist in practice due to differences in culture, history, personal attitudes, and philosophy of a particular region. In Hindustan and Pakistan, for instance, Che and colleagues (2017) view some changes that have occurred by adding different knowledge and practices.

The backbone of this system is four *Akhlāt* (humors) in the body: *Khun* (blood), *Bulghum* (mucus), *Safra* (yellow bile), and Sauda (black bile). Humors have four essential *Quwāt* (qualities): *Garmī* (heat), *Sardī* (cold), *Rutubāt* (moisture), and *Yabis* (dryness), and any one's dominance makes an individual body distinctive from others—like *Dumwī* (sanguine), *Balghumī* (phlegmatic), *Safravī* (choleric) and *Saudawī* (melancholic) (Israili 1981; Sheehan and Hussain 2002; Khaleefathullah 2001).

Disturbances in humors cause an imbalance in the body, resulting in ill health. According to Sheehan and Hussain (2002), *Unānī-Tib* defines the human body as being in three states. (a) In a healthy state, the body can potentially perform all usual tasks. (b) During ill-health, the body works improperly and is unable to move, eat, and digest. (c) An in-between state, in which the body works and performs tasks, yet not at the optimum level. The third state indicates that something wrong is disturbing the equilibrium.

Sheehan and Hussain (2002) further elucidated that the *Unānī* system provides a six-factor framework to deal with health: (i) the natural air; (ii) food and beverages; (iii) movement and rest; (iv) sleep and wakefulness; (v) eating and evacuation; and (vi) emotions. Health requires an equal apportion of such factors in terms of quantity, quality, time, and sequence. The imbalance causes ill-health.

[75]A single individual cannot be considered as a founder (Sheehan and Hussain 2002), since theories of Galen seem influential, as well as the contribution of Persians e.g. Abu-Ali-Abdullah-Hussain-Ibn-Sina (known as Avicenna) (980-1037 A.D.), and Muhammad-ibn-Zakariya-ar-Razi (called Rhazes) (860-932), who are thought of as central in the establishment and development of Tibb (Sheehan and Hussain 2002; Bürgel 1976; Subbarayappa 2001). The contribution of Hippocrates is also undeniable. Additionally, Ibn-Sina developed the system of therapeutics and his book Qanoon (Canon of the Medicine) is still considered the central text in the *Unani-Tibb* (M.H. Shah 1966).

In *Tib*, mentions Sheehan and Hussain (2002), each body has a different temperament, which is determined by age, gender, environment, food intake, sleep, and work. Therefore, a *Hakīm* should have an in-depth understanding of the humors to make a faultless diagnosis because the diagnosis determines "the regimental therapy" [76] – intrusive and nonintrusive. A *Hakīm* needs to match the temperament of the patient and the therapy. The therapy includes avoiding, adapting, and adjusting some personal habits, e.g. food, sleep, exercise, routine, and environment, and specific actions causing psychological changes. The *Hakīm* and patient both arrange future appointments to examine the situation and share experience, respectively, especially after the therapy. If the recommended therapy does not work, the *Hakīm* recommends specific "active and intrusive" therapies (Sheehan and Hussain 2002, 126). Guy Attewell (2013, 141) cites Tabatabai (1912), who argues that a *Hakīm* does not recommend "any element which is not found in the human [body] composition [, as this element] will be harmful to it because it is 'unnatural' [*Ghair Tab'i*]."[77]

For various diseases such as jaundice/hepatitis, sterility, epilepsy, mental issues, depression, *Unānī* is considered a "superior" and suitable medical system (Sheehan and Hussain 2002; Shaikh and Hatcher 2005).

7.1.3 *Ayurvedā* and *Unānī-Tib* in Pakistan

According to the WHO (2007, 32), 70 percent of Pakistan's population, mainly settled in rural areas, use traditional medicine, including *Ayurvedā,* while considering it as "efficacious, safe, and cost-effective."[78] The same report further mentions that around 45,000 traditional healers (the majority in rural areas) and over 52,000 registered *Hakīm* are working in public and private sectors in the country. There are also approximately

[76] It comprises of *Or* (*Ilaj Bitadir*): venesection (*Fasad*), cupping (*Mohajim*), diaphoresis (*Tareeq*), diuresis (*Idrar Baol*), Turkish bath (*Hammam*), massage (*Dalak*), cauterization (*Kai*), counterirritation (*Imala*), vomiting (*Qai*), purging (*Ishaal*), leeching (*Taaleeq*), exercise (*Riyazat*). Other treatment options include diet therapy (*Ilaaj Bil Ghiza*), pharmaceutical or drug therapy (*Ilaaj Bidawa*), and surgery (*Ilaaj Bilyad*) (Sheehan and Hussain 2002, 126). Or such as 'cupping therapy' against arthritis, asthma, migraine (Akhtar and Siddiqui 2008).

[77] This statement provides a probable ground to the refusals and resentment against vaccination considering it as harmful for the body. Chapters 11 and 12 have further details on this matter.

[78] I avoid using "complementary and alternative" medicine because I see them problematic concepts. Both terms indicate something that is not the primary; however, either may complement a primary phenomenon or create an alternative to a primary thing—e.g., the biomedicine in the current sense. I see all indigenous medical systems, *Ayurvedā* and *Unānī-Tib*, as primary, not an "alter-native" systems. They have their knowledge, ideas and practices. If we look from the *Ayurvedā* and *Unānī-Tib* perspective, then the biomedicine may be rightly called a "complementary and alternative" medicine.

360 *Tib* dispensaries and clinics, which offer free medication and are controlled by the provincial governments. The government has established nearly 95 dispensaries under the provincial Local Bodies and Rural Development departments, and a Directorate of Hakeems that works under the Federal Ministry of Population Welfare Program. The National Population Welfare Program engages around 16,000 *Unānī Hakīm* with diplomas. Around 40,000 homeopathic physicians are also registered with the National Council for Homeopathy (ibid.).

To integrate traditional medicine into the national health system, the government passed the *Unānī*, Ayurvedic, and Homeopathic Systems of Medicine Rules in1965. The rule covers the registration of practitioners, elections of the boards, and recognition of the teaching institutions. As per this rule, teaching must be competitive; institutions must offer four-year courses in homeopathy and conduct examinations. Furthermore, the government has constituted a Board of Homeopathic Systems of Medicine to maintain these standards and registration of the qualified persons.

According to the same report of the WHO (2007), the Ministry of Health controls the *Tibbia* colleges and Pakistan's *Unānī* teaching institutions through the National Council for *Tib* to maintain the education standards, revise the curricula, syllabuses and conduct annual examinations. There are 27 (26 private and one public) functioning colleges that offer a four-year diploma in the traditional *Unānī* and Ayurvedic systems. After completion, the National Council for *Tib* registers the graduates and permits them to practice legally. Pakistan is the only country in the Eastern Mediterranean Region (EMR) to incorporate the *Unānī* teachings formally.

7.2 The Biomedical System

The biomedical system follows the principles of biomedicine or known as "Western" medicine or conventional medicine, which applies biological and physiological principles to clinical practice. It stresses standardized and evidence-based treatment that is validated through biological research. Here treatment is administered via formally trained or licensed practitioners such as doctors and nurses. Some see the development and transformation of biomedicine in the 19th century (Quirke and Gaudillière 2008).

Biomedicine treats each body on universal principles: with similar organs and structures. Joralemon (2017, 19) mentions that biomedicine follows a universal, standardized, or a

"mechanistic" approach, and it separates body and mind. Also, the structure of the body remains the same, even if the geography or socio-cultural settings are different.

As before mentioned, illness in *Ayurvedā* and *Unānī-Tib* may be owing to a disturbance in the humors or elements; however, in biomedicine, a disease mainly is defined in terms of an organ failure to appropriately function or invasion of an external force such as virus or bacteria. This biomedical thought regarding the body depends on laboratory research, which creates the "satisfactory" or "convincing" results. This thought provides a foundation for the comprehensive approach of immunization.

7.2.1 Government Sector of Biomedical Healthcare System

Comparable to many other colonized countries, Pakistan inherited its biomedical system from the British colonizers – who aimed to prevent the large-scale epidemics that could halt ecopolitical interests. The British selected the individuals from the elites to be administrators, bureaucrats, and doctors to support the colonizers, and during their departure, they transferred the authority to these "Brown Englishmen" (Zaidi 1988, 2). By this transfer, they "retained considerable influence on the entire health service system of the country by ensuring that the top of the medical profession in India remained heavily dependent on them" (Banerji 1974, 1334).

After the end of colonization in 1947, both the new countries—India and Pakistan—started building institutions, including health care systems. Accurately, Pakistan's initial phase (that was from 1947 to 1955) of establishing the medical system faced significant challenges with replacing existing staff. This phase witnessed the beginning of the UNICEF-supported Bacillus Calmette–Guérin (BCG) vaccination campaign and the opening of two medical schools in West Pakistan (now Bangladesh).

Afterward, the country made five-year economic plans to set objectives, plan actions, and implement them. The Healthcare system became part of such five-year plans. Studying the plans provides a precise indication about the structuring of the biomedical system to fulfill health-related needs and signify political and economic priorities to replace the "old" healthcare system with the web of biomedical institutions. The newly installed system was constantly reformulated by opening academic institutions, producing "qualified" doctors, nurses, paramedical staff, making vaccines, and becoming a signatory of the United Nations (UN).

As a signatory of the UN, the country was bound to follow the protocols and recommendations to translate the SDG framework into National Development Planning. For this translation, the federal government and four provincial governments have already committed to set up SDG Support Units to coordinate with each other. These Support Units have been established in the Federal Planning Commission and *Punjāb* province; however, other provinces and local governments are making efforts to do so. The units are responsible for delivering five main outputs: "(i) mainstreaming the SDGs in national policies and plans; (ii) data and reporting; (iii) inclusive budgeting process and tracking expenditures; (iv) monitoring and evaluation of progress against indicators; and (v) innovation" (Government of Pakistan 2017b, 186).

Now I would like to describe economic plans to especially trace the development of the biomedical system in Pakistan and economic and political investment into it. This description would explain inequalities in the system, such as a dearth of enough budget, facilities, and staff.

7.2.1.1 Five-year Plans of Development

After the partition of old India by the British colonizers, Pakistan made efforts to introduce Soviet-style centralized economic plans and targets for attaining the social and economic objectives of the government's policy. The first-ever five-year plan (1955-1960) focused on opening more academic institutions to produce qualified doctors, nurses, and paramedical staff. During this plan (1952), six new medical colleges were established with a nursing school attached to each. One college was for women exclusively. A postgraduate institution and a bureau to produce vaccines and sera were also built.

The second plan (1960), for1960-1965, continued reforming the biomedical system. A Medical Reform Commission was introduced, which recommended forming RHCs to cover a population of 50,000 for each unit. The commission also recommended developing two Health Technician Training Institutes, introducing family planning, and malaria eradication programs.

Under the third plan (1967) from 1965 to 1970, the government supported the WHO-launched initiative called "health for all by 2000" and commenced a widespread infrastructure and policy forming initiative. This phase structured the medical system

with BHUs to increase the reach at a village level; THQ hospitals for secondary healthcare; DHQ hospitals and teaching and referral units for tertiary care. This phase, therefore, witnessed the birth of the BHU, THQ, and DHQ. The public health campaign, under the guidelines of the WHO was also launched to translate and accomplish the given targets. The country introduced several programs: an Expanded Programme on Immunization (EPI); and Malaria Control Programmes; Tuberculosis Control Programmes; Smallpox Eradication Programmes; Family Planning Programmes; Diarrhoea and Pneumonia Control Programmes. Afterward, the government established the national institute of health (NIH) to implement the policy, monitor the programs as mentioned earlier, and propose further improvements.

The fourth plan (1970), starting from 1970 to 1975, stressed the expansion of medicine quota for leading hospitals and pioneered a generic name drug system to decrease prices in the country. To avoid inflation, the government founded eight state-owned fair price drug shops. The focus was also on the production of "human capital". The result was new educational institutions: the creation of six medical colleges, three nursing schools, and one public health school (Government of Pakistan 1970).

The fifth plan (1978), despite its scheduled beginning from 1975-1980, started three years later in 1978-1983 owing to deficiencies and a more authentic and practical plan being devised. The plan witnessed the formulation of the Country Health Programme (CHP) for improving the planning and management of health services. This program recommended increasing the rural health coverage at least to 50 percent, controlling communicable diseases, combating malnutrition, handling food adulteration, and highlighting industrial hygiene.

The sixth plan (1983), for 1983-1988, launched an extensive rural development program to provide a stable base to the WHO-led initiative called "Health for all by [the] year 2000". The fifth plan's objectives remained unachieved due to the inflation rate (Government of Pakistan 1983). The sixth plan, therefore, emphasized a comprehensive, integrated healthcare system by enhancing physical infrastructure that was enriched with required paraphernalia and trained staff and integrating traditional medicine (*Unānī-Tib*, homeopathy, and *Ayurvedā* in the National Plan) (ibid.).

The Alma Ata declaration of 1978 significantly influenced the seventh plan (1988) for 1988-1993. Zaidi (1988) critically argues that this declaration brought new directions

and protocols for the UN signatories, including Pakistan. During this plan, a female medical technician school, laboratories, and further BHUs and RHCs were established. Community health workers such as semi-skilled and trained paramedics for health facilities were also added. The Family Health Project started to improve MCHC services by focusing on female health. The other initiatives included creating national school health services, minimizing drug abuse, and controlling the goiter (Government of Pakistan 1988).

The eighth plan (1993) that started in 1993 to 1998 launched the Health Management Information System (HMIS), Social Action Programme (SAP), and Prime Minister Programme for Family Planning and Primary Health Care.

There were eight economic plans. Afterward, there was also an attempt of the ninth plan (1998-2003), which concentrated on decentralizing planning, levying the user charges for financing, creating public-private partnerships, and privatizing the healthcare facilities. It also introduced specific changes in the health system to address grey areas in the management and establish balanced promotional, preventive, and curative measures. These changes were to improve the quality of services.

Afterward, the government shifted its focus to reforming programmatic, organizational, and management aspects. In 2010, the government passed the 18th Constitutional Amendment, and transferred power from the federal to the provincial governments: it made health a provincial task. Presently, a district health system is the principal target of policy analysis, while the federal level involves a reform unit, which is responsible for making any structural changes.

Currently, the Federal Ministry of Planning and Development, which is also called the Planning Commission, is responsible for making long term or strategic (5-15 years) plans. According to it, the Ministry of Health and Provincial Health Departments develop appropriate plans to implement them in relation to other social development indicators such as education and gender. Finance comes from the government through the Annual Development Plans (ADPs). The financing also includes external funding derived from foreign aid – given by bilateral and multilateral organizations.

Moreover, Pakistan's population is rapidly increasing. Globally, the country is the sixth most populated with an estimated population of around 200 million (Government of

Pakistan 2017c, xvii). Among several other factors, the population size plays a considerable role in the planning of health. It affects expenditures on development sectors, such as health and education, which have always been minimal and unsatisfactory. For the health sector, the country has spent less than one percent of its GDP, except for the last two years. This allocation is significantly low as per the WHO's six percent benchmark (see Figure 7-1). Per capita expenditure on health is around $36, which is $56 less than the aforementioned benchmark set for the low-income countries (Government of Pakistan 2017b).

Figure 7-1 Showing the 2000-19 budget (in Billion PKR)[79]

Fiscal years	Public sector expenditure (Federal and Provincial)			Per centage change	Health expenditure as % of GDP
	Total health expenditures	Development expenditure	Current expenditure		
2000-01	24.28	5.94	18.34	9.98	0.58
2001-02	25.41	6.69	18.72	4.63	0.57
2002-03	28.81	6.61	22.21	13.42	0.59
2003-04	32.81	8.50	24.31	13.85	0.58
2004-05	38.00	11.00	27.00	15.84	0.58
2005-06	40.00	16.00	24.00	5.26	0.49
2006-07	50.00	20.00	30.00	25.00	0.54
2007-08	59.90	27.23	32.67	19.80	0.56
2008-09	73.80	32.70	41.10	32.21	0.56
2009-10	78.86	37.86	41.00	6.86	0.53
2010-11	42.09	18.71	23.38	-46.63	0.23
2011-12	55.12	26.25	28.87	30.96	0.27
2012-13	125.96	33.47	92.49	128.51	0.56
2013-14	173.42	58.74	114.68	37.68	0.69
2014-15	199.32	69.13	130.19	14.94	0.72
2015-16	225.33	78.07	147.26	13.05	0.76
2016-17	291.90	101.73	190.17	29.54	0.91
2017-18	416.46	87.43	329.03	42.9	1.2
2018-19	421.77	58.62	363.154	0.1	1.1

Source: (Government of Pakistan 2017b, 187-8; 2019b, 172, 2020)[80]

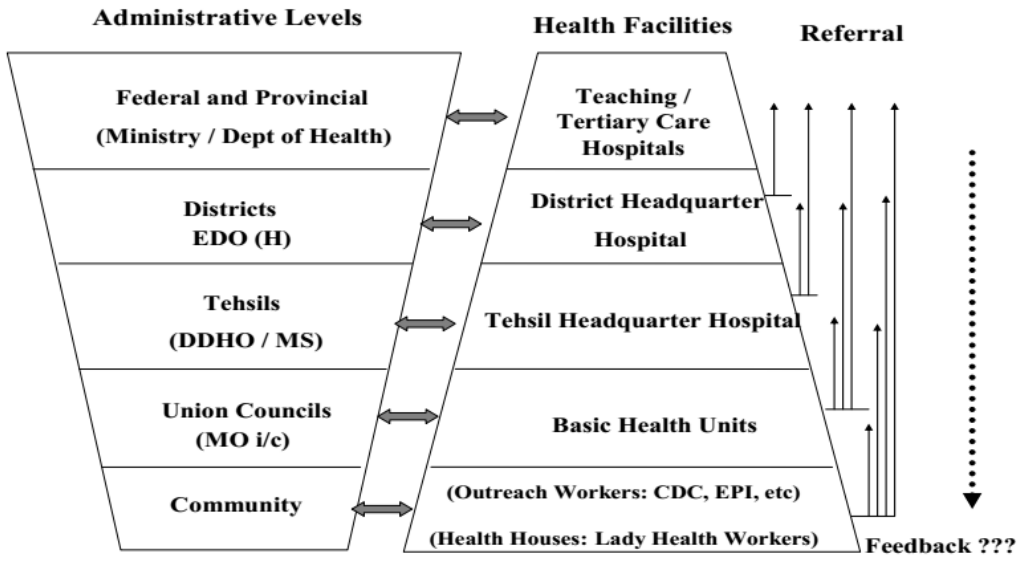
[79] The government has announced the budget 2019-2020, however, it has not published its document called *Pakistan Economic Survey 2019-2020* that contains the exact figures about the expenditure. Although this table does not contain expenditures for the ongoing year (2020), the current budget has been significantly criticised due to decreasing the resources for the development and increase defence budget.

[80] The last calculation of "percentage change" are not mentioned in the governmental document, thus, I have done them.

7.2.1.2 Structure of the Biomedical System

The country's constitution makes human welfare and development "a basic right of every individual," which is also in the UN's charter (Government of Pakistan 2017c, 182); hence, health provision is a government's responsibility. To do so, the country has a top-down structure in terms of administration and service delivery (see Figure: 7-2). The top-level, i.e., federal, has substantial power and significant facilities. At a local level, especially in rural areas, almost every person working in a BHU, RHC, and THQ is usually called a *"Ddākdār"* (it is a Sindh version of *Sindhī* a doctor, though people also use *Sindhī* doctor).* The local people do not differentiate between the hospital staff. For them, the entire staff are "*Sāhib*" (boss, sir, superior)* and *Ddākdār*. Local people often discuss who is an excellent doctor, bad doctor, or doctor with healing power. Word of mouth rapidly circulates such information about a doctor.

Figure 7-2 Structure of the biomedical system in Pakistan



Source: (World Health Organisation 2007a, 32)

To provide healthcare, according to *Pakistan Economic Survey 2017-18*, by the year 2017, the country had 1,211 public sector hospitals, 5,508 basic health units (BHUs), 676 rural health centers (RHCs) and 5,697 dispensaries. The next two economic surveys do not sketch the total number of these facilities, but the number of healthcare providers and doctor-people ratio (see Figure 7-3). Over time, a slight change has occurred in the quantity of these facilities. Furthermore, a report published by the Pakistan Initiative for

Mothers and Newborns (PAIMAN), (2005) on the functions reveals scarcities of such facilities in Sindh province.

Figure 7-3 Healthcare facilities, providers, and ratio 2017-18[81]

Governmental healthcare facilities

Hospitals	BHUs	RHCs	Dispensaries	Grand Total
1,211	5,508	676	5,697	13,092

Healthcare providers

Registered Doctors	Registered Dentists	Registered Nurses
220,829	22,595	108,474

Healthcare services, providers and population ratio

One Doctor	One Dentist	One hospital bed
963	9,413	1,608

The country has horizontal and vertical structures of healthcare. Horizontally, it goes from a provincial level to a district and a community level. However, the categorical or disease-specific programs that the federal government runs are vertical (see the section on the vertical structure of healthcare)

7.2.1.2.1 Horizontal Structure of Healthcare

Each province provides healthcare in a three-tiered system, which is then administratively managed at a district level. The first tier of healthcare includes RHCs and BHUs, MCHCs, and dispensaries. This tier is the core of the primary healthcare structure. Such facilities are a focal point for people living in rural settings. The BHUs, RHCs, and MCHCs provide primary obstetric care with community outreach programs offered via lady health workers (LHWs).

An RHC serves 25,000 to 100,000 people and provides educational, preventive, therapeutic, diagnostics, referral, and inpatient services. One RHC has approximately10-20 inpatient beds. Providing medical, logistical, and managerial support to BHUs, LHWs,

[81] Drawing on Pakistan's *Economic Survey of 2017-18*, I have created this table (Government of Pakistan 2018, 168). Moreover, the government has updated figures about the total number of doctors, dentists and nurses in its *Economic Survey of 2019-2020* (Government of Pakistan 2020). However, it has not mentioned their ratio per population. Hence, I have provided the almost three months old data in this table.

MCHCs, and dispensaries, an RHC performs legal, surgical, dental, and ambulance services. Each RHC contains around 5-10 BHUs.

Furthermore, a BHU with a catchment population of 10,000-25,000 works at a union council level (UC), and provides promotional, preventive, remedial and referral services, in addition to outreach or community-based services and programs. That means a BHU offers primary healthcare and essential services such as basic medical, surgical care, control of diarrheal diseases (CDD), centers for disease control (CDC), acute respiratory infections (ARI), and malaria and tuberculosis control. This unit also controls MCHCs and provides managerial and logistical support to LHWs. LHWs refer a patient to a BHU, which further refers (a patient) to higher-level facilities, if necessary.

The second tier contains first and second level referral facilities (THQs and DHQs) to ensure acute, ambulatory, and inpatient care. A THQ serves a population of 100,000-300,000, and a DHQ a population of 1-2 million. The THQ and DHQ hospitals have specialists to provide comprehensive obstetric care.

The third tier is the tertiary care that teaching hospitals provide. These facilities are present in big cities such as *Karāchī*, *Lāhore,* and *Islāmābād*. This tier also supports the second tier. Besides, some departments, such as the army, railways, and autonomous organizations, provide healthcare to their employees.

According to the WHO (2007a), less than 30 percent of the country's population consults public healthcare, or on average, one person visits a facility even less than once a year. The underlying reasons include a dearth of health professionals, especially female staff (doctors, gynecologists, nurses), frequent staff absenteeism, unsatisfactory services, and inaccessible and distant locations of public health centers (PHC) units (ibid.).

7.2.1.2.1 Vertical Programs of Healthcare

To manage functions related to health and inter-provincial coordination, the government founded the Ministry of National Health Services, Regulations and Coordination (NHSRC) in June 2011. The ministry's vision, according to its website, is to ensure: (a) a capable healthcare system that provides equitable, efficient, accessible, and affordable healthcare services intending to support people for improving their health status. It ensures (b) coordination between national and international stakeholders in the field of public

health; (c) oversight for regulatory bodies in the health sector; (d) population welfare coordination; (e) enforcement of drug laws and regulations; and (f) coordination of all preventive programs, funded by the Global Alliance for Vaccines and Immunizations (GAVI) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM) or simply the Global Fund. This ministry also has the Drug Regulatory Authority of Pakistan (DRAP) to ensure the safety, quality, and affordability of medicines across the country.

Prime Ministers National Health Programme

This program was established in December 2015 to bear the expenses of those who live below the poverty line. In 2016, the program began providing an annual package: 50,000 PKR for secondary care per family and 250,000 PKR for priority diseases per family (Government of Pakistan 2017c). Diseases include cardiovascular disease, diabetes, burns, HIV/AIDs complications, cancer, and covers road traffic accidents. A Central Management Information System (CMIS) monitors the project with the help of the National Database and Regulation Authority (NADRA). According to the newspaper *Dawn* (2018), initially, the project targeted 23 districts, and afterward, 15 districts were added in 2018. The newspaper further wrote that some view this program as "the first step towards turning Pakistan into a welfare state."[82] Although the program aimed to cover the entire country, Sindh and KPK provinces declined the offer (ibid.).

Family Planning and Primary Healthcare (FP&PHC)

Under this program, over 100,000 lady health workers (LHWs) work for improving the health of women and children by changing sanitation, birth spacing, iron supplementation, vaccination coverage, and ante-natal and post-natal coverage during pregnancy (Government of Pakistan 2017b). However, this program has faced significant challenges due to a lack of funding. For instance, LHWs have protested against low and delayed salaries. The sit-ins received massive attention from the media (Express Tribune 2015, 2017; Hisam 2016). The protests occurred because approximately 13,500 LHWs, Lady Health supervisors, drivers, and clerks did not receive their salaries (Express Tribune 2015, 2017). After that, the Supreme Court of Pakistan ordered the issue to be revisited (N. Iqbal 2014). In 2017, the provincial governments revised and regularized services to comply with the orders (Government of Pakistan 2017b).

[82] It's an online version of a newspaper, so there is no any page number.

Expanded Programme on Immunization (EPI)

Since the current thesis mainly revolves around this program, I do not go into its details here. As noted earlier, Pakistan started its EPI as early on as in 1978 to immunize children and pregnant women. The vaccination is against poliomyelitis, tuberculosis, diphtheria, neonatal tetanus, tetanus, hepatitis B, pertussis, and measles. Moreover, UNICEF has helped in introducing new vaccines, such as the pentavalent vaccine. Under this program, around 8 million children and 6.5 million pregnant women were immunized in 2017 (Government of Pakistan 2017b).

The Federal EPI was running this program. However, after the 18th constitutional amendment, this EPI department only procures, coordinates, and offers technical guidance, while the provincial governments implement this program. In this regard, the country relies heavily upon international stakeholders such as the World Bank, the WHO, the Japanese International Cooperation Agency (JICA).

Interestingly, Pakistan's government (2017b) views issues interrelated to immunization only in the Federally Administered Tribal Areas (FATA) and *Baluchistān*, but not in other provinces. Contrary, the current research highlights problems in other geographical parts, too, such as in Sindh province. The government's document of 2017 discusses such issues briefly without details.

Malaria Control Programme

Pakistan aims to reduce the malarial burden up to 60 percent, particularly in high and moderately endemic areas (Government of Pakistan 2017b). Two malarial parasites, Plasmodium Vivax and Plasmodium Falciparum, prevail in the country. The former causes 80 percent of the infections. Malaria is endemic in 56 districts, which constitute 90 percent of the total infected people (ibid). Seventeen districts are in *Baluchistān*, while there are 12 each in Sindh, KPK, and seven in FATA. According to the government's (2017b) *Economic Survey 2016-17*, the national strategy uses Result Based Monitoring (RBM) for "early diagnosis and prompt treatment, improved detection and response to epidemics, developing viable partnerships with national and international partners, multiple preventions, focused operational research and national commitment."

Tuberculosis (TB) Control Programme

In terms of the burden of TB, Pakistan globally stands in the sixth position. Multidrug-resistant TB is ubiquitous, which is increasing due to the high use of antibiotics. This is because the drugs are quickly and readily available in the country. Drugs are prescribed by unqualified persons, self-prescription, and quacks. The newspaper *Dawn* (2017b) reported that the country has utterly failed to regulate and debate selling of the antibiotics.

The HIV/AIDS Control Programme

HIV/AIDS is prevalent in the country. Before 2019, this virus was predominant in only some groups: People Who Inject Drugs (PWID) and sex workers, including Hijra (Transgender) Sex Workers (HSW) and Male Sex Workers (MSW). According to an official document of 2017, with support provided by the Global Fund to Fight AIDS, Tuberculosis, and Malaria (UFATM), Pakistan was declared successful (Government of Pakistan 2017b). The program focuses on behavior change communication (BCC), services for precarious populations, medication for sexually transmitted infections (STIs), safe blood supply, and transfusions, and capacity building (ibid.). Although until 2019, the virus – as claimed by the government – was under control, from May of 2019, HIV is becoming a pandemic, particularly in Sindh. The infection has significantly increased, especially in children. The youngest infected person is around six months old. Consequently, the United Nations Programme on HIV and AIDS (UNAIDS) team visited the country and declared it a high-risk country, especially in Asia.

MCH Programme

This program intends to improve the alarming situation of infant and maternal mortality (IMR). The current IMR is 62/1,000, and the maternal mortality rate (MMR) is 170/100,000 (Government of Pakistan 2017b). There are approximately 550 facilities, including the Emergency Obstetric and Neonatal Care (EmONC). These centers also offer family planning.

Prime Minister's Programme for Prevention and Control of Hepatitis

Hepatitis is another ubiquitous disease in Pakistan. Almost 18 million people are infected with hepatitis. Pakistan and Egypt report 80 percent of the whole world's hepatitis infected people. Hepatitis B and C are chronic, which increases the burden of diseases.

The deaths are caused by liver failure and hepatocellular carcinoma (S. Ashraf and Ahmad 2015). During my fieldwork, numerous people had hepatitis; some of them have already died owing to it. To cure this disease, people consult several sectors of health: biomedical hospitals, verbal healers, and they stay at various shrines. To prevent and control hepatitis, the country launched a Prime Minister's program in 2005. This program provides medication to those people who lack economic resources. The treatment of an individual case costs around 100,000 PKR (Mussadaq 2010). The interventions focus on advocacy and behavior change communication; provide hepatitis B vaccination to high-risk groups; establish screening, diagnosis, and treatment facilities in DHQ hospitals; and ensure safe blood transfusion and prevention of hepatitis A and E (S. Ashraf and Ahmad 2015). Two German Institutions, the *Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH* or GIZ and the *Kreditanstalt für Wiederaufbau* (KfW), support the country in its "Safe Blood Transfusion Project". This prevalence of hepatitis has increased expenditures on combatting this disease by a factor of 19 in the country (Mussadaq 2010).

Cancer Treatment Programme

Eighteen hospitals work in the country. The Pakistan Atomic Energy Commission (PAEC) supports them. According to a government document, these hospitals have advanced diagnostic and therapeutic Nuclear Medicine and Clinical Oncology and initiated the Cancer Registry Programme for detecting, managing, and preventing cancer (Government of Pakistan 2017b).

7.2.2 Private Sector of Biomedical Healthcare System

After mentioning the government provided healthcare facilities, I would like to present the private healthcare sector that prevails in the country. There are formal institutions and informal ways to seek healthcare. Both are described one by one.

7.2.2.1 Formal Private Care

The WHO (2007a) calls the private healthcare system a modern, for-profit, or a fee-for-service system. This system includes biomedical doctors, nurses, pharmacists, drug vendors, laboratory technicians, traditional healers, shopkeepers, and unqualified practitioners. The services it provides include hospitals; nursing homes; maternity clinics; clinics run by biomedical doctors, nurses, midwives, paramedical workers;

diagnostic facilities such as laboratories; medical stores selling drugs; journal stores selling the medicine; *Hakīm* selling medicine in public transport such as buses and trains.

According to the WHO (2007a), some private facilities lack the required staff, skills, technology, and facilities, a defined structure and regulation. Some, however, are hi-tech hospitals and do have skilled staff, supplies, equipment, and transportation. Such hospitals are comparable to any governmental teaching hospital. Businesspersons run them. These hospitals charge visiting fees to patients, besides further charges.

Moreover, the WHO, in its same report, mentions that small structured nursing homes or centers also exist in the country. Two or more people run these facilities. Not all nursing homes have skilled staff and equipment. Also, there are clinics run by one person or in a partnership. These clinics provide part-time or 24-hour services. Government doctors mainly run such clinics after office time. Some doctors refer patients to visit them at their private clinics. The staff may be qualified, but not all are legally allowed to practice. The second category is of semi-qualified practitioners, such as dispensers, lady health visitors (LHVs), LHWs, or technicians, who run clinics after obtaining a diploma or training. Although illegal, non-qualified practitioners also practice and provide shoddy services. They may be ward boys, peons or pharmacists, who obtain some skills through an apprenticeship. Also, many homeopaths and *Hakīm* who are practicing, and not all of them have proper qualifications.

7.2.2.2 Informal Private Care

The WHO (2007a) further details that grocery or general stores sell medicines such as tablets – Aspirin, Paracetamol, painkillers, and antibiotics – in small towns and villages. Legally, this practice is not allowed but is a frequent exercise.

Moreover, other facilities that provide modern, not-for-profit care are (I) NGOs. For instance, Médecins Sans Frontières (MSF) provides medication against Hepatitis C. During the measles outbreak, organizations like World Vision and Red Crescent were also quite active. The latter organization even provided rooms in hospital wards to keep and treat children who had contracted measles. According to the WHO (2007a), Pakistan has a network of approximately 80,000 NGOs registered under various Acts. The government and international donor organizations in coordination with each other are helping them to become self-dependent, autonomous, and financially sustainable.

I have briefly sketched a picture of the healthcare system without going into much detail about the relationship between the state and donor organizations. Sania Nishtar (2006, 9)– a public health practitioner and special assistant to Pakistan's Prime Minister – depicts this relationship as follows: "the role of the State as steward and regulator has become critical as we move to new models of financing health and delivering services as these involve the roles of many stakeholders including the private sector." That means the domain of health has become more complex while involving several stakeholders that can not only be divided as governmental and non-governmental but also in terms of scale such as national and international (see Hadolt and Hardon 2017).

7.2.3 The Current State of the Biomedical System

Documents and reports of the government and (I) NGOs reveal a good picture of Pakistan's current healthcare system. Yet these documents demonstrate an optimism bias that stretches a crafted impression in which everything seems on the desired track. Almost three decades ago, Syed Akbar Zaidi (1988) highlighted the weak areas in the health sector of Pakistan, yet his identified issues still prevail: for instance, a dearth of health facilities; unemployment of doctors; "brain-drain" of graduates; lack of motivation in medical staff particularly those who are working in rural settings; the monopoly of pharmaceutical companies and their profit-center approaches; lack of tap water and proper sanitation. He has identified "class-bias" as a determinant of Pakistan's health sector, which reflects overall patterns of the economy. People holding less economic and political power are more prone, in the words of Farmer (1996b), to "structural violence" and remain muted.

The silence is appreciable and part of enculturation, particularly in Pakistan's rural settings. Active and argumentative children meet harsh punishments – physically, emotionally, and psychologically. Similarly, if an adult complains about anything, then they receive a familial or communal suggestion to stay calm and thankful. However, at the state level, complaints bring various forms of "punishment," e.g., a concerned officer would not help anymore; a politician could get someone in trouble; physical punishment could reach. Consequently, an individual does not report wrongdoings, even corruption.[83]

[83] Nonetheless, there are certain (I)NGOs working to create an awareness of the complaint redressal mechanism at various level and giving confidence to the people to lodge their complaints.

Moreover, in Pakistan, for some doctors, the seasonal diseases bring patients as well as packages from pharmaceutical companies, whose incentives can be a percentage per sale or trips. For incentives, doctors only need to recommend medicine prepared by such pharmaceutical companies. This bargaining is highly relevant to what Farmer (1996b) calls the "benefits of emerging infectious diseases".

Additionally, a columnist of newspaper *Dawn*, named Sara Malkani (2016) published an editorial on Pakistan's healthcare indicating that it is in an "abysmal state" owing to the government's indifference, which reflects in the allocated budget that a few years ago was mere 0.9 percent of country's GDP.[84] For this figure, merely two countries – i.e., the Democratic Republic of Congo and Bangladesh – stand below than Pakistan. Neither civil nor military governments have made health a priority in Pakistan.

Although the healthcare system of Pakistan is struggling with challenges and issues, the country is in the list of countries that do not spend the required resources (World Health Organization 2007a). As mentioned earlier, from 2000-01 to 2014-15, the average percentage of its GDP Pakistan spent on health is 0.53, and in 2016, it spent 0.45 percent of its GDP (Government of Pakistan 2016b). However, in the last two budgets—2017-18 and 2018-19—it has increased its GDP to 1 percent.

Yet despite paying ample attention to this allocation, the government views some underlying hindrances: "the high population growth, uneven distribution of health professionals, deficient workforce, insufficient funding and limited access to quality health care services" (ibid., 187). On Pakistan's healthcare system, another editorial of *Dawn* (2017b, 8) reads that Pakistan is "a country beset with issues of poor vaccination practices, hygiene challenges, illiteracy and unawareness, and an extremely patchy healthcare system, the costs may well be staggering. Far from the politics that take up the attention of our legislators and policymakers, these are issues that merit immediate action."

On the one hand, Pakistan's most population seek care at these government facilities (World Health Organisation 2007a). On the other hand, the situation at DHQs, THQs, BHUs, and Dispensaries is further worrying and worsening. Owing to a lack of funding,

[84] This is an online news report, thus, has no page numbers.

national healthcare fails to meet the primary needs of people. Thus, people go to private facilities. Malkani (2016) claims that the result of the government's indifference is an inadequate quality of services, which diverts people to the private healthcare system.

Moreover, several significant issues hinder the service delivery process. For instance, the lack of good governance and transparency, required health care facilities, quality services, supportive monitoring, required resources, and inefficient use. It also includes administrative delays, poor management, absenteeism, the unprofessional attitude of staff, extra emphasis on private practice, vacant sanctioned positions, inadequate capacity of staff, lack of incentives for staff, unresponsiveness to community needs, and lack of public intervention and participation. Hence, people consult alternative medication systems, owing to a dearth of government-provided healthcare– and low economic resources, and low literacy. These alternative systems themselves lack adequate facilities, medicine, and staff.

7.3 Comparing *Unānī-Tib*, *Ayurvedā* and Biomedicine

Every medical system has unique ideas, practices, and approaches to dealing with the human body. The *Unānī-Tib* and *Ayurvedā* share many things, such as belief in the "power of the body" itself: a human body is more potent than microorganisms, viruses, and bacteria. Both treat each body as distinctive and a product of universal humors. Hence, when humors are in a balance, no other organisms can successfully attack it; because, a body has a defensive power, called *Quwaat-e-Mudabbira* (literally means vital force), to avert any attack. These medical systems deal with a body according to individual factors such as socio-cultural, economic, political, geographical, historical ones.

Biomedicine, however, believes differently. It views microorganisms as more powerful, which can successfully attack if the body has no external support in terms of medicine. The focus of Western medicine is on the pathogens and how to control them while the other two medical systems concentrate on the body that can acquire strength by maintaining the balance among its constituents (Frawley 2001; Ranade 2001). Biomedicine acknowledges the state of the immune system. Yet it pays less attention to the interplays of socio-cultural, historical, environmental, economic, and politico-economic factors, which play a significant role in shaping the body and perceptions towards it (see Lock and Kaufert 2001; Lock and Nguyen 2010). It significantly focuses

on an "outside-in" approach while emphasizing that the body needs external interventions to be strong.

In contrast, the *Unānī-Tib* and *Ayurvedā* practice an "inside-out" approach that focuses on the potential of the body itself. They have specific suggestive patterns such as (1) the air of one's environment, (2) food and beverages, (3) movement and rest, (4) sleep and wakefulness, (5) eating and evacuation, and (6) emotions to keep them in a balance, which leads towards a "strong body". Biomedicine, however, deems medicine, e.g., vaccination, necessary to create power inside the body and improve the immune system to beat any outer attack.

In this regard, Subbarayappa (2001, 143) argues that comparing traditional and modern medical systems is unjust since the former systems have "a philosophical basis in relation to man [woman] and nature, his [her] environment and the body-mind concord," whilst the latter system "lacks such basis" and deals mainly "with diseases, their recognizable causes a verifiable or reproducible curative method." They are comparable, however, while considering their perspectives on and purposes for maintaining health and restoring it.

7.4 Healthcare Systems Compete: A Most Wanted Medical System

The universalization of economic and political regimes has led to all the specific systems being the "most wanted" systems, and the health system is also not an exception because it is also connected to the entire processes of a country. Analogs to tensions between different ideologies and institutions, there is also a competition between healthcare systems, such as biomedicine, *Ayurvedā*, and *Unānī Tib*. After the biomedicine's significant domination and influence, the "local" or "native" medical system(s), I argue, appear "most wanted" from two perspectives. First, the biomedical system wants to change, replace, and dominate it while considering it as unscientific, improper, irrational, outdated, ineffective, hazardous, and harmful. Cunningham and Andrews (1997, 12) argue that unsurprisingly the local systems of former colonies imperialist states "were judged inferior, stupid or merely superstitious in comparison with this scientific medicine". Likewise, "the natives were in general regarded as dirty, lazy, and as reservoirs of disease, needing the imperialist to bring them health and civilization" (ibid.). For instance,

Attewell (2013) describes revisiting the *Unānī Tib* according to scientific principles in India and producing a report for the colonial government.

Second, it is most wanted by the local (native) people, who have been using and consulting it for many generations. They understand it as an identity marker: the following stories illustrate this wanted-ness. This negotiation of healing patterns and revival of indigenous relates to a wider movement across the world, as Gabriele Alex (2009) finds it in the context of a South Indian Narikuravar community, which negotiates and defends its folk medical practices within India. Or, Langford (2002) links the revival of *Ayurvedā* to the revival of Indian in a global context.

7.4.1 Imagining Indigenous Practices

What do people believe, and how do they differentiate indigenous practices and biomedicine? There are local stories which people share. One 50-year-old man, who is quite famous in *Rahīmpur* village due to his folk wisdom, shared two stories regarding the *Hakīm* to explain their knowledge and skills for the diagnosis and treatment of an illness. As the day is incredibly hot (around 40°C), we are sitting under a green tree, locally called *Tāri* (Dalbergia Sissoo). Under the tree, two black buffalos are chained, with their eyes closed, chewing grass. The tree was making the heat a bit easier on all of us. The older man begins the tale:

> Once upon a time, there were two popular *Hakīm*. Kings used to battle each other to demonstrate their strengths, wisdom, and skills. Warriors once fought each other to testify their skills, strength, power, and bravery. So do the *Hakīm*, but with different tricks and ways to evaluate the *JJānn* (knowledge), *Hunur* (skills), and *Ddāhap* (wisdom).
>
> So, one day, one *Hakīm Jibrāīl* (pseudonym) wrote a letter to another *Hakīm*, named *Luqmān* (pseudonym): 'I am sending you a sick person, please treat him accordingly and send me back a healthier one.' He gave the letter and address to a healthy person – who was under his apprenticeship. Besides, he recommended to the person, 'when you feel hungry, tired and sleepy, then you must use the wood of the *Aku* plant [Calotropis procera] to make fire, cook food, rest and sleep beside it. These are the recommendations that you must follow.' The person started his journey on a horse with a cloth bag carrying some food, water, and clothes. The journey lasted around one week. He was following the given directions accordingly, as promised. As time passed, he began to get sick. On the seventh day, he was very ill, unable to move, cook, and eat. Thankfully, he had the horse and just managed to reach his destination.

As soon as he reached the village of *Hakīm Luqmān*, he asked someone to bring him there. Since he was a guest as well as sick, the person obliged him and brought him to the *Hakīm*. They knocked at the door. *Hakīm Luqmān* came outside. The person – who now was very sick – managed to speak while providing him with the letter from *Hakīm Jibrāīl*.

The *Hakīm Luqmān* read the letter and then looked at the face of the person, who was still sitting on the horse. The *Hakīm Luqmān* said, 'Well! The *Hakīm Jibrāīl* is extraordinarily intelligent. I have heard good stories of his *Ddáhap*. I have great respect for him. Also, you are very ill, and fortunately, I have diagnosed the illness. Please do not worry, as you will recover soon. I would have asked you to get down from the horse and have a meal, but I must also follow some strict rules. I am not allowed to show you my hospitality this time, but next time for sure. Your *Hakīm* has challenged my *Ddāhap*. The challenge is akin to questioning or doubting someone's prestige. Therefore, please do not get down from the horse, and let me write down the answer to this letter.'

The *Hakīm Luqmān* replied, 'Thank you for writing to me and sending a sick person. You are a very well-known *Hakīm*, and I am like a student and still learning. I respect your commitment to serving humanity with your *Jjānn*, *Hunur,* and *Ddāhap*. However, with a limited *Jjānn*, I have diagnosed the causes of ill health. I believe that the right diagnosis is half the treatment. Please accept my regards and this recovered, healthy person.' The *Hakīm Luqmān* gave the person some food to eat and recommended: 'You have to use the Bair the same way that you were using the Aku plant; (Ziziphus mauritiana). Also, please make a promise to be consistent.'

The person began the journey back to *Hakīm Jibrāīl*. He followed the recommendations of *Hakīm Luqmān*: resting and sleeping under a Bair tree and using its wood for cooking food. Slowly and gradually, he was recovering. He was sick on the seventh day. On the final day of the return journey, he recovered fully and was healthy again. He arrived home and met the *Hakīm Jibrāīl*. Without any further delay, he handed him the letter of the *Hakīm Luqmān*. After reading the letter, the *Hakīm Jibrāīl* inquired about the whole journey, requesting every detail from the beginning. The person told him everything - how he became sick and healthy again. After listening to the details of the travel account, *Hakīm Jibrāīl* then praised the *Ddāhap* of *Hakīm Luqmān*. In this way, the *Hakīm* used to test each other.

Moreover, my interlocutor asked me if he could share another story. What else would a researcher dream of if not a respondent who was willing to oblige and share knowledge without hesitancy? I replied with a big, yes, "Please! Do tell."

Once upon a time, two *Hakīm*, let us call them *Sārang* and *Sodhal*, were going somewhere. It was sweltering summer weather. The sun was coming down to meet the earth. To protect themselves from the heat, both cover their heads with *Rumāl* (handkerchiefs). On their way, they see a farmer

wearing a *Goadd* (a type of sarong that is wrapped around the waist and worn in place of trousers, especially by men from South Asia) only, with no *Qamīs* (shirt). He is cultivating the paddy in the fields, which are full of water. A woman comes to him with a small basket on her head, which [they assume] contains lunch for him. When they see the farmer and the woman, both start an argument with each other about whether the farmer will die or survive. They stop under a nearby tree and continue observing the whole scenario. *Sārang* argues that 'these are the last breaths of the farmer' and *Sodhal* refutes it: 'he [farmer] can survive, if...'

Meanwhile, the female reaches and calls to the farmer, who comes from the middle of paddy fields to the *Bbano* (small pathways intersecting in the fields between small parts so that the fields can be adequately watered and to walk between the fields). He sits down on the *Bbano*, opens the basket, and promptly starts eating the meal. He is eating and simultaneously sipping something. After the meal, the farmer does not die but survives. His survival raises further questions and discussion for both the *Hakīm*. Both start thinking; they want to know the reasons responsible for the farmer's survival. They brainstorm and come to conclusions on his survival. *Hakīm Sodhal* excitingly shouts as if he has solved a big-impossible puzzle. He said: 'Yes, the farmer can survive under certain conditions, such as consuming a specific food, i.e., raw onion, that he certainly has eaten, and secondly if his feet remain in the paddy fields when he is eating. Otherwise, there is no other way possible that he could survive.' The other *Hakīm* agreed with him and praised his knowledge.

Afterward, they said, 'OK, let us go to meet him and inquire if he followed what we have concluded.' Both went there and called to the farmer, who was again working in the field. The farmer came and asked them what he could do for them. They asked, 'Could you please share with us what food you eat and how you have eaten it since we have a puzzle?' The question surprised the farmer, but he responded to it politely, considering them as guests. He said, 'Because we are farmers. We do not have many options to eat, as we cannot afford it. We eat something simple to survive. We eat for survival rather than surviving for eating.

Similarly, today, my wife brought two Chapattis (homemade bread), one onion, and a jug of Lassi. While she called, I came quickly due to hunger, so sat down on the *Bbano* without going to sit under that tree and started eating with half-washed hands. I could not take my feet out from the wet paddy fields. That is what I ate and how I have eaten.' Both the *Hakīm* then looked at each other. Soon after, *Hakīm Sārang* asked the reasons from *Hakīm Sodhal*, who shared that the food, and feet dipped into the water, maintained the hot and cold nature in the body of a farmer. The onion and *Lassi* have a cold nature, and so is the water. After listening to this brief answer, *Hakīm Sārang* appreciated the understanding, knowledge, and wisdom of the *Hakīm Sodhal*. Later on, they also told the whole story to the farmer, who was still looking at them surprisingly.

After having told the stories, the older man had a victorious smile on his face and said:

> My son, this is called the real *Hikmat* (wisdom). Nowadays, doctors do not even respect humans. If you visit them, then they behave very arrogantly. They cannot even diagnose the illness until you tell them the feelings and problems you are having. However, *Hakīm* used to diagnose people while looking at their faces or just listening to the pulse on the wrist (and not on instinct). A *Hakīm* was fully aware of the beats and sounds of the pulse.

What do the stories indicate? The stories reflect how these people perceive a healer: how a healer should be. Biomedical doctors do not check them or treat them in this way.

This narration symbolizes the way local people view the medical systems or idealize them that how a practitioner should be. According to them, a practitioner should have a thorough understanding of the body and know the causes of illness before asking the sick questions. They indirectly resist the biomedical system. This resistance is part of societal memory. They consider the biomedical system, despite practicing it, as a system of "others". Refusing vaccination, while considering it a "Western plot" to "sterilize" the Muslim females also relates to this "our" and "their" dichotomy. An overwhelming number of people are still served by these indigenous medical systems, where practitioners of these systems feel their pulse, inspect a patient and offer him/her the symptoms and deal with him/her similar to their ancestors. This is not only due to the lack of biomedical facilities but also to the alienation or foreignness of biomedical knowledge and practices.

The existence of such stories reflects the mechanisms of sharing and transferring local knowledge and viewpoint from one generation to another. Stories, folklore, and myths in each culture play a significant function in enculturing its members and preserving knowledge (Miller 1994; Miller and Moore 1989). As Leslie claims, "Human affairs take narrative form through our own stories and those of other individuals, and through stories that account for our customs and place in the world. The inherited forms of these stories guide our selective observation of the world" (1989, 26).

Moreover, some authors have traced the revival of the "indigenous" medical systems, particularly *Unānī* and Ayurvedic ones (e.g., Alex 2009; Weiss 2008; Langford 2002; Leslie 1963). As Leslie (1963, 72) sketches the revitalization, especially during the struggle for independence, "by 1947 there were 57 colleges, 51 hospitals, and 3,898

dispensaries of Ayurvedic and *Unānī* medicine". He further mentions that the followers of *Ayurvedā* consider the "golden age" of this system to be before the arrival of *Unānī-Tib*; however, they view the British-imposed allopathic medicine as being to the "detriment of the native systems" (ibid., 73). Advocates of *Ayurvedā* know that the Mughal invaders introduced the *Unānī-Tib*, but the Arabic-translated version of Greek medicine has roots in the *Ayurvedā* (Leslie 1989). This understanding may be a reason that *Unānī-Tib* and *Ayurvedā* are less threatened by each other but by the biomedicine.

This coexistence and coordination of *Ayurvedā* and *Unānī-Tib* against the biomedical system, during the time of colonization and post-colonization, makes a different type of contestation visible, or what is called politics of identity (see Weiss 2008). Despite the differences in the religions, both the former systems are united against the "external force" in the form of biomedicine. Both systems want to defeat the latter. This contestation reflects a famous local saying "[*Sindhī*] *Tray Dost Ain Tray Dushman*" (three friends and three enemies).* For instance, a person's friend, their friend's friend, and their enemy's enemy are considered three friends, and thus a person's enemy, a person's friend's enemy, and a person's enemy's friend make the three enemies. The context of *Ayurvedā* and *Unānī-Tib* against the allopathic system is an example of this proverb. Perhaps, if the biomedical system had not challenged both, they might have confronted each other. The fundamental point in both is the body itself, which has the commanding position. This means external forces or factors are secondary whenever it comes to ill health. Nevertheless, they have some similarities in terms of geographical practice and theoretical understanding and have competed, too.

7.5 Concluding Remarks

Pakistan has a wide array of knowledge and practices related to health. This multiplicity illustrates a medical pluralism—encompassing *Ayurvedā*, *Unānī Tib* and biomedical, —is practiced. The country has made efforts to legalize the pluralistic medical system, as it legally incorporated *Unānī-Tib*, Homeopathy, and *Ayurvedā*. Illustrating these systems from a historical perspective as well as supplying the data on their current state, I showed what the government has done thus far to meet people's needs related to health, and what structure of the biomedical facilities exist in the country. After being transferred from the British colonizers to the "Brown Englishman," the biomedical healthcare system has evolved and received more considerable attention from the government than *Ayurvedā*

and *Unānī Tib*. Nevertheless, the resources allocated to the system are insufficient when compared to other governmental sectors, e.g., Défense. From 2000 to 2020, the country's average budget allocated to healthcare has never crossed one percent of the total GDP. Only during the last two budgets (2017-18 and 2018-19), the country has spent 1.2 and 1.1 percent of its GDP.

Consequently, the healthcare sector remains unestablished and overwhelmed: In 2018, according to *Pakistan's Economic Survey*, the doctor-patient ratio was around one doctor for 970 people, one dentist for around 9,540 persons, and one hospital bed for around 1,610 people. These differences in terms of healthcare services and providers further intensify when compared to the rural and urban divide. The former category has fewer opportunities as compared to the latter one. This overwhelming state demonstrates the prevailing inequalities and their substantial implications for a layperson.

Moreover, this chapter provided a basic understanding of the local perception of these healthcare systems, which highlights an ongoing contestation, which is visible to a layperson. Although the biomedical system is strong in terms of its network, supplied resources, and governmental attention, the indigenous systems are also under practice. Despite the great attention and funding, the biomedical system also is unable to meet the growing needs of a rapidly increasing population. Moreover, this chapter discussed the competition between healthcare systems: the biomedicine on the one side and *Ayurvedā* and *Unānī Tib* on the other. This tension could be situated within the broader revival of indigenous medicines and identity politics.

CHAPTER 8: MEASLES WORLDWIDE: EPIDEMIOLOGICAL AND BIOMEDICAL PERSPECTIVES

Providing specific epidemiological data concerning measles at the global, South Asian, and Pakistan levels, the chapter highlights some historical aspects of measles, in particular regarding the question of when studies on measles started to explore its causes. In its last part, the chapter describes measles from a biomedical perspective and discusses global initiatives—such as the Measles and Rubella Initiative (M&RI)—that several global stakeholders undertook to deal with measles. Chapter 7 already described some brief details about such initiatives; the following section expounds on those issues.

8.1 Measles at a Global Level: A Few Epidemiological Facts and Figures

On March 16, 2017, the American Centers for Disease Control and Prevention (CDC) Global tweeted, "Measles anywhere is #measles everywhere." This tweet can be read against the background of measles outbreaks – a disease that was declared eliminated in 2000 in the United States (Parker et al. 2006; Zipprich et al. 2015). The tweet also reveals the perception of global stakeholders, for instance, the CDC and the WHO, about the potential and risks associated with measles. The biomedical experts working in these global organizations view measles as a lethal disease and global problem because it is currently resurging across the world.

Furuse and colleagues (2010) write that annually, around 30 million people contract measles. In 2017, measles infected around 90,000 people worldwide (World Health Organisation 2017), and in 2018, its deaths significantly increased and reached 110,000 (Lindmeier 2018). Dabbagh and colleagues (2018) claim that during 2000–2017, the number of measles infections reported worldwide decreased by 80 percent, from about 853,500 in 2000 to around 173,500 in 2017, and measles incidence decreased 83 percent from 145 to 25 infections per million population. However, as compared to the reported measles infection, e.g., approximately 132,400 infections and 19 infected people per million of 2016, both infections and incidence increased in 2017.

Several outbreaks of measles have occurred across the world during the last decade (2010-2020). Reuters (2016) – an international news organization – indicates deaths of around 350 people per day due to measles across the globe. For instance, a measles outbreak killed around 400 individuals in the Katanga region of the Democratic Republic

of Congo (*New York Times* 2015). Moreover, as stated earlier, in 2000, the CDC officials declared measles successfully eliminated in the USA (Gostin 2015). Nonetheless, the current outbreaks in the country show a re-emergence of measles.

White and colleagues (2012) mention that 15 measles outbreaks occurred in the USA in 2011. In 2014, measles remerged in the US and infected more than 600 individuals in 27 states. Similarly, Gostin (2015) states that in 2015 over 100 cases were reported in 17 states, and according to claims of the CDC, 55 percent of people affected by these 100 cases were unvaccinated, and the vaccination status is unknown for 31 percent of the total cases. The *New York Times* (2015) published that an outbreak of measles occurred in American Disneyland that spread across California and beyond, ultimately leading towards a heated discussion and compelling health officials to ban unvaccinated children from schools in Orange County. Domercant and colleagues (2015) consider that several children in California were intentionally unvaccinated owing to people's personal beliefs. Consequently, in California, the government issued strict vaccination compliance laws to strengthen and minimize the occurrence of measles (Garon and Orenstein 2016). According to the American National Broadcasting Company (NBC) News (2019), during 2019, measles infected around 700 people in the US, which is the highest number of infections since 1994. Thus far, the country has encountered 13 outbreaks, six of them in the under-immunized parts (ibid.). After a measles outbreak, the local government imposed a ban on unvaccinated children to restrict them from entering public places such as libraries and gyms in Rockland County, New York (Hein 2019; Mandel 2019).

Furthermore, measles infections also have increased in Europe. According to the WHO (2012), in 2010, measles infected around 37,000 people on this continent. These infections were almost 7,000 higher than the number of the previous year's infected people. The biggest outbreak was in 2011 in France, with around 15,000 cases. Other European countries, including Austria, Italy, Spain, Germany, and the United Kingdom, also witnessed measles outbreaks. In 2014, in Austria as part of an art project, the slogan "*Wir schielen schon auf dich*" ("We are already looking at you") was projected together with red spots onto the walls of the Leopold Museum of Vienna in January 2014 (World Health Organisation 2016a). Considering the measles virus is "looking for people," the word *looking* has been used in the context that the authorities, such as the government and WHO, are "looking" for measles to be eliminated from Austria. The

projection aimed at promoting public awareness of measles. According to Agence France-Presse (AFP) (2019), in April 2019, Austrian authorities suspended bus services in Klagenfurt after a driver contracted measles. Furthermore, in 2019, Italian Health Minister Ms. Giulia Grillo declared, "No vaccination, no school" (Rampton 2019); her declaration has roots in a measles outbreak of 2017, in which the country reported around 34 percent of overall measles infected people in Europe (see European Centre for Disease Prevention and Control 2018; Siani 2019).

Owing to these outbreaks, some scholars view this increase in measles infections, which the WHO estimated at around 200,000 infections in 2018, as a re-emergence of this disease (Barrett et al. 1998; Bloom and Cadarette 2019; Reiss 2019). On the re-emergence, newspaper the *Guardian* (2018) mentions Dr. Zsuzsanna Jakab's views, the WHO regional director for Europe, that there is "a dramatic increase in infections and extended outbreaks" of measles; thus she "calls on all countries to immediately implement broad, context-appropriate measures to stop further spread of this disease." Mark Muscat (2019), a WHO official, stated during his presentation in a symposium held at the Medical University of Vienna, that the second half of the present (2010-2020) decade has witnessed a significant increase in measles cases also in European countries.

The WHO (2019d) mentions that measles infections have increased by 300 percent in the first three months of 2019, as compared to the same period in 2018. For the latter years, the total number of reported infected people worldwide, from 1980 to 2018, is approximately 45,980,300 (World Health Organisation 2019c). According to the WHO's same report, the highest number of infected people was reported in1981, (around) 4,078,500 and followed by 1980 with 3,852,300 infections. In contrast, the lowest number of infections, approximately 312,150, was reported in 2016. Moreover, the WHO (2019e) in its report on "Measles cases and incidence rates," describes that out of 194 member states, there are 11 countries with a significant variation in the confirmed cases,[85] but in these countries, the measles incidence rate per one million population within 12 months is more than six per thousand to over 200 cases. The following

[85] According to the WHO (1999, 10), it is also called an epidemiologically confirmed case, which meets the definition of a clinical case and is linked to a laboratory-confirmed case.

countries reported the highest incidence cases worldwide from the most to the least (see figure 8-1).

Figure 8-1 Showing countries with an over-200 measles incidence rate[86]

Country name	Confirmed infected people	Incidence rate
Madagascar	128,224	6,066.87
Ukraine	56,802	1771.16
Georgia	3,904	1199.88
Kazakhstan	10,126	594.58
The Philippines cases and	42,467	478.31
Kyrgyzstan	2,228	476.68
Israel	996	420.17
New Zealand	1,666	358.73
Liberia	1,282	349.6
Yemen	5,847	331.93
Lebanon	1,241	225.75

Furthermore, as per the same report of the WHO (2019e), out of the same 194 WHO member states, 12 countries have reported over a 100-incidence rate per one million population within a year. The following countries are the ones in terms of incidence rate from the most to the least:

Figure 8-2 Showing countries with an over-100 measles incidence rate[87]

Country name	Confirmed infected people	Incidence rate
The Bolivarian Republic of Venezuela	520	196.02
Albania	481	192.05
The Republic of Bulgaria	1,175	164.76
The Republic of Chad	1,630	131.53
The Republic of the Niger	2,524	130.17
The Republic of Sudan	3,659	127.09
The Republic of South Sudan	1,471	120.27
Tunisia	1,367	120.05

[86] I have created this table based on the data of WHO (2019e).
[87] I have drawn this table using the data of WHO (2019e).

The Democratic Republic of the Congo	7,526	117.42
Myanmar	5,295	116.54
Thailand	4,489	112.37
Angola	2,962	103.25

The majority of these countries have remained under the colonization of the Portuguese (Angola); the French (Chad, Madagascar, Tunisia); Belgian (Congo); Mongols, Ottoman Empire and Russians (Georgia, Bulgaria, Ukraine); American Colonization Society (ACS) (Liberia); British (Myanmar, New Zealand, Niger, Sudan, Yemen); and the Spanish and the Americans (Philippines, Venezuela); French and British (Thailand).

Furthermore, if we look more closely at these countries' current economic and political conditions, most of them fall under the category of low-income countries. We may reasonably infer then that there is a convincing association of the outbreaks of infectious diseases, including measles and doubts about vaccination with colonization and its ensuing economic and political conditions. Some anthropological studies have already illustrated this relationship between vaccination suspicions and colonization (e.g., Feldman-Savelsberg, Ndonko, and Yang 2017; Feldman-Savelsberg, Ndonko, and Schmidt-Ehry 2000; J. Roberts and Mitchell 2017; Fairhead and Leach 2007; Blume 2006, 2017; Renne 2010; Greenough, Holmberg, and Blume 2017).

Now it is useful to draw a picture of measles infections from South Asia as a whole, which the WHO has divided into two regions: The South-East Asia Region (SEAR) and the Eastern Mediterranean Region (EMR). Pakistan falls into the latter region. According to the WHO (2019c), an approximate total of 4.05 million infections of measles have occurred in eight countries of South Asia, from 1980 to 2018: by year, 1987 reported the highest number, approximately 0.327 million and 2012 the lowest reported infections, 19,600. During the decade from 1980 to 1990, infections remained above 100,000, while from 1991 until 2011, except in 2010, when measles infected around 50,000 people. The last decade, however, began with around 39,000 infected people, followed by 49,100; 19,600; 21,700; 31,700; 35,200; 23,000, 26,900 and 57,050 until 2018. The infections indicate an increase in South Asia (see Figure 8-3).

Figure 8-3 Showing measles infection and incidence rate in South Asia[88]

Country	2018		2019	
	Confirmed infected people	Incidence rate	Confirmed infected people	Incidence rate
India	29,000	27.38	10761	7.86
Pakistan	33,000	170.4	2058	10.06
Bangladesh	3,600	23.9	5827	34.67
Afghanistan	166	5.86	211	5.67
Nepal	429	15.28	430	14.36
Sri Lanka	53	2.5	54	2.57
Maldives	3	9.35	1	2.21
Bhutan	0	0	0	0

At the global level, according to the same WHO report (2019c), in Pakistan, measles has infected around 434,000 people from 1980 to 2018. In South Asia, Pakistan stood at the top position due to an approximate number of infected people in 2018, i.e., 33,000 and incidence rate 170.4 (ibid.). According to Mere and colleagues (2019), the reported confirmed measles incidence has increased from an average of 24.6 per one million population during 2000–2009 to an average of 80.4 during 2010–2018. The peak incidence rates occurred in 2013 (230.3) and 2018 (153.6).

The variation in incidence rates, particularly in the aggregate of cases, is highly determined by the significant differences in the population size of these countries. The other underlying reasons, perhaps, include an unequal reporting of infections that might differ due to socio-cultural perceptions and the efficiency of the health department in terms of record maintenance and staff capacity. There are good chances that some or much of the data is "fabricated" according to the situation and demand (see chapter 2).

The data presented above, on the one hand, demonstrate an increase in the cases of measles against the background of global level initiatives, for example, M&RI, to tackle measles (see the latter part of the chapter). On the other hand, it shows the engagement of several stakeholders, who consider that the number of measles infections is

[88] I have drawn this table after drawing on the data of WHO (2019e).

significantly increasing again, and this increase to them is a risk that should be expertly dealt with. These dealings lead to ongoing negotiations across the world.

Interestingly, in most of the cases, the global stakeholders are holding local people or sociocultural practices responsible for these outbreaks. This perception that the local people and their practices are the primary cause has roots in the historical categorization of knowledge by colonizers such as the British (e.g., Paradies 2016; W. Anderson 2014; Asad 1995; Leng 1982; Ong 1988). Five decades ago, David Morley (1969, 297) – a public health practitioner – wrote about the local perceptions of measles that prevailed in Europe, Africa, and Asia. (I describe these perceptions in the next chapter under section 9.1).

Morley presents the belief systems prevailing in different regions, but he never questions the reasons behind those specific perceptions. Accounts like these did more harm than good. "Good" in terms of showing the underlying beliefs. Yet bad because these accounts made stakeholders, such as the WHO, governments, more confident that the occurrence of measles is not their fault but more of the people. Nonetheless, the data from 23 countries, including eight South Asian countries, reflect the fact that most of these countries remained under colonization. These countries are engulfed in networks of inequalities, which produce those conducive circumstances in which infectious diseases, including measles, occur and multiply their impact on people's lives.

8.2 Measles Medication: The Beginning

To our knowledge, measles has been challenging humankind from almost the sixth century BCE (Düx et al. 2020). The term "measles" is believed to have roots in the Latin word *misellus,* which means "miserable" (World Health Organisation 2007b). It also has links to the Latin word *miser*, which also means miserable. According to Peter Strebel and colleagues (2012, 352), this meaning signals the suffering caused by the rashes and sores that occur during measles.

Several scholars worked on measles to find its causes. In the 3rd century, a Chinese alchemist, named Ko Hung, distinguished between smallpox and measles; and similarly, in AD 622 Ahrun, a Christian priest, worked on measles in Egypt (Fenner et al. 1988). In the 7th century, a Hebrew physician called Al Yehudi recognized measles (Strebel et al. 2012). Some scholars, however, see the earliest truly elaborative work on measles as

happening during the 10-11th centuries (Furuse, Suzuki, and Oshitani 2010). In 910, the elaboration of Muhammad ibn Zakariya ar-Razi (865-923) or Rhazes – a Persian philosopher and physician – concerning measles is considered as a ground-breaking diagnosis, because after differentiating measles and smallpox, he declared measles as more dreaded and lethal than smallpox in his famous book *Kitab Fi al-Jadari wa-al-Hasbah* (Hamborsky, Kroger, and Wolfe 2015; Rāzī 1848; Mead 1748; Fenner et al. 1988). That differentiation won him the title of the first physician or "*Hakīm*" in history (Kaadan 2000; Modanlou 2008).

This brief description illustrates that early Asian and North-African physicians deemed measles similar or close to smallpox. Furthermore, although many studies recognize Rhazes' contribution, he left the transmittable potential of measles undiscussed (Strebel et al. 2012). Subsequently, further research addressed whether measles was an infectious disease. According to Strebel and colleagues (2012), the current scientific opinion on measles evolved in the Middle East after discussion of the possibility that measles was transmitted from animals since the virus causing it was analogous to rinderpest, which infected cattle. Further developments commenced from the beginning of the 17th century and on.

Thomas Sydenham, known as "the English Hippocrates," provided a clinical description at the beginning of the 17th century while defining measles characteristics and hinting about its infectious nature (Strebel et al. 2012; Low 1999). In 1757, Francis Home – a Scottish physician – sufficiently studied and explained the contagiousness of measles and affirmed the presence of an infectious agent in the blood of a patient as the cause of the disease (Strebel et al. 2012). Furthermore, Peter Panum – a Danish physician – conducted "the classical investigation" of a measles epidemic in 1846 that transpired in the Faroe Islands, which furthered comprehension regarding the epidemiology of measles (ibid., 352). Afterward, the work of Joseph Goldberger and John Anderson – two American physicians – advanced understanding by transmitting an infected substance into a monkey. This experiment revealed the presence of an "agent," causing measles and helped in creating techniques for isolating and culturing the agent (ibid.). In 1954, John Enders and Thomas Peebles – an American biomedical scientist and an American physician respectively – segregated it in humans and monkeys in a continuation of this

development to isolate the virus causing measles, (ibid., 2012). This final work provided the base to produce the measles vaccine (see chapter 10).

8.2.1 Measles in the Culture of Biomedicine

Biomedicine has its own culture around knowledge production, sharing, and usage (see Lock and Nguyen 2010; Rhodes 1990; Wright and Treacher 1982; Young 1981; Good 1994). In this culture, diagnosis plays a significant role in constructing "reality" (Jutel and Dew 2014). According to this stock of knowledge, infectious or communicable diseases caused by microparasites and macroparasites have the potential to widely spread from one carrier to others (R.M. Anderson, Anderson, and May 1991).[89]

Analogously, measles, like any infectious disease, is spread by respiration and secretions, such as coughing and sneezing and may infect 90 percent of those who encounter an infected person, except for those who have been actively or passively immunized. The primary symptoms include fever, runny nose, conjunctivitis (red eyes), greyish-white spots in the mouth and throat, and a cough. Red-brown spotty rashes commonly appear behind the ears, then spread around the head along with neck and face, and further advance towards the legs and ultimately all over the body over 3-7 days. The most favorable season for measles occurrence is in the late winter and spring.

Measles, like most other viral ailments, may have a non-threatening passage with a few complications other than fever and rashes. Measles, nonetheless, makes an individual susceptible to other health-related problems, such as pneumonia, blindness, diarrhea, and encephalitis, because the measles virus weakens the immune system. Approximately 30 percent of affected persons, particularly children under five, develop one or more complications. Furthermore, measles can severely affect the malnourished population with lessened immunity. Resultantly, it may lead to any permanent disabilities, e.g., convulsions, mental retardation, or death.

[89] There are six categories of infectious diseases. Food and waterborne diseases are acquired through eating or drinking contaminated food and water. Water contact diseases can occur during swimming or wading in freshwater lakes, streams, and rivers. Vector-borne diseases are caused by the bite of an infected arthropod. Animal contact diseases such as rabies occur through interaction or an animal's bite. Respiratory-related diseases are the result of an interaction with the infected human body. Aerosolised dust or soil contact diseases are contracted while inhaling aerosols contaminated with rodent urine. Some authors link the origin of the major infectious diseases to agriculture (Wolfe, Dunavan, and Diamond 2007), some have categorised them into 'old' and 'emerging' infectious diseases (Morse 2001).

Hamborsky and colleagues (2015), in their book *Epidemiology and Prevention of Vaccine-Preventable Diseases*, state that rubella or "German Measles" generally is considered as a trivial ailment. Yet it may immensely affect pregnant women and fetuses. The occurrence of measles in a woman during her first trimester may increase the risks of giving birth to a child with congenital rubella syndrome (CRS), which usually results in multiple congenital disabilities such as heart problems, deafness, and blindness. Annually, over 100,000 children are born with CRS worldwide. The enduring complications and disabilities can create an immeasurable emotional, socio-cultural, and financial effects for families. Hamborsky and colleagues (2015) further claim that the prevention of rubella is possible through a safe, effective and affordable vaccine alone, or by combining it with the measles vaccine (MV) or measles and mumps vaccines (MMV).

8.2.1.1 The Virus Causing Measles

According to Hamborsky and colleagues (2015), from the biomedical perspective, the paramyxovirus causes measles and belongs to the *Morbillivirus genus*. The virus size is 100–200 nanometers (nm) in diameter with a core of a single-stranded ribonucleic acid (RNA). It resembles other viruses, e.g., canine distemper and rinderpest, and has double-membrane envelop proteins that perform a substantial role in pathogenesis. The F (fusion) proteins are attributable to the fusion of virus and host cell membranes, viral penetration, and hemolysis. The penetration then leads to a breakdown of the red blood cells (RBCs-hemolysis) in a host. The presence of the hemagglutinin (H) protein supports the virus in absorbing into host cells. Because the measles virus is sensitive and delicate, sunlight, heat, acidic pH, trypsin, and ether can quickly inactivate it. The virus can survive not more than two hours on objects and surfaces or in the air. Tiny droplets, produced by sneezing, and coughing contain the measles virus and can be transferred to a person who has not yet contracted the illness through inhalation. Measles can also spread via touching a surface where droplets prevail and touching the mouth or nose with the infected hands (ibid.).

8.2.1.2 Pathogenesis of the Virus

The biomedical perspective considers measles as "a systemic infection," which primarily infects the respiratory epithelium of the nasopharynx (Hamborsky, Kroger, and Wolfe 2015). After two to three days of invasion as well as replication in the regional lymph nodes, and respiratory epithelium, an initial viremia appears with subsequent infection

of the reticuloendothelial system. The further replication of the virus causes the next viremia, which occurs five to seven days following an initial contraction, owing to further replication of the virus. This viremia might infect the respiratory tract and other organs (ibid.). The virus begins multiplying at the back of the throat, initially spreading towards the lungs and then capturing the whole body, including the skin and respiratory system (ibid.).

8.2.1.3 Clinical Symptoms and Characteristics

According to Hamborsky and colleagues (2015), an average incubation duration of measles is 10-12 days from contact to prodrome. From exposure to the onset of rashes, the average period is 14 days – ranging from 7-21 days. The prodrome continues for 2-4 days – fluctuating from 1-7 days. The primary characteristic of measles is a fever that augments gradually from mild to high, for example, 39.5°C –40.5°C. Cough, coryza (runny nose), or conjunctivitis are further symptoms, which follow the fever.

Moreover, the pathognomonic for measles are Koplik spots, which were expounded by Henry Koplik (1962) – an American physician – in 1986 as early diagnostic symptoms of measles, allowing measures to be taken to control the epidemics. These spots are tiny in size with a greyish white color like grains of sand surrounded by a reddish border; they usually appear 1-2 days before and after rashes on the inner lining of cheeks (buccal mucosa) (Hamborsky, Kroger, and Wolfe 2015). The spots disappear steadily and immediately after an eruption of maculopapular rashes on the hairline, face, and upper neck, respectively, which mostly lasts 5-6 days. In the next three days, rashes gradually move in a downward and outward direction to reach the hands and feet and appear on the entire body (ibid.). Although the maculopapular lesions initially become distinctive, on the upper body, they form a rash where individual spots can no longer be seen. Initially, slight pressure might blanch the abrasions, but not after 3-4 days. The affected parts are then relentlessly subject to fine desquamation. The rashes fade in a similar order of appearance: commencing with the head and going to the extremities. Also, measles involves other symptoms, such as anorexia; diarrhea, especially in infants; and generalized lymphadenopathy (ibid.).

8.2.1.4 Complications of Measles

Hamborsky and colleagues (2015) mention that 70 percent of measles cases develop no complications. However, the remaining 30 percent of sufferers encounter one or more complications, especially children under five and young adults 20 aged years and above. Among the complications, diarrhea, otitis media, and pneumonia have been significant causes of death. Acute encephalitis also occurs in 0.1 percent cases, appearing after the sixth day of the onset of the rash. The range, however, is 1-15 days. The significant characteristics include headache, fever, stiff neck, vomiting, drowsiness, meningeal irritation, convulsions, and coma. During measles, cerebrospinal fluid reveals pleocytosis and elevated protein, and this results in circa 15 percent of the cases (ibid.).

Further complications discussed by these authors include a type of residual neurologic damage in almost 25 percent of cases, and 0.6–0.7 percent of cases feature seizures whether or not there is a fever. There is a rare complication called subacute sclerosing panencephalitis (SSPE), which disturbs and degenerates the central nervous system. SSPE is a result of consistent infection instigated by the measles virus in the brain. On average, it occurs seven years after measles; however, the reported range starts at one month and continues to 27 years. Out of one million cases, 5-10 develop this sporadic problem. SSPE is quite subtle, steadily affecting an individual's behavior and intellect, and is trailed by ataxia (awkwardness), myoclonic seizures, and ultimately death. After the 1980s, it occurred reasonably rarely. The complications, if measles occurs during pregnancy, include higher chances of premature labor, spontaneous abortion, and low-birthweight infants. It has not been confirmed, but congenital disabilities have also been linked with measles.

Hamborsky and colleagues (2015) also write about "atypical measles," which can also occur due to an individual receiving a killed (inactivated) measles vaccine (KMV). During exposure to a wild-type measles, KMV does not offer protection but instead makes the recipient sensitive to antigens. Consequently, hypersensitivity polysynovitis occurs. The symptoms of atypical measles comprise fever, pneumonia, pleural effusions, and edema, while the general form of eruption is maculopapular or petechial. Nonetheless, it might contain urticarial, purpuric, and vesicular components — onset occurs either on the wrists or ankles. Treatment involves revaccination with a live measles virus, which may result in complications of fever (ibid.).

Another form of measles known as "modified measles" is a consequence of immunoglobulin (IG) uptake as postexposure prophylaxis or a lingering maternal antibody in infants (ibid.). The central attributes encompass a lengthened incubation period, mild prodrome, and a quickly disappearing sparse, discrete rash. Vaccinated people have also reported this illness (ibid.). Hemorrhagic measles is another rare occurrence, with high fever (105°F–106°F), seizures, delirium, respiratory distress, and hemorrhage into the skin and mucous membranes.

Immunocompromised people such as those who are T-cell deficient (certain leukemia, lymphomas, and AIDS) are more prone to measles in terms of intensity and duration. There are good chances that rashes may not appear in these people. Other populations susceptible to measles include malnourished children, predominantly those who are vitamin A deficient. The malnourished in particular face complications such as diarrhea, dehydration, inability to feed, stomatitis, and bacterial infections (on the skin and elsewhere). This malnourishment causes approximately 25 percent of measles-related deaths. Hamborsky and colleagues (2015) further claim that across the globe, 0.2 percent of individuals die owing to measles, and in Africa, measles is the most common cause of blindness among children.

In simple words, factors that make a person more prone to developing measles-related complications encompass age, geographical location, the body of an individual, and the vaccine itself — these factors function as confounding factors whether to avoid measles or to deteriorate the state of an individual further after getting measles.

8.2.1.5 Case Categorization and Diagnosis

The WHO (2013b), in its *Measles Elimination Field Guide*, mentions three categories of measles cases – confirmed, probable, and suspect – verified through different procedures and protocols.[90] According to this guide, in a laboratory, diagnosis starts by isolating a virus from a clinical specimen such as from urine, the nasopharynx, blood, or the throat. This is followed by molecular investigation to detect measles RNA in oral fluid or from throat swabs up to five days after the appearance of the disease. Afterward, an antibody investigation identifies immunoglobulin M (IgM) in serum and a significant rise in

[90] The World Health Organisation (2007b) also has established guideline manuals to diagnose measles and rubella in laboratories.

measles IgG using any standard serologic scrutiny, e.g., enzyme-linked immunoassay (EIA), and HI.

Diagnosing measles by isolating the virus is not recommendable; nonetheless, in molecular epidemiologic surveillance, it plays an essential role in detecting a geographical origin and circulation of its strains (Hamborsky, Kroger, and Wolfe 2015). Clinical indications may also prove erroneous due to an ambiguous character of prodromal symptoms, the prevalence of mild cases as well as inexperienced practitioners (World Health Organisation 2007b). Moreover, measles also resembles other infectious diseases such as rubella, dengue fever, ECHO, Coxsackie, parvovirus B19 and herpes virus, some bacterial as well as rickettsia diseases and Kawasaki's disease, toxic shock and drug reactions (ibid.). These resemblances require laboratory tests to be conducted to avoid any ambiguity and consequent problems.

On methods and prerequisites, Hamborsky and colleagues (2015) state that it is necessary to simultaneously assemble the clinical specimen with sampling for serologic examination. Hence, isolation is possible if someone collects the specimens during the first three days of onset. Most importantly, the collection should not wait for serologic confirmation, and a suitable collection period is 7-10 days after onset.

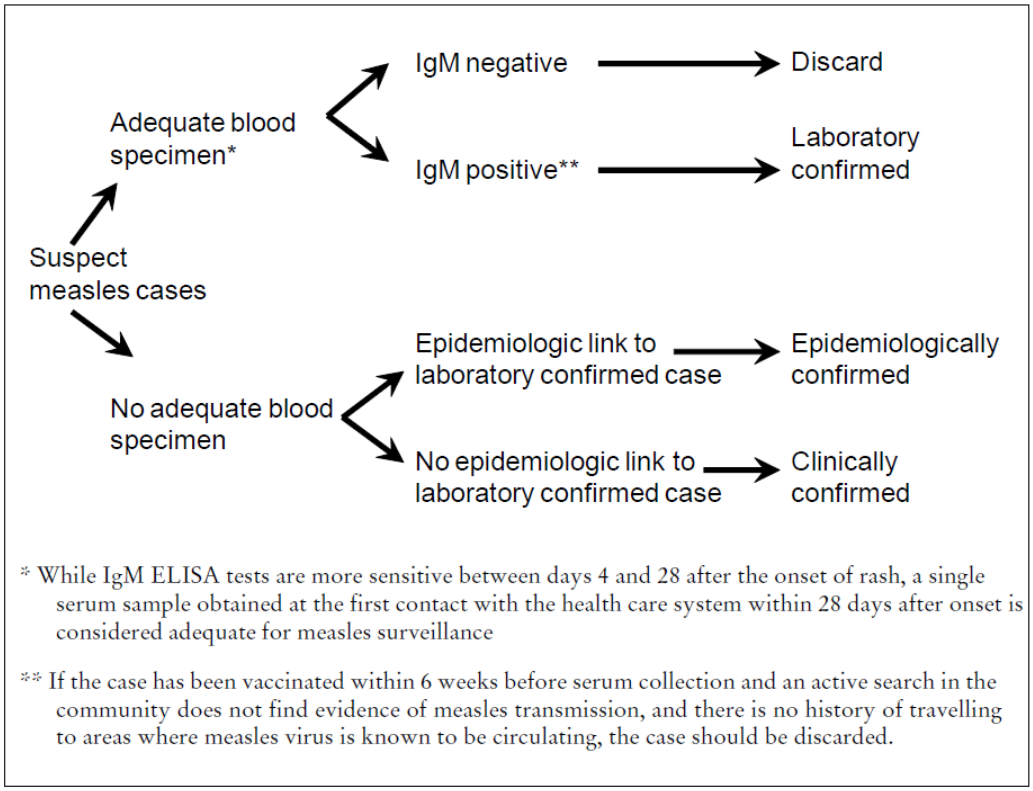
Enzyme-linked immunoassay (EIA) is extensively applied in serologic testing, and its earlier use might work as a diagnostic as well. Usually, exposing a formerly susceptible individual to a vaccine or a wild-type measles virus would result in the development of IgM before an IgG response. The former would be transient response, i.e., for 1-2 months. However, the latter response would last for several years. The status of an uninfected individual must be IgM negative. The individual's previous infection and vaccination history, nonetheless, determine the IgG status (positive or negative) (Hamborsky, Kroger, and Wolfe 2015). The requirement of EIA for IgM antibodies is merely a single serum specimen, which can be a diagnostic in case it is positive. Using this test is indispensable for all cases of measles, including those having additional laboratory validations. IgM capture tests, recommended by the CDC, mostly show positive measles on the first day of onset.

Nevertheless, 20 percent of these tests might give negative results if conducted after 72 hours post rash. Cases are, therefore, retested. Detecting IgM for the next 30 days is

entirely possible. Available tests for IgG antibodies encompass EIA, hemagglutination inhibition (HI), indirect fluorescent antibody tests, microneutralization, and plaque reduction neutralization. The most commonly used complement fixation test in the past is no longer recommendable (ibid.).

Hamborsky and colleagues (2015) write that detecting the level of a measles antibody requires a demonstration of a four-fold titer for the IgG testing (see figure 8-2). The first specimen should be from soon after the rash onset, while the second can be taken from 10-30 days after the rash. However, both the specimens should be taken simultaneously and with the same test type for documenting an increase in titter based on the type of test. Confirmation of the diagnosis is not possible until and unless both the specimens are taken. IgM tests are preferred for confirming the measles diagnosis.

Figure 8-4 Confirming measles cases



Source: (World Health Organisation 2007b, 9)

8.2.2 Launching the Measles and Rubella Initiative (M&RI)

Since measles is a highly infectious disease, a global M&RI was launched in 2001 to lower measles deaths by 95 percent by 2015; to achieve the regional measles and rubella/CRS elimination goals by 2015, and to eliminate measles (or reduce cases to a minimum) from

five WHO regions by 2020 (World Health Organisation 2012). The American Red Cross, the American CDC, the UN Children's Fund, the UN, and the WHO are leading in this initiative. There are 24 international supporting partners behind this initiative in addition to the affected countries (Strebel et al. 2011).

Under this initiative, a new Global Measles and Rubella Strategic Plan was initiated in alignment with the Global Vaccine Action Plan in 2012 to fulfill the intended goals to control and eliminate measles and rubella from 2012 to 2020 (World Health Organisation 2012). The plan secured an endorsement from the heads of M&RI agencies to implement it in 68 prioritized countries, Pakistan included, for the support and improvement of routine vaccination against these two diseases according to the country's profile. The plan elaborated strategies for each country's immunization managers, who work with domestic and international partners. The following were the salient features of the plan: by the end of 2015, deaths from measles should be minimized by 95 percent compared with the deaths that occurred in 2000. Also, by the same year, the target should be achieved in terms of eliminating regional measles and rubella or CRS. Importantly, again, the aim was to eradicate measles and rubella in at least five WHO regions by 2020.

The strategy focuses on five core components (ibid.). The first is to achieve and maintain high vaccination coverage with two doses of vaccines, which contain measles and rubella. The second is to monitor the disease through active surveillance and evaluate programmatic endeavors to ensure progress and the positive impact of vaccination-related activities. The third is to develop and maintain preparedness for outbreaks, rapid responses to outbreaks, and effective treatment of cases. The fourth is communication and engagement to build public confidence and increase demand for immunization. The fifth covers novel research and development required to support cost-effective action and improve vaccination and diagnostic tools.

Here it is necessary to analyses the operationalization of the aforementioned strategic points in Pakistan. First, to improve the routine vaccine coverage, the Pakistani expanded programme on immunization (EPI) has developed a field team at the union council level to prevent various communicable diseases. Secondly, two different monitoring teams of the government officials and WHO personnel work at a district and a provincial level to evaluate the program's progress in executing the supplementary immunization activities

(SIAs) to meet the intended objectives. Thirdly, while working along with the lady health workers (LHWs) and the EPI team, school health and nutrition supervisors work on sensitive issues related to immunization to mobilize and educate the community. Fourthly, the government, with the help of the *Punjāb* Information Technology Board (PITB), introduced a digital E-Vac system to improve vaccination in June 2014 in four districts of *Punjāb* province. Afterward, the project included all 36 districts of the province by October in the same year. The primary aim of E-Vac is to ensure that the vaccinators perform their duties as they should (see chapter 10).

Nonetheless, the WHO Strategic Advisory Group of Experts on Immunization (SAGE), considering the current trends in measles vaccination coverage and incidence, concluded that the 2015 global milestones and measles elimination goals seemed unachievable, owing to gaps in vaccine coverage. According to SAGE, the resurgence of measles in those countries that achieved the goal of elimination or were about to achieve that goal means that measles elimination is significantly challenged (World Health Organisation 2019b). The underlying reasons include a decrease in funding; Strebel and colleagues note that "financial support to the Measles Initiative decreased from USD 150 million in 2007 to USD 50 million in 2009, and USD 35 million in 2010, and many priority countries have not been able to raise the expected 50% of operational costs for measles supplementary immunization activities" (Strebel et al. 2011, S2). The decrease in economic resources led to postponing the scheduled vaccination campaigns and cutting back on the number of age groups within the target range for vaccination (ibid.).

Strebel and colleagues (2011) state that the world is standing at a crossroads regarding measles elimination. There is a need to ensure political will and economic resources to sustain previous efforts and control the disease. Successfully dealing with measles requires changes in policies and practices that are hindering the vaccination of children, especially in the Democratic Republic of the Congo, Ethiopia, India, and other high-burden countries. The M&RI commissioned a mid-term strategy review to gauge the reasons responsible for failure to meet goals since 2010. To deal with measles, the WHO (2019b) writes in its website about the "Key Facts" regarding measles that the organization "will continue to strengthen the global laboratory network for guaranteeing the timely diagnosis of measles and track international mushrooming of the measles

viruses to allow a more coordinated approach in targeting vaccination activities and reduce measles deaths from this vaccine-preventable disease."

8.3 Concluding Remarks

This chapter provided specific epidemiological data concerning measles at the global, South Asian, and Pakistan levels. It elucidated some historical aspects of measles that when inquiries on measles started to explore its causes. In this chapter, I demonstrated that the current epidemiological data about measles reveals a worldwide increase in the cases of measles. This resurgence has received significant attention in the media and from national and global stakeholders, who view measles as a challenging infectious disease that can rapidly spread from one person to another, from one country to another. Stakeholders, such as the WHO, have already accepted that the elimination of measles, which seemed possible several years ago, is currently under threat. In the view of these stakeholders, the occurrence of measles is highly associated with local belief systems that cause people to reject vaccination.

Yet these stakeholders have paid little attention to the network of inequalities that are contributing to the resurgence of measles. I argued that belief systems could not be the sole reason for measles outbreaks, because many of the countries with high rates of measles have remained colonies and their economic and political structures are still insufficient and inappropriate to run the countries effectively. This insufficiency and inappropriateness create and multiply webs of inequalities. For instance, economically developing countries still look for foreign aid and support, which brings further problems (Easterly 2006; Z.A. Bhutta 2001; S.R. Khan 2002; Escobar 2011). Thus, it should come as no surprise that measles cases have significantly increased in Pakistan. The increase in measles incidence rates from an average of 24.6 per one million population from 2000–2009 to an average of 80.4 during 2010–2018 (Mere et al. 2019) reflects those networks of inequalities at play, as I will further discuss in the following chapter.

CHAPTER 9. MEASLES FROM A CULTURAL PERSPECTIVE: EMIC PERCEPTION AND PRACTICES

Delineating biomedical and global perspectives on measles in the previous chapter, this chapter focuses on measles in Sindh province. It offers details on the positions, ideas, and practices of local people, *Hakīm*, and government officials relating to measles, and asks, what measures they take to deal with it. The chapter details views of engaged stakeholders, who frame measles as a process of transition, a disease, and an issue that requires intervention. Based on their standpoint, they take the required measures which demonstrate the negotiation of one phenomenon of measles. Mainly, this chapter devotes full attention to dealing with measles at the local level: It explains measles as necessary sacred illness, the ritual of *Chando*, in which a child is quarantined, certain dos and don'ts. In the later part, I draw on print media to describe how government officials view local perceptions and practices about measles. This chapter should be read in relation to the next chapter, in which I focus on the two outbreaks of 2012-13.

9.1 Measles in Local Cultures

Measles is not a new phenomenon, as it has been overwhelming the world and attracting discussions for many centuries. I operate under the assumption that most people are rational. Few operate without exercising judgments that derive from a set of values. Yet explanations and perceptions are distinctive, demonstrating the orientations and experiences of engaged stakeholders. Throughout history, measles has been subject to debate, especially on its prime causes, and received different rationales and responses as it has significantly affected populations worldwide (Morley 1969; Furuse, Suzuki, and Oshitani 2010; Rāzī 1848; Koplik 1962; Cunha 2004).

Five-decades ago, David Morley (1969, 297) provided background information about the local perception of measles across the world. He writes in Europe measles was perceived as "the failure of the mother to menstruate during pregnancy," and that "bad blood" enters the fetus and emerges after birth as rashes of measles (ibid., 297). He further describes that in Africa, people believed measles because of sorcery. Nonetheless, some people linked it with heat and eating certain foods, e.g., snails or beniseed (also known as sesame seed). Owing to fears that rash may not come "out," people avoid both traditional and scientific medicines. Morley further mentions two "dangerous" customs: Restricting

fluids during measles in many African areas, and an astringent fluid made from roots or herbs to eyes in the Zambesi valley.

On the perception of measles in Asia, Morley describes a few proverbs collected from West Asia: (a) “A child that gets out of measles is a child that is reborn,” (Arabic) (b) “Count your children after the measles has passed,” (Arabic) and “Smallpox will make your child blind. Measles will send him [her] to his [her] grave.” (Parsee) (ibid., 297).

Moreover, in Asia, people usually consider measles due to a “malignant goddess,” thus, parents may hide their children from neighbors. Considering it useless and dangerous, they do not bring the measles-infected child to a hospital. Moreover, if a child, brought to a hospital due to some other health conditions, develops measles there, the parents promptly bring home. Based on ancient medical systems, they prefer to treat the child by special foods having “cold” properties (ibid.).

Morley’s description demonstrates that measles has been received and perceived in local cultures differently. These perceptions vary yet resemble each other. As mentioned at several places, Morley’s words, such as “malignant goddess,” are loaded with a specific meaning. Secondly, he has not touched upon factors that lie beneath these ideas and practices.

Besides, there a few more examples of measles in local cultures. For example, the following Aztec painting (Figure 9.1) shows a person who is sitting on a wooden stool with the marks of the measles rash. On the right side, a woman is checking the measles rash. The painting reflects a ritual for healing measles.

Figure 9.1 Aztec Drawing Portrays a Measles-Contracted Person

(Oldstone 2010, 144)

Moreover, in Uganda, people believe that measles occurs twice in a lifetime. One colleague from Uganda shared it when he was working on his doctorate in medical anthropology, during our discussion at the Medical University of Vienna (Ronard Mukuye 2013, personal communication). During this time, they perform certain rituals. During the measles outbreak in 2013 in Uganda, local people preferred to heal measles by local herbs than a hospital cure (Mafigiri, Nsubuga, and Ario 2017). These people were "blamed" that their ideas and practices are a cause of outbreaks.

In contrast, people in Sindh believe that measles occurs once in a lifetime, and then the person who had measles is *Pakā* (immunized). For them, measles is a necessary and sacred illness, which I discuss below.

9.1.1 Measles a Necessary Sacred Illness in Sindh

From the village of *Rāmpur*, a 40 years-old interlocutor stated, "Measles certainly will occur to a person. Mostly during one's childhood. However, if it does not occur during life, then one will even contract it in the grave. There is no way that it will miss someone".

This statement illustrates an underlying belief in the necessity of the occurrence of measles. The grave is a metaphor indicating the cultural belief in this inevitability. People perceive that measles will unquestionably occur in everyone. If it does not occur during life, one may not escape it during the grave after death. They draw its etiology from Hindu mythology, irrespective of religion, and give a supernatural explanation of the occurrence

of measles. Hindus and Muslims both believe that measles is a manifestation of the goddess *Mātā*, and she visits everyone. Despite a similar perception, there are a few differences. Hindus have a name for this goddess's manifestation in the form of measles – *Sitālā Mātā* – while Muslims use the more generic term *Mātā*.

Two questions arise: Why do people consider that measles will necessarily occur, and why do they consider it a sacred illness? One reason may be that before the work of Rāzī or Rhazes, there was no proper differentiation available across the world between smallpox and measles until the 10th century (Kaadan 2000; Rāzī 1848). If the scholars of that time were unable to distinguish between the two diseases, then, how could a layperson do so? This lumping together of these two diseases compelled people to contemplate measles as sacred, link it with *Mātā* and give it a supernatural explanation akin to the one they had for smallpox, due to the similarities in the symptoms and vague differentiation between the two, and to the power attributed to both diseases, which still prevails. The memories and stories related to smallpox outbreaks and the extraordinary infection and implications they caused have not vanished. I suggest that their fear of the overwhelming implications of both measles and smallpox pushed people to categorize them in the same domain of sacredness. Humans tend to place all phenomena—that overwhelm and frighten them or cause death—into the extraordinary category: the supernatural (see, e.g., Foster 1978). When people believe that a disease's primary cause is supernatural, they also believe that control over it can only be possible through making vows, performing rituals, and worshipping supernatural beings.

Why is measles considered a manifestation of *Mātā*, even by Muslims in Sindh province? To build a comprehensive understanding and trace the roots of this perception and practice, we should not forget the history of the region in which Pakistan lies. Briefly speaking, before the arrival of Islam in South Asia, especially in Sindh, which became known as *Bab-ul-Islam* (a door to Islam in the subcontinent), Hinduism was the dominant religion. The oral history of the area reveals that the region once used to be called "Sindh-Hind". Even after the Indo-Pak separation, the coexistence of two religions remained prominent, which still is the case. After the partition, most of Pakistan's Hindus stayed in the Sindh province, where many Muslims also reside; some were ancestrally Hindu. The etiology of measles provides a vivid example of cultural assimilation and religious syncretism.

There are at least a few more cultural traits related to Hinduism that people are practicing in the province despite being Muslims. The case of measles is one among them. Measles seemingly helps to refute the principal grounds for the separation of India. People, irrespective of the fact that their primary religion is Islam, still retain Hindu traits that are contrary to the critical event of Indo-Pak separation, which happened in part because their leaders at the time considered the "two nations different". Consequently, the old geographical "Sindh-Hind" region split into two countries in 1947, and the third one Bangladesh separated in 1971 (Wynbrandt 2009).

This brief description helps to holistically comprehend the local ideas and practices of measles and provides a base for contextualizing measles as a phenomenon. The purpose behind mentioning this history is neither political nor economic, but highlighting cultural connections still existing between the two countries. Otherwise, it would be difficult to answer the research question regarding measles etiology drawn in Hindu mythology, especially by the people of Sindh province who live primarily in the rural areas, irrespective of their religion.

In the *Rāmpur* village, people link measles with *Sitālā Mātā*, while inhabitants of *Rahīmpur* village use a generic word "*Mātā*". The name "*Sitālā*" – taken from Sanskrit – means "one who cools," as mythologically, she was born from the cold ashes of the sacrificial fire (Stewart 1995, 389). She is also known as *Roga Raja* (*the king of diseases*), *Basanta Raya* (*mother of poxes*), or *Vyadhi Pati* (*lord of pestilence*) (Ghatak 2013, 120). According to Fabrizio Ferrari (2015), not only Hindus worship her: Muslims, Sikhs, Buddhists, Christians, and Adivasis in the villages across Pakistan, North India, Bangladesh, and Nepal do as well

Why *Mātā*? According to Flood (1996), a glance at Hinduism shows that the concept of a goddess is not less important and visible than the conception of Shiva: various goddesses exist, who are benevolent or malevolent. The *Kālī* (the "black" one) is among them. She is garlanded with severed heads, girdled with severed arms, with rolling, intoxicated eyes and a lolling tongue. That means the *Mātā* worship has remained in the region.

9.1.1.1 Cultural Knowledge and Healing of Measles

According to local people, the preliminary bodily signs of measles include reddish eyes, a bad-smelling mouth, fever, and the eruption of small red spots on the body. The last two

signs are significant precursors. Mostly, the first identifier usually is a child's mother who reads these signs.[91] For surety, she needs an older woman's affirmation, as an older woman has witnessed and dealt with numerous cases. After confirmation, they observe a series of rituals, which constitute what Van Gennep (2013 [1960]) terms "*rites de passage*" in which an individual leaves one group and joins the other.

Measles implies a transition. After measles, a child is believed no longer be the same, but in a transition to join a *Pakā* (mature, strong and stable)* group. For a successful transition, people observe certain "dos" and "don'ts" without hierarchizing them. All are essential actions to offer a pleasing welcome and grand farewell to *Mātā* for a child's successful transition to *Pakā*. Commonly, the total duration of this passage is seven days. The rites have various parts, which I describe in the following sections.

9.1.1.1.1 *Chillo* as preliminal rites

After contracting measles, the next step is what Gennep (2013) calls a "rite of separation". For quarantining, the child is separated and put into *Chillo* (quarantine)* in a specific place in the house. The place depends upon the economic situation of the family. For instance, if the family owns a big house, then the child is kept in a separate room. In contrast, if people are not wealthy enough to have a separate room, they keep the child in the same room where they live. In *Rāmpur* village, they have *Chanworā* or *Jhuggi* (huts); thus, they keep the child in one of them.

A red thread is tied at the room's entrance to inform people that a person with measles is living inside. The red simultaneously symbolizes life, as it is the color of blood, and indicates danger or a "no-go" area. If entering the room is necessary, then one must perform a specific measure, especially related to purity. For example, *Mathy-Mero* (a person who has not taken the necessary ritualistic bath after sexual intercourse)* or *Uhto-Kuhto* (a person with a bad intention, e.g., evil eye, jealousy, dishonesty, or of bad character – e.g., a magician)* cannot enter the house, specifically into the child's room. (I deal with it in the next few paragraphs).

The child wears clean, soft, and thin clothes to observe purity and avoid irritation – caused by the heat of rashes– to the body. The child receives money, jewelry, and toys by

[91] Throughout the thesis, the term "child" is used for an individual who contracts measles, because measles usually occurs during childhood.

his/her family members, especially by the mother. Dealings with the child are conscious, careful, and reverent. Family members, including any visitor, try their best to entertain the child, as entertaining the child is thought to be pleasing to *Mātā*. The child's living space is cleaned continuously to ensure cleanliness and purity. During the phase of measles, vocabulary in the whole house substantially changes. Everyone uses reverent language to address the child: respectful phrases are used such as [in *Sindhī*] "*Bhāgg Wāri Āi Āhy*" (the blessed one has arrived).* In actuality, these words address an invisible supernatural being: *Mātā*. Abusive words and loud voices are highly avoided.

Cooking and eating patterns also change. The family practices a strict regimen. Muslims stop consuming meat, beef, fish, and chicken and even bringing meat to the home. Moreover, some Hindu groups such as *Bāggrrī* and *Bhīl*, who consume meat, also observe this regimen. There is a direct link between the regimen and *Mātā*, as in Hinduism, meat consumption is forbidden (generally speaking). Meat makes *Mātā* malevolent. As one 40-year-old Muslim female respondent from *Rahīmpur* village said:

> A ten-year-old child was not yet diagnosed with measles. He was usually behaving, such as playing, eating, moving, and walking. One day, he ate meat with neighboring relatives. As he returned home, he got a high fever. His whole body became reddish. The next day, measles appeared on his body with severe intensity. Eating meat displeased *Mātā*.

Furthermore, regardless of religion, people refrain from cooking food with onions, garlic, and spices, called *Dāgg*. It creates a robust smell that spreads through the house and reaches to a child. These ingredients make the smoke spicy too, which then hurts and irritates the rashes on the child's body. This also irritates *Mātā*, and then she increases the intensity of pain for that child. People avoid intercourse because it pollutes an individual and requires ablution. Prompt ablution is not possible after intercourse as one needs to walk towards a bathing place or hand-pump. This walk brings impurity, and the impurity makes *Mātā* vindictive.

Similarly, three types of people are never permitted to enter the house. First, an outsider, irrespective of blood relationship, denotes a person who is not living in the same house or sharing the same spaces. For example, if there is more than one house and people share the same spaces to fetch water, and often go to see each other, they are not considered outsiders. Or, to make it more comprehensive, an outsider is a person whom a family

member needs to greet or shake the hand with — which they do not need to do with insiders.

Second, *Mathy-Mero* (a person who has not taken the necessary ritualistic bath after sexual intercourse)* and third, *Uhto-Kuhto* (a person with a bad intention, e.g., evil eye, jealousy, dishonesty, or of bad character – e.g., a magician)* are forbidden to enter the house, specifically into the child's room. In cases of extreme necessity, a person can observe a ritualistic ablution to enter. If the person engaged in sexual intercourse, then the requirement is a ritualistic bath while chanting holy verses from the sacred texts, e.g., *Qurān* and Geeta. However, if the person is just a regular outsider, then s/he needs ablution, which includes washing feet, hands, rinsing the mouth and nose, and washing the face. Usually, such people never intentionally enter the house because they share the same culture and know the expected consequences.

After the onset of the rash, Muslims bring the child to visit a Hindu person to please *Mātā*. Then the child is brought to a Hindu healer for a check-up and remedies. The underlying reason is that *Mātā* is a goddess of Hindus. Therefore, a Hindu healer knows the revered ways to deal with her. This treatment subsequently pleases *Mātā*, contrary to biomedicine, which displeases her. The child is not left alone, especially by the mother, who accompanies the child and sings a *Lorī* (lullaby) for him/her. The *Bhajjan* (Hindu religious songs) are played (Kawrani 2013; Sachanandbaghzai 2011) to please *Mātā*. An audio cassette with *Bhajjan* is bought from a market or borrowed from a Hindu family. Although smartphones have replaced stereo players, many people do not have such phones in this locale. Also, there are a few people who have stereo players.

Furthermore, the child is given a bath with clay obtained from the mountains and goat milk.[92] Almost equal quantities of water and milk are mixed for the shower. Both ingredients have cold properties and effects, so the bath provides comfort to the child by reducing the body's heat. During this transition, people observe a ritual of the *Chando*, which has two parts: *Katcho* and *Pako*.

[92] In the *Rahīmpur* village people use water, not milk. This mainly is due to the lack of milk, in contrast to *Rāmpur* village where people have herds of goats, sheep and cows.

9.1.1.1.2 *Katcho Chando* as liminal rites

On the third day of measles, people observe *Katcho Chando*—a rite of transition. Etymologically, *Katcho* denotes unripe, weak, pre-, initial, the beginning of another phenomenon that will follow it, and *Chando* means to sprinkle. The term *Katcho Chando* connotes that the child is weak and must go through a transitionary process to be strong again. Usually, an older woman leads the ritual. She can be from the same family, village, or a neighboring village, as long as she is known for her ability to perform such rituals. In some cases, the child's mother, mother's sister, or mother's or father's mother observes the ritual. The criteria are that she must know the *Lorī* (*Bhajjan*) and the necessary steps. To participate in these rites, the child comes outside his or her room for the first time after the rites of separation[93] but remains inside the house. Constituents of the rites include cow's milk and sweet flat *Chapāti* made from a mixture of wheat flour, jaggery, and water prepared during the night on a flat pan, and chickpeas that are left to soak in a pot full of water during the night. Importantly, water is sprinkled on the stove where the sweet bread is prepared. Sprinkling symbolizes coldness and soothing, which indirectly brings comfort to the child. The rites commence after the mother holds the child in her lap (if the child is little in age or weak), or the child sits while holding sweetbread in her/his lap. The older woman leads the ritual and chants the following *Lorī*:

***Sindhī* (in Latin letters)**	**English Translation by Author**
Thār Tharī	Sooth [*Mātā*] Soother
Amarr Mehr Kandīn	Mother bestow your kindness
Jagg Thār Amarr Tharī	Soothe the whole world mother soother
Mokhy Dhari Dhurāi Day Jag Khān Agy	We beseech to heal the child before the world
Jagg Thār Amarr Tharī	Sooth the whole world, mother soother
Thār Tharrī	Sooth [*Mātā*] Soother
Khāshā Gulrrā Kandīn	Beseeching to make good flowers [rashes]
Pahnjy Gulrran Ji Parwarsh Pān Kandīn	Please grow them by yourself
Jagg Thār Jījal Tharī	Sooth [*Mātā*] Kind Soother
Shikarpur Jun Chokron	Girls from *Shikarpur*[94]
Amarr Māī Māī Kan	Mother calling thee repeatedly
Hath Me Lotā	While holding pots in their hands
Mathy Tay Chapotā	While wearing headscarves
Dar Dar Chandrro Dīan	They observe the ritual at every house

[93] As during the course of measles, the child is kept in a room, except when the child needs to excrete. That sometimes is done in the room and the excrements disposed. It completely depends upon the child's individual situation.

[94] Shikarpur is the name of a city, which was one of the popular settlement centres of the Hindu population prior to the partition of 1947. At the moment, there are a couple of places named with Hindu owners. The names of government hospitals are Hindu names. This may be a reason for using the name of this city in the *Lorrī*.

Jagg Thār Amarr Tharī	Soothe the entire world, thee soother
Thār Tharī	Soothe [*Mātā*] Soother
Asān Jo Paitrro Thārīn	Soothe our inside (belly)
Asān Jā Bachrrā Thārīn	Soothe and heal our children
Jagg Thār Jījal Tharī	Soothe the universe, thee soother
Tuhnjo Sij Chand Bhāī	Sun and moon are your brothers
Tuhnjo Kokal Bhāī	*Kokal* is your brother[95]
Pahnjan Bhāirn Jay Sadqy[96]	In the name of your brothers be kind
Mukhy Dān Diār	Give me the news of health [of my child]
Thār Thārī	Soothe [*Mātā*] Soother
Khāshā Gulrrā Kandīn	May thou grow beautiful flowers (rashes)
Panhjy Gulrran Jī Parwarash Pān Kandīn	May thou ripen your flowers
Thār Tharī Asān Jā Bachrrā Thārīn	Soother [*Mātā*] Sooth our children
Tuhnjo Sij Chand Bhāī	Sun and Moon are your brothers
Tuhnjo Seharr Bhāī	Rabbit is your brother
Tuhnjo Jāhāl Bhāī	*Jāhāl* is your brother
Tuhnjo Kokal Bhāī	*Kokal* is your brother
Satan Bhāiran Jay Sadqy	In the name of your seven brothers
Moky Daan Diār	Give the news of health [of the child]
Jagg Thār Jejal Tharī	Sooth the entire world, Kind Soother
Sāggion Ghitrrīon Sāggrrā Sair	Same pictures, same tours
Bachrrā Dai Ghumandum Pair	May the children walk again
Thār Tharī	Soothe [*Mātā*] Soother
Asān Jā Bachrrā Thārīn	Soothe our children, please
Thār Tharī	Soothe [*Mātā*] Soother
Amarr Mehar Kandīn	Be a benevolent mother to us (please)
Mehar Kandīn	Bestow mercy upon us
Asān Jā Paittrrā Thāraīn	Please soothe our belly (inside)
Jagg Tharī	Mother! The healer of the world
Oh! Rānni Jo Āi Muhnjy Taddy	Oh! the queen has visited me
Amarr Bachrrā Widhā Mun Tuhnjy Taddy	Mother I submitted my children thee
Mokhy Dhārāi Dhurrāi Dday	Please heal them
Jagg Khān Aggy	Before the rest of the world
Jag Thār Amarr Tharrī	Soothe the entire world Mother Soother
Jeejal Aayam Muhnhy Taddy	Mother visited my (poor) house
Amān Bachrrā Widham Tuhnjy Taddy	Mother (I) presented my children thee
Sāgīon Ghītyon Sāggrrā Sair	Same streets, same trips
Bachrrā Dai Ghumdam Pair	Make them able to walk again
Thār Thāri	Heal (you) the healer
Muhnjā Bachrrā Thārīn	Heal (soothe) my children, please
Jagg Thār Amarr Tharrī	Soothe the whole world, Mother soother
Thār Tharī Amarr Mehar Kandīn	Soothe soother, mother, be benevolent
Mehar Kandīn	Have mercy (upon us)
Khāsha Gulgrrā Kandīn	May you grow beautiful flowers (rashes)
Pahnji Gulrran Ji Parwarash Pān Kandīn	May you look after them (rashes)
Thār Tharī	Heal (you) the healer
Muhnjā Bachrrā Thārīn	Heal (soothe) my children, please

[95] It is unclear who *Kokal* is. However, mostly he is known as a supernatural being.
[96] *Sadaqāh* is an Arabic term – a kind of voluntary offering or charity according to the position of the giver.

Jagg Thār Amarr Tharrī	Soothe the universe, Mother soother
Oh! Rannī Jo Āi Muhnjy Taddy	Oh! The queen came to my (poor) house
Amarr Khanī Diān Mehmānī	A warm welcome and homage to host you
Channān Pusāyān	(I) put chickpeas in water (for her)
Mithrrā Lolrrā	(I) prepare sweet bread
Āun Thadhrro Kayān	(I) make it cold (during the whole night)
Māī Rājā Khay Tharyān	To make Mother King blithe and kind[97]
Māī Rājā Thāry	May mother king be soothing
Asān Jā Bachrrā Thāry	May then she soothe, heal our children
Thār Tharrī Asān Jā Bachrrā Thāry	My Soother heal our children
Adī Mubarak Hujy	Sisters congratulations to all of you
Māī Rājā Tun Wanj	Mother King, you may go, please
Bāggan, Amban, Tutan	To gardens of mangoes, mulberries
Mokal Athāi	We permit you: say goodbye
Asān Jā Bachrrā Thārīon Wanj	Please go while soothing our children
Pān Bhī Wanj Daryāin Main Thar	You may go to the rivers to soothe them
Māī Rājā Asān Jā Bachrrā Thārion Wanj	We request, leave after soothing our children

During the incantation of the *Lorī*, the chanter regularly sprinkles cow's milk on the child's whole body, especially on his/her face through a filter that is usually used to filter wheat flour. Using cow's milk is more respectful, as a cow is a sacred animal in Hinduism. In the absence of cow's milk, milk of a buffalo, goat, or camel might be used. Milk is a ritual prerequisite. After completion, sweet bread is distributed among participants and, in some cases, also in the neighborhood. Although paying money after receiving the bread is not mandatory, most of the receivers give money to the child according to their financial capacity. The family members, such as father, mother, or grandmothers, often give money. Some of them put the remaining milk, chickpeas, and some bread into running water, preferably in a nearby river or a small watercourse; the running water symbolizes life, and the water cools down the heat caused by measles. After that, they bring the child back to the room s/he stayed before. Afterward, following the dos and don'ts continues. This rite is followed by the *Pako Chando.*

9.1.1.1.3 *Pako Chando* as a postliminal phase

The *Pako Chando* – which can be understood as "rite of incorporation" in Van Gennep's terms – is usually observed on the seventh day. "*Pako*" in my translation means *ripen*, *strong*, or *stable* – the ending of a thing that started earlier and *Chando*. In some cases, it may be performed on the fifth day, determined by the situation of the child. For example,

[97] This is quite interesting that here *Mātā* is addressed with a masculine term *Rājā*, perhaps to show the "power".

this is the case if the rash is not severe, and the child is active and able to eat. As one 50-year-old mother shared, "When we see that *Mātā* has started returning [to her abode], then we observe the ritual earlier. If treated worshipfully and reverently, she returns quickly. Otherwise, on day seven, her *Mudo* (tenure, duration)* is completed."

The procedures of these rites are analogs to those described above. However, *Katcho Chando* contains a few additions to the required elements. Before these rites, the child receives a bath with clay (obtained from mountains) mixed with goat milk and water. The inherent belief is that this clay has a cooling quality, which soothes the body by reducing the pain of the rash. After this bath, the child wears new clothes, which in most cases, are newly bought or sewed.

Akin to the *Katcho Chando*, a woman leads the ritual while invoking the *Lorī* mentioned earlier. However, the child, either in the mother's lap or elsewhere, receives one piece of bread on the forehead, two on the eyes, two on the feet, and two in the hands. Cow's milk is continuously poured on his/her body during the invocation. After accomplishing this ritual, every participant congratulates each other, especially the child's mother and her/her family members, for the successful completion of the transitionary phase. Again, the child receives some money, especially after this final ritual. This completion is no less than a celebration showing an appropriate farewell to *Mātā*, who was pleased and has therefore now gone. The child now receives the title of *Pakā*. Considering the meanings of the term *Pako* that denotes mature, strong, or accomplished, the child has successfully gone through the passage and completed the transition.

Until the performance of *Pako Chando*, during the whole course of measles, the child is addressed with reverent words and actions. Every effort is made to please and keep him/her calm. There is generally no negligence in observing the aforementioned 13 steps. The child is never left alone. Notably, the mother accompanies him/her and sings the *Lorī*.[98] The cassette of *Bhajjan* is played. When I conducted the current research, people still had a small number of mobile phones. Yet, nowadays, there are good chances that

[98] One of my editors from the USA made a comment that is highly relevant to my project, so I would like to mention here: "Wow, if we treated kids with measles in these ways, I think everybody would want to have measles! I remember that when I had measles, my mom put my favourite coral sheets on my bed and served me beef broth in a gorgeous antique cup and saucer. She made me feel very special and loved—but that was nothing compared to all this!"

many of them may have mobile phones to play *Bhajjan*. During my fieldwork, they were still playing cassettes in the stereo players.

Although performing the regimen becomes a bit lenient thereafter, it does not stop after the *Pako Chando*. The child still receives intensive care to prevent the disease from recurring. Also, an old Muslim woman, when talking about the elements of rites, claimed that in the past, pouring of cow urine, instead of milk or as an addition to it, on the body of the affected child was also common. Nonetheless, over time, it was realized that this was impure. They therefore now either use cow milk or goat milk for this purpose.

The dos and don'ts of treating a child with measles index certain aspects of underlying cultural knowledge. Quarantining a child demonstrates cultural awareness of the infectiousness of measles, especially for people who are *Katchā* (plural form of *Katcho* in *Sindhī*). Treating the child with "cold" substances shows the cultural belief in the hot/cold system of beliefs. Covering the child with clay can have the medico-therapeutic benefit of relieving the itching and drying up the rash. Maintaining cleanliness could further indicate the cultural acceptance of germ theory even as it also honors the culturally perceived sacredness of measles as a gift from *Mātā* to make the child strong.

9.1.1.1.4 Lorī or Bhajjan: musical healing

During the course of measles, the importance of music is undeniable.[99] People play cassettes of *Bhajjan* and women, especially the mother, sing the *Lorī*. People perceive measles as one of the toughest and most testing phases of life. They feel afraid of it as measles leaves only a few parts of the body unwounded. The passage of measles is believed to inflict wounds inside the body more than the outside. Measles is considered to be one of the toughest times for a child, especially when its intensity increases. The child falling unconscious is the peak of measles—a woman, often the child's mother chants the *Lorī* that is a *Bhajjan*.

Interestingly, Muslims call it a *Lorī,* not a *Bhajjan*, for religious reasons. That means Muslims do not have a problem with the inherent properties of a *Bhajjan*, such as the use

[99] Appreciable work has been done on musical healing across cultures (Gouk 2017), specifically in the subfield of medical ethnomusicology, which has cast full attention on the powers of music impacting social, cultural, psychological, emotional, spiritual and biological aspects of human life (Lloyd, Barz, and Brummel-Smith 2008; Koen 2006; Boyce-Tillman 2014). Anthropology has also invested its efforts and energies in this domain (Laderman and Roseman 2016; Friedson 1996; Feld and Fox 1994; Roseman 1991).

of the word *Mātā*, but they do not like the term *Bhajjan* because of its strong association with Hinduism. Therefore, uttering the term *Bhajjan* may make someone a *Kafir* (a nonbeliever, usually connoting a Hindu).* During the ritual of *Chando*, women sing the *Lorī* without any instrument, but as melodiously as possible. The *Lorī* soothes.[100]

9.1.1.1.5 Visiting Kālkā Devī Mandar

Although shrine behavior, including *Mandar*[101] (a Hindu temple), was mentioned earlier in chapters 6 and 7, my focus in this section is on the *Kālkā Devī Mandar* itself. The *Mandar* is an historical place where Hindus have been coming to worship for several centuries. The *Mandar* is associated with *Kālkā Devī* (the black goddess or mother), who is an incarnation of *Durga,* who is a Hindu goddess of war, and whose mythology centers around combating evils and demonic forces that threaten peace and prosperity.

The *Kālkā Devī Mandar* is one of the oldest and most venerated *Mandar*s of the province. It is located in a mountain cave where the goddess is believed to have made an appearance during her *Hinglāj Yatra*. *Hinglāj*, about 250 KM from *Karāchī*, is another famous sacred place of pilgrimage for Hindus that is situated in *Taluko* (sub-district) *Lyāri* of Pakistan's *Baluchistān* province. The *Kālkā Devī Mandar* is believed to have two tunnels that connect it to the *Hinglāj* temple in *Baluchistān*.

The *Kālkā Devī Mandar* is at a distance of around 60 km from the village of *Rahīmpur* in district *Sakhar* and is located about one mile south from the capital city of *Arorr* (old name of the present-day *Rohrrī* city in *Sakhar* district). According to one legend, a devoutly religious woman, named *Kālkā*, used to live in these caves and the hills were called *Kālkā* hills during Roe Dynasty (that ruled modern-day Sindh and northwest India from 450 BC). The entrance to the cave is hardly five to six feet high. The smell and the smoke of *Agarbatī* (incense) creates a mystic aura around the area. The priest sits on a stone

[100] In classical Hindu music, as there are seven *Chakras*, there are also are seven *Swarā* (notes). Each note stimulates a specific Chakra inside the body. According to Koen (2006), music generates different vibrations by affecting the tympanum, body, and thoughts simultaneously. Hence, this dimension of singing *Lorrī* or *Bhajjan* makes this connection of sounds and body occur. Music is often used to cure various illnesses – for instance, the usage of *Falak* and *Maddāh* musical forms in a hospital in Tajikistan as complementary healing to anaesthesia (Koen 2006), or using music in various spiritual healing rituals in Baluchistan for diagnosing, curing and preventing ill health mainly caused by supernatural beings (Sultana 2013).

[101] In Urdu/Hindi and sometimes in Sindhi, *Mandar* is pronounced as *Mandar* ['mændır] not *Mandar* ['mændər].

platform next to the statue of *Kālkā Devī* with a dagger in one hand and a chopped head in the other. One can sit and chat with the priest.

Most Hindu devotees pay homage to *Kālkā Devī* on the night of the first Monday of every month. According to the caretaker of the temple, 60 percent of people who visit this temple are Muslims or belong to other religions. During my fieldwork, many families paid a visit to this sacred place. They made vows, cooked food, ate it, and distributed it among the people present there.

When the 2012-13 outbreak of measles occurred, many people, irrespective of their religions, despite the usual quarantine, brought their children with measles to this *Mandar* or fetched water from the *Mandar* to bring home for the children to offer them to drink and to spray over their bodies. This sacred place has long been central for attaining healing. Bringing children to the *Mandar* shrine simultaneously serves two purposes: for the child to meet a Hindu person, and to heal the measles. Generally, the underlying purpose was to make *Mātā* benevolent. The child, firstly, was brought to a *Pujjārī* (leader of Hindu rituals) of the temple for various verbal chanting, and then to the statue of *Mātā* inside the cave.

At *Mandar*, people also applied lamp oil and water on the child's forehead and got the child to drink some of the water. Carrying water back to home in a bottle to mix it with other water to increase the quantity to spray across the house – particularly in the child's room – and getting the child to drink is also done to please *Mātā*, and consequently to decrease the intensity of the measles, helping it to become "cold," or bearable.

9.1.1.1.6 Consulting a Hindu healer

For apprehensions about measles, people preferably bring the child to a *Hakīm*. The older women, especially, work as the primary healers to diagnose measles by reading the child's face and other symptoms. The reddishness of the face is one of the first signs and symptoms of measles. Therefore, whether measles is recognized or suspected, the child may be brought to any Hindu healer.

When parents doubt the face of a child is red and has a fever, too, but there are no rashes on the exterior of the body, then they think that the *Mātā* has hidden herself. In some cases, then the child thought to have measles is brought to any Hindu person. Considering

this person believes in *Mātā*, this act ultimately pleases *Mātā*, who will afterward manifest and make the measles visible. The invisibility of measles inside the body is highly dangerous. In local expressions, this inconspicuousness demonstrates that *Mātā* has hidden herself. Bringing the child to a Hindu *Hakīm* also serves at least three essential purposes. The first is that causing *Mātā* to choose to make herself visible will also make the measles visible. Second, the *Hakīm* knows the esteemed ways to deal with *Mātā*, since he is Hindu by his religion, and thus is unlikely to do anything that might displease *Mātā*. The third purpose includes the treatment of measles. He gives the child some syrups and recommends necessary preventative measures such as avoiding any meat and prohibiting a *Uhto-Kuhto* person from visiting the child.

As mentioned before, people avoid biomedical medication as it makes *Mātā* uncongenial. Given this, whenever fever occurs due to measles, parents bring their child to a local Hindu healer. To reiterate, a Hindu *Hakīm* practices Hinduism, thus knows the required ways of dealing with *Mātā*, who appears in the form of measles. In contrast, biomedical doctors lack this knowledge and orientation. Generally, these doctors treat measles with injections. Consequently, *Mātā* becomes malevolent and augments the severity of effects since the injection is believed to be not targeted at the child but at *Mātā*.

Hence, in *Rahīmpur* village, during the outbreak of measles, the local people consulted the local healers first. These Hindu healers had been practicing *Hikmat* for several generations. There are two Hindu *Hakīm*, as mentioned in the previous chapters, who are quite famous in the area, not merely for dealing with measles but for treating other illnesses as well. These *Hakīm* were reluctant to share their views with me, as the outbreak attracted the government's attention, and the EPI personnel directed them to refer the affected individuals to biomedical hospitals. They saw me as a person from the EPI or the media or belonging to an inspection team who could get them into trouble by inquiring about their views.

One *Hakīm* was initially extraordinarily reticent in sharing his views about measles. After building rapport, he claimed that measles is an infectious disease that spreads rapidly from one person to others and that it is more intense after three days. People of this area bring the people suffering from measles to him because of their beliefs. During the outbreak, around 40-50 cases were brought to him, which, so he told me, he refused to

treat and referred to the Tehsil Headquarters (DHQ). In contrast to his claim, local people told me that this *Hakīm* never referred any child to a biomedical hospital but treated them himself.

Nevertheless, after ensuring privacy and confidentiality and stressing that this was not an inquiry for an institution but instead that this was research in which his (*Hakīm*'s) name would be kept highly confidential, he comfortably shared his opinion in the following way:

> Measles is the arrival of *Mātā*, and we also call it *Devī Mātā*. We Hindus observe an associated Sao Mangal (Green Tuesday) in her name. That means this is the day of *Mātā*, in which we perform certain rituals on that day. We sprinkle milk on every person's face, mainly unaffected children/people in advance to respect and please *Mātā* so that if she comes, she should be benevolent.
>
> We have been practicing *Hikmat* since our forefathers.[102] We treat a person as per our orientation and belief system. Our religious teachings teach us how to deal with *Mātā* respectfully. People believe, too, that measles is a manifestation of *Mātā*. This belief drives them to bring their children to us and to the *Kālkā-Devī-Mandar*, where they offer water of that *Mandar* to the affected children. People also play the cassettes of *Bhajjan* in their homes, which are a Lori – *Thār Mātā Thār*. Since they believe that it will heal the person, it heals in actuality. It is all about one's *Waisah* (beliefs).* (…) If someone believes in a *Choddo* (bark)* of a Bair tree (Ziziphus Mauritiana) to cure some illness, it does indeed cure this. In Sindh province, people, for example, believe in several Sufis (puritans) such as *Qalandar*, *Bhittaī* or *Sachal*, and make vows there. Resultantly, their wishes come true, but the wishes of non-believers never come true.

This fascinating quote clearly shows this *Hakīm*'s belief in the power of belief itself, along with his high degree of reflexivity. It is quite reminiscent of the Kwakwa̲ka̲'wakw shaman Quesalid, who entered shamanic training to prove its falsehood, yet ended up understanding that shamanic healing techniques worked because people believed in them and so continued to practice it for many years (Whitehead 2000). Quesalid, originally named George Hunt, was the long year key informant of the Franz Boas and remained a key figure to develop a theory on shamanism, magic, symbolic healing, and

[102] I have used "forefathers," as according to them, in their family only male members practised *Hikmat.* Nonetheless, I understand that their women might have (even to a lesser extent) helped them during preparation of herbal medicine.

healing and religion (Whitehead 2004, 166). He eventually received significant attention in anthropology (Lévi-Strauss 1963; Brumble 2008; Briggs and Bauman 1999).

Another *Hakīm* has been practicing for approximately 20 years at a 50-year-old clinic, where his father used to practice.[103] He is, therefore, the second-generation practicing *Hikmat*. During the outbreak, people brought around 70-80 children to him for treatment. Simultaneously, he was reporting the cases to the THQ, as the government issued a recommendation letter that measles should be referred. Talking about the outbreak, he remembers:

> It was a massive outbreak in which five children died. People were frightened. They believe that *Mātā* causes measles. We Hindus call her *Parwati*. *Kālkā Devī Mandar* in *Arorr* is associated with her. People brought their children to this *Mandar*. The children that were brought to the *Mandar* and given a bath (there) survived. Interestingly, most of them were Muslims. People prepared sweet bread to be offered to *Mātā* to please her. When people visited *Mandar*, the intensity of illness reduced, and no other deaths occurred after that. It means that bringing children and showing respect to her pleased *Mātā*, and she became benevolent afterward. In their houses, people play cassettes of *Mātā*, based on some religious chants for worshipping and pleasing *Mātā*. Some women, in particular, chant those words over affected children for the same purpose. Whenever measles occurs in a household, people chant *Bhajjan*, perform *Chando* on the seventh day, prepare sweet bread, and pour goat or cow milk, cook vegetables to eat, avoid sex, and worship more.

These two quotations from *Hakīm* specify one thing: similarities in the belief system. Both *Hakīm* and people believe in the sacredness of measles and deal with it with equal respect. These *Hakīm* never give an injection to a child with measles; they give syrup and *Kakh* (a ground form of specific plants).* These *Hakīm* also prescribe pharmaceutical products, such as paracetamol and antibiotics. The medical representatives of various pharmaceutical companies regularly visit to mobilize them to recommend the medicines these companies produce.

Moreover, the *Hakīm* deal with other diseases and suggest the medicine of these pharmaceutical firms. They also have a stethoscope, thermometers, an oxygen machine for asthma patients, syringes, and medicine. The clinics – one and two-rooms – of these *Hakīm* are notable examples of the coexistence and syncretism of various medical

[103] Presently, one of his nephews has completed a biomedical technician course, and now works with him at his clinic.

systems such as *Ayurvedā*, *Unānī,* and biomedicine. The walls of these clinics include several pamphlets encompassing the verses of the Holy *Qurān* and pictures of Hindu gods and goddesses right beside advertisements for biomedical products.

9.1.1.2 Briefly Comparing Both the Villages

As I have shown, both Hindus and Muslims of the selected villages believe in measles as something necessary and sacred that is a manifestation of *Mātā*. In Hinduism, it is believed to be one *Mātā* or *Devī*, *Durggā*, and she is called "Mahadevi" (great goddess), and then she manifests in different forms (Dowson 2000, 90). However, a slight variation exists in the names of measles. In *Rahīmpur* village, the term for measles is "*Ur'rrī*," while in *Rāmpur* village, it is "*Ourhī*". In *Rahīmpur*, no specific name of *Mātā* prevails among Muslims to show which specific manifestation of *Mātā* it is.[104] However, in *Rāmpur*, a particular name exists — *Sitālā Mātā.*[105]

Although rituals are carried out during measles, the Muslim population does not conduct any worship, unlike Hindus. In *Rāmpur*, as a preventive measure, people often invoke *Mātā* to keep her pleased. As one 40-year-old Hindu lady from village *Rāmpur* shares:

> In our native language, we call it "*Ourhī*" and believe that it is a *Sitālā Mātā*; therefore, worshipping her is a regular practice to receive her blessings. We observe a ritual called *Thadrrī* (my translation: soother) fortnightly. For this, we prepare *Thadrrī* from a combination of wheat flour, sugar, and water on a flat pot, which is identical to *Chapāti*. Sometimes we prepare sweet rice instead. After that, water is sprinkled over the stove to cool it. Once the *Thadrrī* is ready, we bring the deity mentioned above under a tree to worship and implore it to prevent or cure an illness, including measles and problems – whether social, psychological, or economic. However, whenever, measles appears, the ritual is delayed, and a person is kept on a waiting list to see if any other family members get the symptoms to observe the *Thadrrī* then together. Once the measles appears, the very second day, no food considered to have a hot or cold effect is cooked at home or eaten by the affected person. The person eats ground wheat grains prepared in milk and with dates.

[104] It is interesting that in Karachi, Mull (1997) found that the Muslims associate measles with *Mātā and* know the name of *Sitālā Mātā*.

[105] *Sitālā* is a deified *Mātā*, who is worshiped by Hindus, Muslims, Sikhs, Christians, Buddhists, and 'Adivasi' across Pakistan, India, Bangladesh, and Nepal. Ferrari (2015) mentions that worshiping her is not determined by any fear, but rather because of her gentleness, compassion, and lovingness. Her name itself denotes 'Cold'; he claims. She is invoked to protect against poverty, illness, injustice, and misfortune. See chapter 5 for more details concerning invocation.

In both the villages, whenever measles occurs to a single person in a home, there is a wait to see whether symptoms appear in any other member of the family before performing the rituals of *Chandā* mentioned earlier. Observing the ritual may have severe consequences for the next child(ren) contracting measles, such as *Mātā* hiding herself inside the body of the next child. Her hiddenness causes problems, including death. Because, as an old lady from *Rahīmpur* claims, when "*Mātā* hides herself, we neither behave with that child reverently nor take required care of him/her. This unawareness also causes failure to follow the regimen, which makes *Mātā* malevolent. She becomes angry".

As I have shown, in both villages, during measles, the child receives complete attention and devotion. The child is given no food with hot or cold nature during that phase, except ground wheat grains cooked in milk containing dates. In *Rahīmpur*, they also give fruit such as apples to the child. Also, inhabitants of both the villages accentuate that seeking biomedical healthcare is highly forbidden. It displeases *Mātā* and makes her malevolent. They, therefore, do not bring the child to a biomedical hospital but perform the rites at home because *Mātā* becomes malevolent due to biomedicine, particularly the injections and an impolite attitude of doctors. The injection is perceived as not directed towards the child, but indirectly towards *Mātā*. During those days, the child is "possessed" by *Mātā*, and she lives inside the child's body. Biomedical treatment provokes her to be unkind and aggressive. As a result, she chooses hostile reactions. Consequently, the child suffers due to the vindictiveness of *Mātā*.

During the outbreak, the resistance against bringing the children to modern hospitals, in general, came from the women and the older women in particular. They were appealing to their male counterparts: "Since you do not obey and listen to us while carrying these children to the hospitals, please, in the name of the Holy *Qurān* and *Allāh* at least, do not allow the doctors to inject our children."

Despite these strong beliefs, the change did occur. When parents did take children to a hospital, they could see that the children returned to their homes healthy. The women of *Rahīmpur* village said, full of determination:

> If measles occurs again in any other children (in our home or village), we will bring them to the hospitals for the treatment and observe the *Chillo*

> and *Chando*. Whatever [the conditions], we will never hesitate and compromise on the medical treatment. The outbreak and the (biomedical) treatment have opened our eyes that there is no harm in bringing the affected persons to the modern hospital.

Nonetheless, despite the said determination, in the village of *Rahīmpur,* measles occurred in an infant during my fieldwork. Her family did not bring the child to the hospital but treated her with traditional healing in the form of observing dos and don'ts and performing the ritual. The child was also brought to the *Kālkā Devī Mandar*, and the water of the *Mandar* was used as a remedy. Simultaneously, they consulted a Hindu healer. After performing these practices, the infant got well.

I enquired about the fact that after the outbreaks, people were determined to bring every child who contracted measles to a biomedical facility, while still taking traditional measures. One woman I spoke to explained that this was because the government provided ambulances during the outbreak of measles to transport their children to the hospital for treatment. This mattered because the hospital is quite far away, so bringing a child there always consumes time and resources. The provision of ambulances made it much easier to bring an infected child to a hospital.

9.1.1.3 Measles as Mātā: Print Media Reports

The people of other districts also believe measles is a sacred illness associated with *Mātā*. The central purpose of their response is to please *Mātā* by performing rituals. The newspaper *Dawn* (2014) wrote about the measles outbreak in 2012-13 with the caption "Sindh's measles nightmare".[106] This English daily published the views of a medical doctor working at the *Sijāwal* district government hospital. The doctor claimed:

> When it comes to treatment, many in the rural sector turn to superstitions for the management of measles. For them, measles is a "Hindu" disease, and thus, only a Hindu faith-healer can handle it easily. Per cultural practices, children are not to be taken outside the house when symptoms of measles – spots on [the] body, inflammatory eyes, or reddening – first appear. Villagers usually bring a child to us [at a hospital] after they start suffering post-measles complications, such as high-grade fever, diarrhoea, or acute respiratory infections.
>
> However, the child arrives late on, and complications become the ultimate cause of death. A child is brought to a hospital covered in rallies (bedsheets) so that he or she is not exposed to the external environment.

[106] All these names are the original names, which were published by the newspapers.

> This handling is part of many people's belief[s]. Many villagers strongly believe that an injection cannot and must not be administered to a suffering child on the pretext of it aggravating the illness. Measles is a highly contagious disease (…) if a child in a village suffers from it, the disease is bound to affect other children of the same village.

This doctor argues that poor health literacy and lack of education are substantial causes of this "ignorance" in the rural sector. The same newspaper also published the views of a Sindh EPI Project Director named Dr. Mazhar Khamisani:

> During our visit to upper Sindh in 2012-13, we were in *Saleh Pat* [a *Talukā*, where also *Rahīmpur* village is located], which had been adversely affected by the measles crisis. We c[a]me across a family that told us that they followed the advice of a Hindu faith-healer, who wanted them to listen to *Bhajjan* to treat measles. However, it is not a rural community alone that has a different set of belief systems. In the urban sector too, residents deal with measles much the same way as their rural counterparts, before eventually going to doctors. Many urban families hold the belief that measles completes its influence before disappearing, so it's better not to touch the rash lest the disease gets "annoyed" and causes more complications for the patient (M.H. Khan 2014).

The newspaper *Dawn* in the same report also presented the ideas of Ms. Sofia Iqbal – a resident of *Karāchī*: "Measles usually disappear in two-and-a-half days or seven days at the most. People keep a piece of the neem tree's bark underneath the pillow of a child and dangle it on the main entrance of their homes. A small piece of gold wrapped in white cloth is often also used, sometimes kept in a patient's pocket."

This newspaper then mentions the problem of infrastructure in Sindh that "not all districts have a fully functioning hospital. The accessibility and affordability go together: everyone cannot bear the hefty expenses of transportation to travel from the far-flung villages." One villager shares his thoughts with the newspaper. Bābu Kand[h]rā – a social activist from the Rāwal Kand[h]rā village – claims, "It becomes challenging for us to hire transport first from the main road and then shift our patient, adult or child, to a hospital. Also, there is the cost of medication."

The newspaper *Express Tribune* (2012b) also printed the views of Dr. Jay Ram Das – EDO Health district *Sakhar:* "In rural areas, people mostly live in single-room houses and are not able to quarantine their ailing children" because measles spread through sneezing and coughing. Dr. Das further says, "That's not all. People irrespective of their religion

don't want to offend *Mātā* Rani, who, according to Hindu mythology, takes over the body of a child [during measles] for five to seven days. We are trying to convince the people to bring their children for proper treatment."

The same newspaper (2012c) also reported a similar understanding of measles in a different district of Sindh, called *Khairpur*. During the outbreak, there were also parental refusals to receive medical help for measles while believing that the "disease" is a test of faith in the *Khairpur* district. These Muslim families believe strongly in Hindu mythology and link the high fever and the red spots signs to the goddess *Mātā* Rani [in Sindh it is pronounced as *Rānnī*], who controls the children's body. Several families, many of them Muslim, therefore, do not allow doctors to vaccinate their children.

According to a *Talukā* headquarters (THQ) hospital's superintendent, Dr. Qurban Sahito, people in rural areas still adhere to old customs and beliefs of Hindu mythology although the majority are Muslims, who then chant songs for 5-7 days to appease the goddess who helps to restore the child's health.

About the ritual, the *Express Tribune* (2012c) mentions the view of a resident of *Thul* named Mukhi Baksho Mal, who is a Hindu. He claims:

> When *Mātā* Rani takes over a child, he/she should be treated very politely. During the stay of the goddess, the child should not be given any kind of meat or fish and only served vegetables and boiled rice. The families also sing hym[n]s to appease *Mātā* Rani." Mal further explained that "Hindus avoid giving medicines to children suffering from measles and prefer using their faith during the healing processes.

The same English daily produced another story from *Kandhkot* district about measles as a manifestation of *Mātā*. The same newspaper (2012c) mentions, "The villagers adhere to Hindu beliefs which state that a goddess enters the child during this period and using medicine may offend her. They believe that she would leave the child's body on her own, and the child only needs to abstain from wearing red or eating red meat. Specific bhajans are also sung to the affected child." The paper then quotes Dr. Jay Ram Das, who "criticised the prevalence of old customs and methods of treatment in villages. He said that some people didn't even know the difference between a qualified doctor and a quack. He also advised that parents should not hide their children during visits from the vaccination teams or take them to hakims".

The above-cited news reports also illustrate the local conceptualizations of measles. The reports also reveal the occurrence and associated perceptions towards measles across Sindh province (without generalizing). The newspaper describes the etiology of measles in terms of "superstitions" and Hindu mythology. Interestingly, the focus of these reports is on other districts of Sindh province, such as the *Sijāwal*, *Sakhar*, *Khairpur*, and *Kandhkot*. The reports hint at the persistence of perception of measles as a sacred illness. However, there are some variations compared to the selected villages of my project. For instance, in the *Sijāwal* district, people dangle Neem tree's bark, a small piece of wrapped gold, at the entrance to their homes or the entrance to the infected child's room, but not the red cloth. The gold falls into the category of jewelry. Hanging the bark or gold at the entrance is similar to practices in the selected villages, which signify that someone with measles is in that home, the room in particular.

9.2 Concluding Remarks

Among the central bodies of the thesis, this chapter explained the local perceptions and practices of measles in Sindh province: that is a necessary sacred illness, which requires extraordinary measures to deal with it. I elucidated rituals to deal with measles that reveal a transition from an unimmunized state to an immunized state. Observing the symptoms of measles, the local people put the child into *Chillo*. Thereafter, different rites and regiments start. The major among them are *Katcho Chando* (preliminal rites) and *Pako Chando* (postliminal rites).

An older woman leads them and chants a *Lorī* (Bhajjan). Although both rites are performed at different phases of measles, constituents of these rites remain the same to a greater extent. They include cow's milk and sweet flat *Chapāti* made from a mixture of wheat flour, jaggery, and water prepared during the night on a flat pan, and chickpeas that are left to soak in a pot full of water during the night. Importantly, water is sprinkled on the stove where the sweet bread is prepared. Sprinkling symbolizes coldness and soothing, which indirectly brings comfort to the child. The rites commence after the mother holds the child in her lap (if the child is little in age or weak), or the child sits while holding sweetbread in her/his lap.

After focusing on how local people deal with measles and what measures relevant stakeholders take to deal with it, the chapter illustrated measles as a process of transition,

a disease, and an issue that requires intervention. Through the content of print media, I have elaborated on how the government officials and doctors blame the meanings the local people give to measles for these outbreaks. In the forthcoming chapter, I will deal with the two outbreaks while emphasizing the perspectives of local people, the government, and the global stakeholders.

CHAPTER 10: TWO MEASLES OUTBREAKS AND MULTIPLE NARRATIVES

This chapter is significantly linked to chapter 9. In the previous chapter, I discussed how local people of Sindh perceive and deal with measles. Expounding on it, the current chapter discusses how several stakeholders, ranging from the *Rahīmpur* village of district *Sakhar* to the WHO, interpreted and dealt with the measles outbreaks of 2012-13. Not only the chapter presents perspectives of the local people and local *Hakīm*, who recall the memories of the outbreak, but this chapter also offers standpoint of government officials and its institutions: i.e., Aga Khan University, the National Institute of Health (NIH), the Pakistan Medical Research Council (PMRC) and the Ministry of Inter-Provincial Coordination (IPC)/Federal Expanded Programme on Immunization (EPI) Cell, and Accountant General of Pakistan Revenues (AGPR), and international NGOs, i.e., the WHO, the United Nations International Children's Emergency Fund (UNICEF) and the United States Agency for International Development (USAID).

10.1 The Local Perspective

As repeatedly mentioned in the thesis, during severe measles outbreaks of 2012-13, *Sakhar* was the second most affected district in terms of measles-infected children, and measles-caused deaths across the country, and Sindh province. These outbreaks also significantly affected the village of *Rahīmpur* that lies in the stated district, with regard to infections, including some deaths of children. However, measles has been occurring in the village previously, which was always dealt with local measures, e.g., the ritual of *Chando* (see chapter 9). The current outbreak was overwhelming: The local people performed the ritual; nonetheless, the number of infected children rapidly escalated. The rising spread and the severity of outbreaks, particularly deaths, created chaos, fear, and anxiety in the village. They started making sense of the phenomena and sorting out the possible options. The male members of the village decided to opt the modern medicine; however, there was no hospital in the nearby surroundings, except a dispensary at a distance of around 10 kilometers.

Perceiving the outbreak extraordinary, they brainstormed to do something unusual. Inhabitants of the village staged a protest on a nearby small road with the dead body of a child who died from measles. The aim was to seek local media coverage – print and television – and thereby to garner the attention of the relevant health officials. The most influential person of the village and in his late 30s with secondary school education was

working with a local *Sindhī* newspaper, *Sāhil* (a pseudonym) used that platform to approach the local press. The protest's aim was fulfilled when coverage sought the attention of the healthcare officials and politicians, who then visited the village. The responsible vaccinator also accompanied those officials. *Sāhil* remembers the "outbreak event":

> When cases rapidly increased, and there was no response from the health officials and politicians, then we staged a protest with a dead body of a child suffering from measles to seek the attention of stakeholders concerned. I invited the media to record our protest, later on, the politicians, including a provincial president of one of the political parties of the country, government health officials such as District Coordinator (DC), Executive District Officer (EDO) health reached us along with police protocol. Meanwhile, the vaccinator responsible for our village also came, who was not visiting us according to his schedule, and even he was not aware that our village was part of his assigned field. When we inquired, he was lying. Therefore, we physically beat him in front of all the politicians and health officials, since we were highly concerned about our children, who were suffering and dying. This way, our village secured full attention, and we received an ambulance to carry our children to hospitals in *Sakhar* city, e.g., the government civil hospital, Red Cross hospital, where wards were reserved for the measles-infected children.

Two more respondents, *Ibrāhīm*, and *Ismāīl*, both in their 40s, recalled the outbreak in the following way:

> Before a swift escalation of in cases and especially in deaths, we perceived the outbreak ordinary and following the cultural measures taken by the older women. However, the rapid spread of measles overwhelmed us with fear and anxiety. In the face of a significant outbreak, we started searching for effective measures to deal with it. There seemed no other option, but biomedical care. These overwhelming circumstances led us to hold a demonstration of the required care of our children. The protest was successful in seeking the attention of responsible officials. The politicians and doctors visited us and provided an ambulance. At the time of taking our children to the hospital, the women, particularly the elderly females, were showing a high resistance and did not want us to bring the children to modern hospitals. The elderly women were repeatedly saying, 'Please, we give you the oath of the Holy *Qurān* and the *Allāh Pak* (God), do not allow the doctors to inject our children; otherwise, *Mātā* will be vindictive.' The doctors, however, made the treatment according to their knowledge and understanding.

> During the outbreak, when our children were dying, and the number of affected children was increasing. We decided to bring our children to the doctors because we wanted no more deaths—the deaths of children, which

> had already occurred, scared us. However, our old women were saying that we breached the required dos and don'ts, especially we became careless about cleanliness—that is why measles spread quickly from one child to another. Owing to negligence, measles happens and spreads rapidly. Moreover, during that time, a local politician started paying around 10,000 PKR (around US$90) to parents whose children died due to measles and 5,000 PKR to every affected child in the civil hospital of *Sakhar*. He paid the amount from his pocket. His offer played a significant role in mobilizing the parents, who started to bring their children to the hospital because of money. The politician encouraged us to change our attitude towards the measles.

Zamīr, a 40-year-old male respondent from the *Rahīmpur* village, shares his view about the outbreak in the following way:

> As soon as we knew about the vaccinator—that he was the person responsible for vaccinating our children—we without any delay started beating him severely due to not visiting our village to vaccinate our children. We did not know it was him earlier. He was continually making excuses that our village was not his field while uttering that he was unclear as to whether (or not) this was his responsibility. We were frantic after observing the overwhelming situation of our children. He enraged us. Nevertheless, we spared him because health officials and politicians protected him and requested us to let him go.
>
> After the arrival of politicians and health officials, we were given an ambulance to bring our children to *Sakhar* Hospital. One ward in Red Crescent Hospital and one in the Civil Hospital in the *Sakhar* city were reserved for us. We formed two teams of volunteers from our village. One team was responsible for bringing the children to the hospital, and the second team's duty was to stay at the hospital to look after the children. We commenced bringing our children to the hospital, which was almost 40 km away. The doctors were waiting for us. Upon our arrival, they started the medication of our children. Steadily children were recovering. Moreover, a politician from our area started giving a stipend to the parents who were bringing their children or allowed their children to be brought to the hospital. He also gave the double amount to the parents of deceased children.

Moreover, after transporting all children of *Rahīmpur* village to the biomedical hospitals, these volunteers approached nearby villages to carry the children infected by measles to the said hospitals. The measles outbreak was not merely limited to that village, as stated earlier, but the outbreak occurred in the whole *Taluko*. While visiting those villages, volunteers encountered hesitancy and resistance from the parents to bring the children to hospitals because they were considered "outsiders." People were uncertain as to whether these volunteers were *Uhta-Kuhta* (Plural of *Uhto-Kuhto* in *Sindhī*: that means,

persons with a bad intention, e.g., evil eye, jealousy, dishonesty, or of bad character – e.g., a magician)* and *Mathy-Mero* (Plural of *Mathy-Mera* in Sindhi, which means an individual who has not taken the necessary ritualistic bath after intercourse).* About the hesitancy of parents, *Sāhil* and *Jamāl*—in their 30s with the higher secondary school certificates (intermediate) education who volunteered for health officials during the outbreak to locate the measles-infected children, and mobilize parents to bring the children to the hospital—shared their views in the following way. *Sāhil* said:

> After taking our children to the hospitals, we surveyed nearby villages to find the affected children and take them to the hospital. However, people were not allowing us to see their children as they were scared that our visit would cause the deaths of their children, as *Mātā* becomes angry when someone impure and an outsider meets or visits the child. Even our simple looks were considered as harmful. It was the same perception and belief as inhabitants of our village used to have. However, EDO briefed us that measles is like a viral disease that starts with fever, rashes, and can rapidly spread to other unaffected persons, especially children. We were using our dead and cured children as a source to mobilize inhabitants of nearby villages. Owing to our constant mobilization, they permitted us but requested us to be pure before visiting their children. They gave us water for ablution.
>
> [*Jamāl* continued:] The parents were not allowing us to see their measles-infected children. They were afraid that perhaps some of us might be a *Uhto-Kuhto* and *Mathy-Mero* person, which can lead to the *Mātā*'s malevolence. We experienced that resistance throughout the area we visited. We introduced ourselves and started mobilizing people by giving them a reference to our village. After receiving awareness of measles from the health officials, we stated to people that measles was a viral "disease," not a manifestation of *Mātā*. Despite massive mobilization, parents were still hesitant to let us meet their children. Some of them did not even allow us, who steadfastly refused and believed that their children would recover through observing rituals.

In terms of how this purity and impurity works, and how people practice these concepts, particularly during measles, *Sāhil* and *Jamāl*— the two volunteers—shared one story about a teenage girl who was severely affected by measles.

> We reached a village where villagers informed us about a teenage girl who had contracted measles and was in critical condition. We quickly reached that house and called[107] for the head of the household; a woman appeared.

[107] In villages, it is a normal practice to call (shout) the name of the family's head or any other male member. Because sometimes there is a doorway but no door, or because of voices inside the house, or the width of the house, knocking at the door does not work. There are no doorbells.

In response to her inquiry about our visit, we informed her that we were volunteers carrying measles-infected children to the hospital. After our briefing her concerning the visit, we learned that she was the mother of that girl. First, she completely denied the presence of a person having measles and then accepted, but she showed a great reluctance to let us visit her daughter. Her refusal was straightforward, 'I cannot permit you to see my daughter, because this will lead towards the anger of *Mātā*, and as a consequence, my daughter could die.'

We assured her that we were neither *Uhtā-Kuhtā* nor *Mathy-Merā* [plural form of both in the *Sindhī* language]. Instead, we had observed prayers five times a day and that we know what purity was. After a discussion and mobilization of half-an-hour, she agreed, however, with the condition that we must perform ablution before entering her house and seeing her daughter. She brought water for us to perform ablution to maintain the purification before entering the house. We followed her instructions accordingly. She afterward brought us inside her house, where her daughter was lying in a bed in a critical condition. The girl was in a critical situation: weaker and wrapped in the clothes. She was unable to speak. The family was economically poor.

After looking at the critical situation of her daughter, we asked the lady to permit us to bring her daughter to the hospital promptly. She should also accompany us to stay with her daughter. Concerning her permission, she would receive some money as well as free medication for her daughter. Otherwise, the consequences might be quite severe, including death, as some of our children had already died due to measles. We told her success and critical stories from our village to allow us to bring her daughter to the hospital.

Although she resisted bringing her daughter to a doctor, something worked, and she agreed for the treatment. We took both the mother and the daughter in an ambulance to the mentioned civil hospital. The doctors, after inspecting the girl, informed us that the situation of the girl was substantially critical, and thanks to God that we brought her at the right time. Otherwise, there were high chances that due to extreme severity, she could have succumbed to death. These words made the girl's mother cry.

Doctors allotted a bed to her and started medication. Gradually, the girl recovered enough to speak. After some days, she became entirely healthy and was discharged from the hospital. Then her mother was praying for us.

The views of these respondents illustrate the intensity of the measles outbreak and how these local people made sense of a challenging situation. The uncertainty and fear caused the local people to seek the attention of politicians and health officials. Undoubtedly, whenever an overwhelming situation occurs, we cannot merely sit and view how that situation impacts us. Instead, we humans make some best efforts to deal with it.

Responding to a challenging situation is part of our enculturation. It has continuously evolved and preserved in "societal memory." Analogously, when the outbreak's scale considerably increased, people had to make a suitable choice to contain the disease. They understood that local measures are proving insignificant to deal effectively with measles. Hence, despite their elder—socially respectable—women, they protested against receiving the necessary attention of officials and bringing children to a hospital. This response may better be understood concerning our socio-cultural and biological history, in which we have learned how to make sense of a challenging situation and deal appropriately with it.

Moreover, the anecdote demonstrates the way politicians and officials dealt with the outbreak and how it changed the perception people had of measles. On the one hand, local people's children were overwhelmed by the infection, and on the other hand, they got a chance to earn some money. Hence, in the face of an overwhelming situation that made them helpless and in the absence of relevant resources (money, the hospital care, and the ambulance), the provided money and the ambulance played a pivotal role in changing the local perceptions and practices of measles to bring children to the modern hospitals. The money as a "token" from the politician reflects how economic and political factors structure the inequalities and then shape the views of people. One can easily see how an unequal distribution of resources, facilities, and awareness have created a sense of "aid," and "greed" in the village of *Rahīmpur*.

Furthermore, the local people's punishment to the vaccinator demonstrates how poor (in terms of economic) manipulate their equivalents without understanding who is the main responsible person or institution for such a testing situation. The vaccinator was also not wealthy, and he lacked enough funds and facilities to reach a far-flung village.

10.2 Views of Medical Doctors and Local Health Officials

Riaz (2013, 189) cites an interview with Zulfiqar Bhutta[108] in the *Lancet*, "This was a tragedy that was waiting to happen. We have been predicting for a while now that without adequate cover with routine immunization in many parts of Pakistan, notably in rural populations, that there was bound to be a situation where you would have an

[108] He is founding Chair of the Division of Women and Child Health at the Aga Khan University, Karachi Pakistan.

outbreak like this". He further shared that they saw an absolute outbreak of a preventable "disorder" that was happening in the country's south. Likewise, the BBC (2013) broadcasted the views of a *Punjāb*-based medical doctor from *Lāhore*, named Dr. Raza Hasan, who argued that he had been working for over two decades and had not seen a measles epidemic of this severity. Parents refuse modern medication, and when they come, it is late, so doctors cannot do anything.

A district-level government health official, Mr. *Rānno*, boldly claimed during my *Kachaharī* (see chapter 3) with him that people of this *Taluko* [referring to the sub-district, in which the village of *Rahīmpur* is located] are economically poor. They practice "cultural taboos," yet not all of them refuse vaccination. Some people openly welcome it, as they do not want to see their children suffer and die. Nonetheless, children go still unvaccinated not only due to parents' refusals but because of some other factors, too, such as lack of access to people due to unestablished road infrastructure, inaccessible vaccination, officials' deficiency of sincerity, commitment and ownership at service delivery level.

Mr. *Rānno* further shares that the lack of sincerity, commitment, and ownership – of the health officials – at the service delivery level are among the primary reasons for the outbreak. For example, as follows, there are five tiers: vaccinator, supervisor *Talukā* Superintendent Vaccination (TSV), District Superintendent Vaccination (SV), focal person of EPI, and the Project Director at the provincial level. The routine vaccination is facing problems in this chain. There is a lack of commitment and proper supervision and monitoring. If staff conducted work candidly, then it is possible to control the vaccine preventive diseases (PVDs), and outbreaks would not occur. Even if a microorganism causes disease, then its intensity will be not so severe.

For example, if a doctor or a staff member of EPI learns about a case of measles anywhere in a respective field, then s/he must reach there as soon as possible; otherwise, that one case of the measles will affect another 22 children/persons. The official must keep an affected child in an isolated room and give him/her a vitamin A capsule promptly, which will help to reduce the chances of death. Afterward, the official has to give the same capsule after one month that will surely help further to decrease the chances of mortality. This way, we can avoid an outbreak, and if we do not do this, outbreaks will occur.

Mr. *Rānno* further continues that the government of Sindh has employed Health Education Officers (HEO) to change the people's attitudes and behaviors that are harmful to their health. In other words, HEO will change the anti-modern medicine views. Scrupulously speaking, if there were no refusals of the vaccination, then what would the HEOs do? How can I tell you because [in *Sindhī*] "*Zubān Tay Tālā Āāhin, Pairan Main Bairryion*" (tongue is locked, and legs are chained).* Hence, he told us what he could?

His sentence is a metaphor to clarify that he would instead be punished or fired. Hence, he could not share the exact situation, although he gave us a sheet containing the cases of refusals.

10.3 Politicians' Debate

The consecutive outbreaks of 2012-13 remained the center of attention not only in the media but also in the political circles: It became part of the government's discussions and debates. The rumors had it that the government did not provide the province with a sufficient amount of vaccine, or the government used an expired vaccine. Consequently, a debate was held in a Senate meeting of the Upper House of Pakistan's Parliament.[109] As mentioned earlier, the newspaper *Dawn* (2013) reported that during that meeting the Federal Minister for Inter-Provincial Coordination at the time accepted that the measles outbreak was a result of "poor handling" of measles infections, which resulted in over 200 deaths of children in 11 districts of Sindh province. Contending that the federal government supplied 10. 7 million doses of the vaccine, against the province's need of 4.1 million, the minister claimed that the shortage of the vaccine was not the issue, but the "access to people" insofar as 40 percent of the area was under the vaccination coverage.[110]

To the Minister's second inference, one Senator argued that if the shortage of the vaccine was not the prime reason, then outbreaks were "a case of severe [governmental] mismanagement." An opposition Senator argued that the measles outbreaks not resulted

[109] Pakistan's Parliament is based on two houses: The Upper House (the Senate) and the Lower House (the National Assembly).
[110] During the debate, the minister praised the governments of two other provinces, *Punjāb* and KPK, for their effective steps and the better case management that was lacking in Sindh.

in 200 deaths, but approximately 1,000 deaths. The ruling minister labeled it as an "exaggerated" claim and stated that the real figure is 232 deaths.

The senator's discussion shows how an outbreak was negotiated via quantification. Fewer numbers reflect here a success story of the government— "the proper management"—of the outbreak. For instance, a thousand deaths demonstrate more "value" than over a hundred. This "valuation" and quantification of loss is highly prominent in the political circles as well as in governmental and non-governmental officials of health. Interesting enough was the end of the discussion: since the home district of this minister was also among the eight severely affected areas by measles, he promised that the government would supply further vaccines after administering the supplied ones. Summing up, he asked the elected representatives to play a significant role in increasing the coverage of vaccination against the "deadly disease."

Furthermore, taking advantage of the upcoming elections, other than the ruling political parties used these outbreaks and rumors about the "expired" vaccine as a pretext. It is essential to mention that the measles outbreak occurred when the first-ever democratically elected government in the history of Pakistan was completing its five-year tenure, and the next general elections were approaching.[111] Hence, during election campaigns, other parties were citing the measles outbreak and mentioning in their election campaigns that the present government mismanaged the vaccination in general and the outbreak in particular, which consequently led to the high morbidity and mortality of the children.

The government authorities, especially at the federal level, accepted that measles could have been controlled with proper handling of the cases and ensuring an ordinary person's access to healthcare. This access and the "poor handling of the outbreak" signify several existing disparities in the country, which are related to the availability of the healthcare services and providers, and ineffective check and balance. For instance, competent dealing with an infectious disease requires the following actions: (a) the vaccine, (b) a routine vaccination, (c) an appropriate cold chain to maintain the temperature of the vaccine, (d) well-informed and well-resourced vaccinators to vaccinate, (e) adequate

[111] During the entire political history of the country, this was the first democratic government about to complete the five years of governing. Prior to it, although the elected governments ruled the country, they could not complete the five-years tenure due to military coups.

supervision of the vaccination. Once the infection spreads, then it is highly necessary to carefully handle it that necessitates: (a) a thorough survey of the area to identify the infected people, (b) a careful and effective medication of the infected people, (c) a well-established and resourced medical facility that has the required capacity (beds, services, and providers) to accommodate the infected people, and (d) and well-trained medical staff to treat the infected people.

These entire preventive and curative measures considerably depend on those policies, which make a difference to have an (in-)effective healthcare system. These policies are devised and implemented at national and global levels. Yet, they negotiate the outbreaks in a way that most likely makes the local people appear as the "culprits" for epidemics. The following letters, which two politicians and parts of the government wrote to the federal government, highlight how they were negotiating the outbreaks and inferring that underlying causes.

The first letter was written to the President of Pakistan on 10th January 2013by Dr. Azra Fazal Pechuho, who was Member National Assembly, Chairperson National Assembly's Standing Committee on Defense, and sister of then the country's president. Mentioned in the report of *Wafaqi-Mohtasib* (Federal Ombudsman), the details of the letter are as follows:

> i) The Federal Government through the Federal EPI Cell was responsible for the uninterrupted supply of vaccine to the provinces till June 20, 2013. Due to inordinate delay in [the] supply of vaccine to the provinces, the target children could not be protected with the measles vaccine which resulted in a nation-wide epidemic and hundreds of deaths which could have been averted.
> ii) Monitoring and surveillance system[s] clearly failed to forewarn and inform the authorities at the Provincial and Federal level with the result that no timely intervention could be made. Deaths of hundreds of children from measles were brought to the light by the media. More deaths of children are being reported every day from across the country and the toll is unfortunately likely to rise manifold.
> iii) In her view, the Federal EPI Cell, Ministry of IPC had failed in its duty to process the case[s] and arrange for release and disbursal of funds to the UNICEF for purchase of vaccine. This has resulted in [an] interruption in [the] supply of vaccine to the provinces which continues to persist and there is no clear time frame in which vaccine[s] will be made available to the provinces despite the deaths of hundreds of children across Pakistan.

iv) From the above, it is clear that the responsible officials failed to perform their duties in [the] timely purchase of measle[s] vaccine[s], timely release of funds and effective monitoring and surveillance of measles in the country. This criminal negligence has cost the country hundreds of precious lives and brought a bad name to the Government (Government of Pakistan 2013, 10-11).

Ms. Pechuho, in her letter, holds the federal government responsible, not the provincial government, because she belongs to the Pakistan People's Party (PPP) that has been active in the province for many decades and ruling the province from 2008. She criticizes the federal ministry for an untimely procurement and supply of the required vaccine and views government officials failed to perform their due roles effectively. Moreover, in her view, the problem also exists in surveillance to detect the outbreak prior to the media. She does not mention the provincial government. Nonetheless, as state above, the federal minister argued that the requirement of the vaccine was fulfilled. This also highlights the aspect of contestation between the provincial and federal governments.

Another letter that the Ombudsman's report contains was written by Mr. Haleem Adil Sheikh, who was the Advisor/Minister for Relief Department, Government of Sindh. Following are the details:

a) Parents were not bringing the infected children to nearby hospitals.
b) [The] Medical staff was found misreporting/hiding facts, as people could not afford the treatment.
c) Measles has spread mostly in the areas which were badly affected in three consecutive rain flood disasters.
d) Financial constraint is also the prime factor, as people could not afford the treatment.
e) Malnutrition combined with measles have caused fatalities.
f) Lack of prompt treatment and improper isolation procedures [are] also cause of [the] spread of measles.
g) Children were not vaccinated [in] proper time and immunisation was compromised.
h) Privately administered clinics and hospitals were not having sufficient well[-] trained staff to treat the increasing epidemic.
i) Government hospitals did not take [the] widespread epidemic threat seriously and no plans were made or prepared for [a] micro[-]level immunisation plan.
j) Medicine [was] not available in OPD [Outpatient Department] to fight the measles virus and post measles complications on [an] immediate basis.
k) Improper handling of vaccines comprised their quality and efficacy.
l) More than 50% of cases were not reported mainly because of [the] nondeployment of health teams in the field.

m) As per rural custom[s], symptoms of measles in children and women, [e]specially female child[ren], are not taken seriously.
n) Classical taboos of [S]tone [A]ge treatment are adopted in houses, based on superstition.
o) Measles is not a life[-]threatening disease but due to lack of awareness, improper treatment and increase in post[-]measles complications, it can cause fatalities in children (Government of Pakistan 2013, 10-11).

Mr. Shaikh starts with the parents, who could not bring their children to modern hospitals. Afterward, he mentions the following reasons behind the outbreak: Medical staff's misreporting/hiding facts, impacts of floods, economic factors, malnutrition, untimely treatment, low-vaccination uptake, lack of staff at the private clinics, government hospital's negligence to understand the outbreak's scale, a dearth of medicine at the hospitals, improper handling of vaccines, "rural customs," "classical taboos of Stone Age," and local perception of measles that it is not life "threatening." Nonetheless, the Shaikh does not mention the government as he was also part of the provincial governing system.

10.4 Report of the Federal Ombudsman on the Measles Outbreak

Based on these letters and informed by the media, the *Wafaqi Mohtasib* (Federal Ombudsman) of Pakistan took notice of the outbreak. The Ombudsman considered "mal-functioning and negligence of the government departments and their functionaries" behind the 20,000 suspected cases of measles and 463 deaths from January 2012 to 02 February 2013 (Government of Pakistan 2013, 4). Considering this outbreak important and a result of the government's "neglect, inattention, and delay," the notice was taken under "Article 2(2) of the Establishment of the office of *Wafaqi Mohtasib* (Federal Ombudsman) Order, 1983)" and under its motion following the Article 9(1). To detail causes behind the outbreak, the Ombudsman constituted a committee to compile the statements of national and global stakeholders responsible for the vaccination in the country, such as the Sindh government, the Ministry of Inter-Provincial Coordination (IPC)/Federal EPI Cell, the NIH, the Pakistan Medical Research Council (PMRC), Aga Khan University, Accountant General of Pakistan Revenues (AGPR), and, the WHO, UNICEF and USAID. The following were terms of references (TORs) to (a) know the underlying causes of the measles outbreak, (b) "fix the responsibility of the government departments, and their functionaries for their failure" for timely procuring measles vaccine, immunizing children through the country and recommending suitable actions "against the

delinquents," and (c) recommend appropriate measures for averting the possibility of such outbreaks in the future (Government of Pakistan 2013, 5).

To obtain perspectives on the outbreak, this committee held several meetings with the above-stated stakeholders. Following perspectives concerning the measles outbreaks, 2012-13 are based on this Ombudsman's *Report on Measles Outbreak in Pakistan*, which reveal contestation between the engaged stakeholders.

For considering the critical role of the provincial functionaries to implement the EPI in the provinces, the Ombudsman asked the Ministry of IPC and National Program Manager of the Federal EPI to hold a meeting with provincial Health Secretaries, and EPI heads. On January 31, 2013, the Ombudsman's committee held a meeting with the concerned provincial functionaries and the senior representatives of the USAID and WHO. The agenda points included, the provincial vaccine requirement for the entire year 2012, the number of vaccines provided by the Federal EPI Cell, underlying reasons of the outbreak, suggestions to improve the vaccine procurement and vaccination and to halt such "disasters" in future (ibid., 34).

10.4.1 The Sindh Government's Viewpoints

Sindh's targeted 9-15 months children were 2.74 million, and the required vaccine for 2012 was 3.570 million doses. Against this requirement, the federal EPI Cell provided 5.504 million doses. However, Sindh province stated several important reasons for the measles outbreak: the federal EPI failed to (a) timely supply the required vaccines, syringes, safety boxes, and other logistics, (b) develop an efficient surveillance system to monitor the burden of disease, (c) formulate an effective monitoring and evaluation system to monitor coverage of routine immunization and give appropriate feedback. (d) the performance of the concerned districts that were severely affected during the outbreak was inappropriate.

To improve the performance of the EPI and avoid any future outbreaks, Sindh suggested that the procurement and timely provision of the vaccine is the responsibility of the federal government. The federal government should buy vaccines from UNICEF because it provides a quality vaccine at affordable prices. Otherwise, there are only three manufacturers like Glaxo Smith Kline, Sanofi Pasteur, and Novartis, who hold sub-offices in Pakistan, and other manufacturers do have their agents in the country. Owing to this

low competition, the manufacturers practice a monopoly in the county that leads to an unbearable economic burden on the EPI. Not merely the federal government, but the provincial governments should also pool their resources for a centralized procurement through UNICEF, which is necessary for the smooth functioning of the EPI. It is crucial that the Ministry of IPC, in collaboration with the provincial EPI, should formulate an active surveillance system for detecting an early outbreak. This ministry should also focus on building an appropriate monitoring and evaluation mechanism to check the routine immunization activities often (Government of Pakistan 2013).

10.4.2 The Opinion of IPC and the Federal EPI Cell

At the federal level, the central EPI cell under the Ministry of IPC was primarily responsible for the planning and implementation of the EPI throughout Pakistan. However, after the devolution (the transfer of power or authority from a central government to a local government) of the Ministry of Health in June of 2011, the provinces/areas were supposed to procure vaccines on their own. In February 2012, the Planning Commission decided in consultation with the provinces that provinces would do the actual procurement, as the federal entity of EPI had ceased to exist. It was as late as in mid of October 2012 when the provincial governments showed their inability to procure vaccines, and the EPI had to be resurrected in October 2012 (through the extension of PC-1) to perform this vital function. The federal EPI floated tenders four times to purchase the measles vaccine through open bidding as per PPRA rules. However, open bidding did not work. Therefore, the government bought all the vaccines via UNICEF during the year 2012.

Since October 2012, provinces had not sent an official request to the EPI for vaccines or informed them of the unavailability and shortages of the vaccine stocks. Nonetheless, the federal EPI fulfilled their demand quarterly. The federal EPI is mostly concerned with supplying vaccines to continue routine immunization. The World Bank indicated pathetically low routine immunization during that period.

The federal government has regularly developed standard operating procedures (SOPs) for ensuring active routine immunization through combating the decision gaps between the provincial, district levels, and further downwards. Despite that, the actual coverage remains lower than 50 percent, except for *Punjāb*, where it is around 60 percent. The EPI

further took a stance that vaccines for 100 percent coverage reached provinces as per their demand, but the provinces did not send utilization reports to the federal EPI. That means that it was not a shortage of measles vaccines that led to the deaths but pathetically low routine coverage (less than 50 percent) and a failure of implementation at district levels and below (Government of Pakistan 2013).

10.4.3 NIH's Views

There is now a WHO-supported Disease Early Warning System (DEWS) in all provinces to report suspected cases. The DEWS recorded a total of 17,338 suspected cases from 1 January 2012 to 19 January 2013, with 413 deaths. The case fatality rate was 2.38 percent. Most deaths are attributable to post-measles complications. The cases and deaths reported from other provinces make it a generalized issue. However, Sindh province was the worst-affected. The NIH had already alerted all stakeholders, including provincial and district health authorities, for measles preparedness through Seasonal Awareness and Alert Letters (SAAL). The present measles episode highlights the critical inability of the healthcare delivery system: a failure to find and vaccinate the vulnerable populations; and the inability of the EPI monitoring and surveillance system to identify, investigate and respond to the issues related to the measles outbreaks from district to district (Government of Pakistan 2013).

10.4.4 Position of PMRC

The present outbreak is a result of overall low vaccination coverage, which did not exceed 60 percent for many years. The WHO's coverage data implies better coverage in the urban areas than the rural. The stock shows there was no shortage of vaccine stocks in any province. Also, there is no doubt in the efficacy of the vaccine as no other country has reported such an event. All the neighboring countries have excellent coverage of EPI vaccines that made them successful in the eradication or control of these diseases such as polio besides measles, much earlier on. Now, the government should procure a future supply of vaccines through UNICEF, because it gives a standard rate, and supplies on time with a guarantee of quantity and quality (Government of Pakistan 2013).

10.4.5 The Standpoint of Aga Khan University

A pediatrician's team of Aga Khan University visited the profoundly affected areas of Sindh during the outbreak. During their week-long visits to health facilities, areas and

observations in the field, the team discovered the pressing issues in the cold chain maintenance, capacity of the health staff, coordination among the vertical programs and the engaged health officials such as between the medical officers and vaccinators, attendance of the vaccinators, and great emphasis and incentive for polio vaccination. Aga Khan University proposed short and long-term plans such as vaccinating all the children (6 months to 15 years) during March-April 2013; ensure vaccines; staff training; fixing the cold chain and filling the vacant positions at the healthcare facilities (Government of Pakistan 2013).

10.4.6 Views of Accountant General of Pakistan Revenues (AGPR)

According to the Federal Ombudsman's (2013) report, the Ministry of IPC/Federal EPI Cell sent a cheque to UNICEF for an advance payment of Rs.633m against the UNICEF's cost estimation for the measles vaccines that was valid until the 31st December 2012. However, the funds did not reach to UNICEF as per the said date, as the AGPR issued the cheque on the 7th January 2013. UNICEF then refused to accept the cheque, because the prices of vaccines were varied meanwhile. Consequently, there was a delay in the advance payment and vaccine delivery. Therefore, the Ombudsman asked AGPR to clarify its stance.

The AGPR stated that bills of amounts that massive need at least seven working days to process. Although the bill was processed the next day, some legal issues arose, slowing down the System Applications Products (SAP) server of AGPR. Especially the issues related to legal, i.e., Writ Petition, by the Pakistan Medical Association (PMA) in the purchase of vaccines, AGPR conveyed to the Secretary, IPC Division, for specific clarifications. The bill, afterward, was resubmitted almost after 15 days. Meanwhile, the National EPI manager visited AGPR, and the bill was "expeditiously" passed on the same day on 07th January 2013 (Government of Pakistan 2013).

10.4.7 The WHO Perspective

According to views that the WHO provided to the Federal Ombudsman (2013, 18), the WHO had already alerted all the provinces about the possibility of a future measles outbreak. To avert that outbreak, a vaccination campaign was held to vaccinate 4.5 million children in 23 districts of Sindh. Despite that, the measles outbreak occurred, and the primary reasons behind the outbreak and the deaths are: "(i) low rate of the routine

vaccination in the field particularly in Sindh province; (ii) poor health services management; (iii) untrained staff at health facilities and in the field; (iv) inability and incapacity of the health personnel in the hospitals and in the field [required] to treat post-measles complications". The post-measles complications – pneumonia, encephalitis, and diarrhea – were the leading causes of many deaths (Government of Pakistan 2013).

One of the WHO officials during my interview indicated a dearth of the political will, as Closser (2010) also found in her work *Chasing Polio in Pakistan: Why the World's Largest Public Health Initiative May Fail*. His views are:

> The Health Department did not perform its job as required. It [the outbreak] occurred due to their negligence. A family member can make the health department accountable for their roles and responsibilities. The government did not take the proper measures, but it was just busy in blame games. Everyone was saving their skin. During an outbreak, politicians were speaking silly stuff, as they were saying that measles has occurred because of malnutrition. At the same time, they even do not know that the virus is the main reason for measles, not malnutrition. Malnutrition can aggravate the situation but cannot cause the measles.

10.4.8 The UNICEF Viewpoint

According to UNICEF's viewpoint, as expressed to the Federal Ombudsman, the province was not allocated any measles vaccines for 2012-13 because it reported 118 percent coverage during the measles supplementary immunization activities (SIAs) between October 2010 and March 2011 (Government of Pakistan 2013). However, the current outbreaks tell the other story: it is "suggestive of poor quality of the measles SIAs as well as Routine EPI coverage" (ibid., 19). In most of the cases, post-measles complications like pneumonia, encephalitis, and diarrhea affected children and caused deaths, and approximately 20 percent of these children were malnourished (ibid.).

In March 2012, according to the views of UNICEF to the Ombudsman, Sindh province witnessed a rising trend of measles cases, mainly in the Southern districts and *Karāchī* city (ibid.). In that year, cases increased again from October onwards, which reached a peak in December 2012. The last rise of cases and deaths were reported from the Northern districts such as district *Qamber Shahdādkot,* which reported 777 cases (the highest number) and district *Sakhar* with second-highest numbers of deaths —33.

The same report mentions that several SIAs have been conducted in the province like the National Measles Catch-up Campaign during the nationwide campaign in 2007-08 and the National Measles Follow-up Campaign in Sindh Province in 2010-11.

For the measles follow-up SIAs, Sindh received 4.26 million doses of bundled measles vaccine on a loan basis for case response activities from the existing UNICEF vaccines stock. Then, the Provincial Health Department conducted measles campaigns in 8 most affected districts from 31 December to January 2013 and further requested support from UNICEF and other development partners in reaching the remaining districts.

According to the Federal Ombudsman's report, UNICEF Communication Network staff for Polio Eradication (COMNet) played a significant role in Measles Outbreak Response during measles outbreaks in 2012-13 (Government of Pakistan 2013). The report further mentions that UNICEF:

> (a) provided technical assistance for Measles outbreak response activities from planning to implementation, including social mobilisation. (b) facilitated the supervision and monitoring of the activities along with social mobilisation sessions in the community; (c) used [the] local FM radio channel in Larkana [in *Sindhī Lārrkānno*] for messages about Measles and presentations on air by District Heath Communication Support Officer (DHCSO) alongside Executive District Officer (Health) focal person covering the entire district. Coverage included parts of *Kamber* [*Qamber*], *Khairpur* and Jacobabad district; (d) distributed UNICEF proposes that a technical forum comprising of the EPI stakeholders including UNICEF, WHO, Federal EPI and Provincial EPI should be established and made fully operational to jointly discuss the situation and response at regular intervals (Government of Pakistan 2013, 20).

10.4.8.1 UNICEF Negotiates with the Government of Pakistan

The Ombudsman's report further discussed that on 29th January 2013, the Ministry of Inter-Provincial Coordination (IPC) and the federal EPI requested UNICEF to procure vaccines. On 1st February 2013, UNICEF submitted a Cost Estimate for these vaccines that the said governmental departments approved on 2nd February 2013. During this process, UNICEF negotiated with the head office for procurement – UNICEF Supply Division – "trying to ensure that the most cost-effective vaccine source could be assessed given maximizing the utilization of funds bearing in mind that the measles vaccine in the previously expired Cost Estimate for delivery in 2013 was quoted at a unit cost of USD 2.40 per vial" (Government of Pakistan 2013, 21).

Although UNICEF measles vaccines were out of stock, UNICEF managed to secure 18 million doses that were not included in the UNICEF global forecast. Each unit costs US$ 2.40 per vial as compared to the previous availability of un-forecasted measles vaccines at US$ 4.25 for the same unit. Around 6.1 million doses will be delivered to Pakistan as the first urgent delivery during February 2013.

Moreover, UNICEF urged the establishment of a technical forum comprised of the EPI stakeholders, UNICEF, WHO, the federal, and the provincial EPI. The forum must be fully operational to collectively discuss the situation and the response at regular intervals to challenge the measles crisis.

10.4.9 USAID Standpoint

High-level political commitment and technical leadership are necessary to strengthen the EPI system at the federal and the provincial levels. The immediate epidemic and long-term collapse of EPI systems require both short and long-term financing, commitment, and accountability. This is possible through several measures. First, UNICEF should have the authority to procure all the vaccines for the immediate future. Second, the federal and provincial levels must clarify and build consensus on responsibilities under devolution, including procurement, planning, cold chain maintenance, resource mobilization, adequate operations funding at district levels, agreement on the installation of supply chain systems, monitoring, and reporting at sub-district and district levels. The current situation needs rapid regional assessment.

Third, for the failure of agreed targets, federal and provincial EPI program managers and EDO health should be held accountable. The provincial governments should ensure the provision of adequate resources such as generators with petrol, and solar panels in high-risk districts to ensure the cold chain integrity in the face of constant electricity load-shedding. Fourth, there is a need to report and revise the definition of a fully vaccinated child. For instance, currently, the districts report a once-vaccinated child as fully a covered one. The new protocol, however, recommends the second dose of anti-measles vaccine at 15 months of age. Fifth, there are three levels to generate information for the EPI: DEWS, District Health Information System (DHIS), and EPI Cell. There is a need to revise these mechanisms so that the generated information can function for managing

and analyzing the outbreaks and program response. Sixth, capacity building is needed for the provincial governments for smooth planning and transparent procurement.

10.5 Concluding Remarks

Supplying the comprehensive standpoints of several stakeholders regarding the outbreaks, this chapter highlighted the negotiation processes. The bargain started when local politicians paid money as well as an ambulance to the local people to bring their children to the biomedical hospitals. The same politicians wrote letters to the federal government, which initiated discussions and debates that took place in the Senate – the Upper House of Pakistan's Parliament. These politicians, who were part of that government, did not criticize their provincial government but the federal government, health officials, and the local people.

Considering it a critical problem, the Federal Ombudsman formed a committee to pay thorough attention to the matter and find out the underlying reasons for these outbreaks. The committee consulted numerous national and global stakeholders, such as the Sindh government, the National Institute of Health (NIH), the Federal Cell of Expanded Programme on Immunization (EPI), the WHO, and the USAID. This report reveals a visible contestation among these engaged stakeholders while highlighting the outbreaks' significant reasons. It not only demonstrates the negotiation among national and global stakeholders but also between provincial and federal governments.

Nonetheless, the report mentions a consensus that the most crucial cause of the measles outbreak was a failure of the EPI system, which is deteriorating: the vaccine coverage is non-satisfactory. The EPI coverage is unacceptably low, and it lacks accountability since there is a dearth of a reliable and active surveillance system. Such a system should be activated at the national, provincial, and district levels; otherwise, the signals cannot systematically reach the health managers. Due to this lack, the outbreak gets reported first in the media. Moreover, the lapses in the cold chain make the quality and efficacy even of the appropriate procured vaccines questionable.

Further challenges include persistent load-shedding and insufficient investment in the EPI infrastructure at the provincial level. Almost all trained human resources were shifted to polio, considering it as a more pressing issue. The attention results in a lack of focus on other diseases such as measles. All stakeholders agree that in the absence of a

quality and effective EPI system and a lack of over 90 percent vaccine coverage across the country, outbreaks will occur of all PVDs.

Although this is an immense waste of national resources, nobody was held mainly responsible. The lucid gap between the reported use of the vaccine and the outcomes of immunization requires accountability because the health administration, district administration, and provincial governments are responsible for ensuring the coverage. Such stakeholders should be held accountable for this failure in performance. As an EPI district official during a *Kachaharī* with me claimed "(…) The lack of sincerity, commitment, and ownership – of the health officials – at the service delivery level is the major reason for the outbreak."

In the next chapter, I discuss the vaccination in detail – from the historical development of vaccination to the commencement of EPI in Pakistan with the issues that are surrounding the vaccination in the country.

CHAPTER 11: VACCINATION AND ANTI-VACCINATION CAMPAIGNS: COMPETING PERSPECTIVES

This chapter presents a brief global account of vaccination and then provides general perspectives on immunization from Pakistan (for measles vaccination see chapter 12).[112] Being a signatory of the United Nations, Pakistan is bound to make efforts to vaccinate each child to eliminate infectious diseases to reduce the burden of diseases. Pakistan's Expanded Programme of Immunization (EPI) faces multiple challenges in the form of controversies and tensions. The chapter deals with why vaccination uptake is low in the country, and why people refuse and show anti-vaccination sentiment as there is a different ideology that vaccination is a "Western plot" or a conspiracy against Muslims. Focusing on these questions, the chapter situates controversies around vaccination within broader key events related to geo-bio-politics: it explicates ideas woven around vaccination, several rumors, and conspiracy theories. The discussion will deal with how and why a life-saving scientific advancement, i.e., vaccination, has interpreted differently in Pakistan.

11.1 What is Vaccination?

To be certain of surviving longer and secure from attacks of microorganisms, directly intervening in human physiology appeared as a new endeavor in the late 18th century. Vaccination, succinctly speaking, emerged as a form of that development to guarantee longer survival and better health after various circumstances and experiments in that century (S. Plotkin and Plotkin 2004; S. Plotkin 2014; S. Plotkin 2011). The expansion of vaccination, however, commenced in the 20th century and sought to cover the worldwide population (S. Plotkin 2011).

Vaccination is an immunogenic process, in which an antigen – gathered from a dead or weak virus/bacterium – is injected into the human body. In response, the body becomes immunized after producing antibodies against that disease, which are proteins that a body releases to obliterate any toxins or disease-carrying organisms. According to Baxter (2007), immunization occurs mainly in two ways: active and passive. Active immunity itself has two types: (1) Natural protection that occurs when a body is directly exposed

[112] Some findings of this chapter were also presented during my first ever conference on 20-23 July 2016 in Milan on *Anthropological legacies and human futures* by European Association of Social Anthropologists (EASA).

to a disease and then produces antibodies to protect against that disease in the future. (2) Vaccine-induced immunity is also produced by a vaccine that carries a killed or debilitated disease-causing organism. Consequently, the body produces an immunological memory, and whenever it encounters the same pathogen in the future, the immune system recognizes it and releases the required antibodies against the infection immediately. Active immunity may take days or weeks to develop but is long-lasting or even lifelong.

On the contrary, Baxter (2007) views "passive immunity" as happening by directly transmitting antibodies into a body. For example, a fetus acquires immunity through the placenta from the mother, a newborn receives it through the colostrum (the first milk from the mother), and a person may get it through antibody-containing blood products such as immuno-globulin. It offers immediate yet temporary protection. In other words, one can obtain immunity naturally or acquire it artificially through a vaccine.

Based on the second type of immunity, the entire vaccination operates across the world. In the following section, I detail the vaccination programmed in Pakistan.

11.2 Vaccinating Pakistan: The Beginning and the Current

Vaccination began in Pakistan in the 1970s, after the country signed the Charter with the UN for controlling and eliminating infectious diseases. The EPI began in Pakistan in 1976 on a pilot scale and then was expanded across the country in 1978 (Hasan, Bosan, and Bile 2010). In the beginning, the EPI aimed to protect children aged 0-11 months against six contagious diseases – childhood poliomyelitis, tuberculosis, diphtheria, tetanus, pertussis, and measles – to reduce child mortality and morbidity (World Health Organization 2019a). Moreover, over time, new vaccines were introduced, such as hepatitis B in 2002, Hemophilus influenza type b (Hib) in 2009 and pneumococcal vaccine (PCV10) in 2012, and inactivated polio vaccine in 2015 (ibid.). Moreover, vaccination also immunizes pregnant women.

The WHO (2016b) mentions the specific objectives of this program: to interrupt poliovirus by 2012; eliminate neonatal tetanus and measles by 2015; reduce diphtheria, pertussis and childhood tuberculosis to a minimum level so that they do not become a public health problem; and control other infectious diseases by introducing new vaccines once they become available; use EPI as a spearhead for promoting other primary

healthcare activities, and integrating the EPI into primary healthcare. Vaccines given under this program include oral poliomyelitis vaccine (OPV); pentavalent vaccine; pneumococcal vaccine; measles; and tetanus toxoid.

Some vaccines cause temporary side-effects. For instance, Bacillus Calmette–Guérin (BCG), pentavalent, pneumococcal, and measles vaccines may cause fever and swelling; those children or adults then need some paracetamol and to be massaged with cold water or ice to heal. That means one medicine needs another medicine. If a child is suffering from diarrhea, then the oral polio vaccine (OPV) vaccine can be flushed out with feces, so a booster dose is given after four weeks.

All vaccines are affected by heat and sunlight; they, therefore, require proper cold chain maintenance to function effectively and to prevent them from losing efficacy. The EPI follows a top-down approach: federal, provincial, district, sub-district, and Basic Health Unit (BHU) levels. There are facilities for maintaining the cold chain at all these levels. The vaccine transmission or delivery from province to district level occurs in a particular vehicle containing coolers to maintain the cold chain. The Executive District Officer (EDO) works as the district head and is responsible for receiving the vaccines. Also, there is an EPI focal person who is responsible for all duties from storage to distribution.

To ensure the vaccinations, the monitoring teams visit the field and interview the target group, e.g., parents. The frequent questions include: (a) does a vaccinator visit your village to vaccinate your children? (b) could you please show us the vaccination card, if your child is immunized? Moreover, (c) if the card is available, the vaccination status of that child is written there (see photograph 58 in the annexure 1); in the absence of the card, the BCG scar is monitored and considered as a proof that a vaccinator approached the child.

Each union council (UC) contains a BHU functioning under the control of a medical officer (MO). Moreover, as a month starts, vaccinators of every BHU visit the district level office to receive vaccines according to the target population. A vaccinator maintains a stock register, which encompasses all daily records of a vaccine – the amounts received, used, and remaining. The MO supervises the entire process. At a UC level, the vaccine is stored in the respective BHU at a controlled temperature and then distributed among vaccinators according to the due and defaulter list for the vaccination.

11.2.1 Introducing "E-Vaccs"

To make the vaccination program more "efficient" and "effective," primarily through overcoming the problems related to inadequate geographical coverage and insufficient performance of field vaccinators, the EPI of *Punjāb* has revisited its strategies and added smartphone technology to them. In this regard, the *Punjāb* Information Technology Board (PITB) was consulted, which developed a digital system called "E-Vaccs" (electronic-vaccination) for ensuring the vaccinators' attendance in the field (Sarwar 2017). It follows the same principles of e-health for using information and communication technologies (ICT) via the internet. The system comprises a smartphone application that records real-time immunization coverage in a centralized database. The application was introduced in June 2014 in four districts of the mentioned province as a pilot project, and it was implemented in all 36 districts of the region by October 2014. The introduction of smartphones with GPS trackers is an innovative idea purposing the improvement of vaccinators" attendance in the field for ensuring vaccination to every child.

Overall, 3,750 smartphones were distributed among the vaccinators, who also sign into the application three times a day in addition to marking their attendance on the register at BHU in the morning. The first sign-in occurs in the allocated area, according to the monthly tour plan, when a vaccinator with his field team (sanitary inspector, CDC) moves to the respective village. The second sign-in is marked with a picture at the kit station, which usually is the LHW health house or house of any well-known person of the village. Each vaccinator signs in for the third time at the end of the working hours when they have finished recording the vaccination coverage in terms of the number of children vaccinated. The location is automatically connected with GPRS, which tracks the presence of a vaccinator. There is a complete satellite map of the whole province at the provisional and district offices so that any monitoring officer can access, log in and locate vaccinator information and the sign in or out time, a record of presence, and the location of the vaccinator concerned.

After the introduction of the E-Vaccs, the attendance of the vaccinators dropped significantly from 97 percent to 54 percent, which was shocking news. There were a few probable reasons for this. First, the technology was new and perhaps too advanced for many vaccinators, who were unable to understand and use it efficiently. Second, vaccinators considered that nothing significant would happen if they did not mark their

attendance on it, as it was in the past. Third, they showed resistance to this application because it would increase their accountability at the district level, and they would no longer be able to mark themselves present by proxy; therefore, they wanted to make this move fail. Forth, some of them "lost" their Smartphones and were using that as an excuse.

However, attendance increased from 36 percent to 94 percent after fixing the problems cited above. For this matter, the vaccinators received training at the district level to impart the skills and knowledge to operate the phones accordingly; regular monitoring commenced, and the absentees received show-cause notices.

This smartphone technology was launched in the Khyber Pakhtunkhwa (KPK) in the last six months, and its recent launch occurred in the *Baluchistān* province, too. Nonetheless, there is no news from the Sindh province, so far.

Moreover, another pilot program – *Har Zindagi* – is operational in the *Punjāb* province's two districts, i.e., *Sāhīwal* and *Sheikhupurā*, which will be implemented in the whole province and the country once it is successful (Sarwar 2017). This new application will work as a tool for maintaining the vaccination record at the household level by the parents. This new immunization card has the color and design akin to the country's passport (green) with the purpose of parents' intentional respect and vigilance. There is a Near-Field Communication tag inside it, which enables real-time data sharing between the E-Vaccs application of the vaccinator and the card in the smartphone once both are tapped together. This application will work as an alarm through Robo-calling and short message service (SMS) for vaccination dates for the parents.

11.2.2 Failing to Meet Vaccination Benchmarks

Pakistan still needs to achieve the expected benchmarks. The WHO (2019a) accepts that despite the efforts of the government and the WHO's noteworthy partners, the country still has to meet the immunization indicators. The primary goals of eradicating polio, measles, and neonatal tetanus remain incomplete so far. Routine vaccination coverage is still not according to the standards for attaining the anticipated goals. Numerous outbreaks of measles, pertussis, and diphtheria in several parts of the country are evidence of the "poor" routine coverage.

Moreover, there are substantial issues in cold chain maintenance, lack of skilled vaccinators, and weaknesses in the catchment areas in terms of distance and their geographical location (T. Khan and Qazi 2014). These factors, including the perception, significantly affect the vaccine uptake. For instance, in September 2015, the *Dawn* newspaper published a report: "Over 75,000 children in Sindh never received polio vaccine"(Mansoor 2015b). According to this report, around 440,000 of the country's children never received a vaccine, and out of them, 56 percent are in *Baluchistān*, 17 percent in Sindh, 14 percent in the FATA, and 12 percent in KPK. It precisely demonstrates the state of vaccination in the country, though the figures are about polio vaccination. If polio vaccination is in such a critical state after receiving enormous attention from the governmental and global stakeholders, then one can predict something critical about the entire immunization program.

According to Mushtaq and colleagues (2015), from 2003 to 2006, polio was transmitted to approximately 24 polio-free countries, causing around 1,400 cases, most of which had originated from Pakistan. In 2007, Australia reported a poliovirus infection in a man who traveled from Pakistan (Stewardson et al. 2009). Likewise, the strains of the poliovirus in cases identified in China, Egypt and Palestine during January 2012, December 2012 and March 2013 respectively were also traced back to Pakistan (Luo et al. 2013; Ebrahim 2014).

Consequently, the Saudi government made vaccination mandatory for Pakistani travelers to Saudi, especially for the Hajj and Umrah (2011).[113] The WHO (2011) also made it compulsory for Pakistanis who would like to travel abroad to show a vaccine card at airports. There was no choice left, but to produce a card. However, how was this idea to receive the vaccine first, then travel, implemented? It makes profound sense to share my fieldwork diary that contains one anecdote of this vaccination obligation.

> I was traveling to Austria for the second time after the completion of this fieldwork. Media regularly broadcasted about a travel ban without providing the "yellow card" – the evidence of vaccination – at Pakistan's airports along with the visa and passport. Because I was working on this project and considered it an urgent matter, I decided to receive the vaccine

[113] Hajj and Umrah are holy pilgrimages for Muslims, during which they travel to Makkah and Medina cities of Saudi Arabia to visit the holy *Qabā* and the shrine of the Prophet Muhammad.

> and a "yellow card." I talked to a friend[114] who was working in a health department at a district level, about it. While I was in *Islāmābād* to travel to Vienna, his suggestion was astounding: "You are too old to receive the vaccine, so please send me your details for the registration here. Then I will post you the card. After this WHO requirement, numerous people aspiring to travel abroad come to us and receive the cards without taking the vaccination." I declined the offer, which made my friend angry.
>
> To receive the vaccination, I visited the NIH, where another aspiring traveler was already there for the vaccination. Interestingly, the unit head called us inside his office and asked about the countries we were planning to travel to and the purpose of our journeys. The interaction was a small interview. Subsequently, he reasoned with a smile, "See, my son! I have heard that people are not receiving the vaccine, but the cards. Therefore, I have decided to perform this duty with honesty and vaccinate people myself." He opened the vaccine's vial and gave each of us two drops of the vaccine. Although I have already received the hepatitis vaccine via injection, I received an oral vaccine for the first time in my life. After that, the person in charge provided us with yellow cards to show them at the airport. The most astonishing thing occurred at the airport when nobody inquired about the cards to prove the status of vaccination.

This personal experience shows a difference or gap between theory about vaccination and practical initiatives—a gap between the proposed protocols and following them—which can be associated with the prevalence of the infectious disease in the country. There are many reasons behind this gap: Why are the set objectives incomplete despite the efforts? This critical state compels questions to be posed to explore the underlying causes and consequences. Failure to achieve the anticipated results signifies that something is "wrong" or "missing." This current study seeks to discover those causes.

11.2.3 Vaccine Dynamics: Controversies, Conspiracy Theories, and (Mis-)trust

Vaccination, after a successful breakthrough of knowledge, has continuously refracted into multiple and successive transfigurations of meanings that carry certainties and uncertainties. Over time, vaccination has met with ambivalent attitudes and emerged as a complex and contested phenomenon. A vaccine as a "new technology" – connecting various stakeholders in diverse locations – has received a peculiar response across the globe (Feldman-Savelsberg, Ndonko, and Schmidt-Ehry 2000; Renne 2010; Blume 2017,

[114] Due to ethical reasons, I am not disclosing the name of my friend, as otherwise, there could be severe consequences such as him losing a job.

2006; Greenough, Holmberg, and Blume 2017; Colgrove 2006). Vaccination programs are also "political programmes" (Greenough, Blume, and Holmberg 2017, 1).

Anti-vaccination movements have occurred worldwide; for example, in Austria and the USA, some people refuse vaccines. In these two countries, the refusals have connections to an inherent potential of the body: the fact that it should work without intervention and, in the US, the deep belief that vaccines can cause harm, including such diseases as autism, especially when too many are given at once, overwhelming the child's immune system. However, the refusals in Pakistan are distinguishable in multiple ways from those of other countries, which I will explore below. In Pakistan, there are also other factors related to economics and geopolitics that shape people's perceptions and practices of a vaccine. Controversies related to vaccination in Pakistan are comparable to some other countries, such as Cameroon (Feldman-Savelsberg, Ndonko, and Schmidt-Ehry 2000) and Nigeria (Renne 2010), where vaccination is under a spotlight and considered as a "Western plot" to "sterilize women." Mark Nichter (1995) finds a similar contestation in India, where Muslims and Hindus mistrusted the vaccination after linking it with some hidden political agendas: Muslims feared that Hindus might covertly want to reduce Muslim population and Hindu population justified the government's initiative to control the population. In the same article, he further describes how a man told him the "real purpose of vaccination programs" viewing vaccinations as an extension of Christian missionaries (ibid., 618). This is similar to what Fairhead and Leach (2007) call "vaccine anxieties" that reflect politico-economic issues.

People's narratives, refusals of and resistance against vaccination have connections with geopolitics, international relations, and/or "foreign affairs" and economic regimes. They suspect the subtle hegemonic forces at play and view vaccination not only a material phenomenon but see hidden ideology attributed to it (see Nichter 1995). There is a link between the justifications of anti-vaccine sentiments and some other intertwined "critical events" that are happening now and have happened in the past—especially events related to geopolitics, such as colonization; the invasion of the Union of Soviet Socialist Republics (USSR); and the creation and growth of the *Tālibān*, who cultivated extremism and suspicion in the country. These events happened in the 1980s when Pakistan agreed to produce the *Tālibān* to defeat the USSR (see chapter 5). Recent events include a war on terrorism, drones, and the use of a "fake" vaccination drive to locate Osama-bin-Ladin

(see section 11.4.3. of this chapter). Connecting global and local realities, forming new forms of knowledge and action, and rearranging social relations in significant ways, vaccination—an intervention to the physical body— indeed can be associated with the "body politic" and "social body" (Scheper-Hughes and Lock 1987; Nichter 1995).

Vaccination in Pakistan, hence, is imbued with differing and widely varying dynamics. The anti-vaccination movements illuminate the complex connections among local, national, and global factors and stakeholders. They encompass weavings determined by socio-cultural, economic, political, and historical factors. Briefly speaking, there are refusals, there is resistance, and there is resentment against vaccination. Mistrust has significantly emerged: between parents and the government; between the local and the global stakeholders; between the national and global stakeholders. Sometimes, this mistrust overlaps. There are various connections and causes for vaccine refusals that the following description explains. These multiple links overlap but cannot be reduced to each other.

11.2.3.1 The Vaccination-Reproduction Connection

Suspicions related to fertility control have a long history. Prior to industrialization, population growth was universally encouraged, because, in the absence of technological advancement, human power was the primary means to the production of wealth. Nonetheless, the Industrial Revolution in Western Europe also brought the so-called "demographic transition" of the late 18th century (Andrade and Hussain 2018). Cities attracted mass migration, and as technologies replaced human labor, overpopulation came to be a pressing concern (Bongaarts 2009).

About this overpopulation, Robert Malthus (1872) in his classic book, *An Essay on the Principle of Population*, argued that food resources grow at an arithmetic rate, while the population grows at an exponential rate. These different growth patterns would eventually lead populations to reduce their sizes through war, disease, and famine. He insisted on the need for abstinence rather than contraceptives for the sake of population control. Malthus opposed those laws and social programs that would give any assistance to the poor, because to him, these initiatives would encourage population growth (M. Rao 2004). Thereafter, the disciples of Social Darwinism manipulated Malthus's disapproval of welfare programs in the later 19th century (Rogers 1972). Their ruthless ambition to

rid society of its "undesirable" population paved the way for conspiracy theories to point out a "New World Order"; namely that global efforts are underway to control population size through ulterior means (Andrade and Hussain 2018).

According to conspiracy theorist Leonard Horowitz (1997), the medical sector plays a pivotal role in that population control scheme. Horowitz claimed that new viruses and vaccines are produced by the medical industry to achieve population reduction.

Likewise, in Pakistan, people harbored resentment towards vaccination after linking it with reproduction. This resentment most prominently surfaced after the introduction of the family planning system, when the country created the Family Planning Association of Pakistan (FPAP) in 1953 to ensure "the right population" (see Lock and Nguyen 2010). Afterward, controlling and managing the population became part of the country's five-year plans from 1965-1970 onwards (see chapter 7). Family planning, nevertheless, received immense resistance owing to specific socio-cultural, economic, and political reasons (Hakim 2001; Robinson 1966). For Andrade and Hussain (2018, 5), the conspiracy theories related to reproduction have a Western origin. Nevertheless, conspiracy-mongering grows successfully in specific contexts such as the socio-cultural, and the political (Douglas, Sutton, and Cichocka 2017). First, family planning was perceived as contradicting the belief system: God controls and decides on the conception of a baby. Stopping conception or aborting a fetus is both *Harām* (prohibited) actions in Islam because, through them, one intervenes in the business of God. Every child brings *Rizq* (a source of survival)* with birth through God's will; therefore, the number of children should not be a worry for the parents. Second, it is to interfere in what is locally considered people's most "private" matter – sex, on which an open discussion is wholly discouraged. According to my observations, many women are willing to adopt family planning interventions; however, shyness hinders them from discussing the precautionary measures. Third, Pakistan is an agrarian society; therefore, more reproduction means more economic production, as the underlying belief is that more hands guarantee higher production in the agricultural fields in the absence of technology. A famous proverb in Sindh province has it that *Jetrā Hath, Otro Fāido* (as the number of hands grows, so grow the rewards).* Fourth, family planning is considered as a "Western plot" to decrease the Muslim population, as – according to belief – the West fears that Muslims may come to control their countries and pose a challenge to their sociocultural

patterns. Laypeople believe that as many children as possible should be produced to spread the followers of the Holy Prophet, Muhammad. Fifth, family planning also has been strongly linked with colonialization, because, though the British came first for the sake of trade, later, they took advantage of their higher power to intervene in politics and to colonize the sub-continent to exploit its resources.

Many anthropologists have illustrated this point (e.g., Lock and Nguyen 2010; Feldman-Savelsberg, Ndonko, and Schmidt-Ehry 2000; Renne 2010). Resistance against family planning was not only in Pakistan but was also recorded in India and Bangladesh (see Nichter 1995). People perhaps had the stories and memories of colonialism in their minds, which ultimately led them towards resistance, fearing family planning as a new move to control them. I call this a "societal memory," which records and keeps fresh in people's minds the humiliating, horrific, unpleasant, and lingering experiences of the colonized. The memory, over time, may blur but does not entirely vanish. Resonant events or circumstances evoke societal memory. Analogs to the human body, the society also develops antibodies and releases them when encountering happenings similar to those of the past. The memories of colonization are preserved in the societal memory. Several post-modern anthropologists trace the roots of violence in colonization (Otterbein 1999; Hinton 2002; Ferguson 2004; Scheper-Hughes and Bourgois 2004; Whitehead 2004).

Vaccines were locally perceived as a new move to control the population in Pakistan, as they were in Nigeria (Renne 2010). These conspiracy theories give no meaning in a vacuum, but once connected, they paint a comprehensive picture that what is happening is entirely explicable (see Murakami et al. 2014; Andrade and Hussain 2018; Horowitz 1997).

11.2.3.2 Perception about Vaccination: Rumors and Conspiracy Theories

Our socio-cultural history is full of narratives. We construct them to make sense of our lives—and, more importantly, to transfer knowledge and wisdom to the next generations. Rumors and conspiracy theories are critical, and many times untested facts. Rabo (2005, 163) considers them "tautological and self-referential" that "can be seen as a desperate expression of the weak." Nonetheless, they are forms of narratives: they are social phenomena (I. Ali 2020g), which particularly emerge to make sense of extraordinary

situations. Hence, these can be interpreted against the backdrop of socio-cultural, economic, and political contexts, which are local and global in terms of scale, because they signify the connections between and among them.

Turner (1993) considers a rumor to be something beyond a symbolic phenomenon since rumors generate relationships between unequal social segments. Feldman-Savelsberg and colleagues (2000) discovered a rumor's ties to local, regional, and national contexts, which further are linked to global political movements in the case of anti-tetanus vaccination in Cameroon. Nancy Scheper-Hughes (1996), after exploring the organ stealing rumors in the shantytowns of Brazil in the mid-1980s, contends that rumors can contain a global dimension. A rumor, hence, takes place in a specific social, cultural, economic, and political context at it indexes inequality and politics.

Similar rumors and conspiracy theories have surrounded vaccination in Pakistan, which mainly, as mentioned earlier, emerged during the family planning in the country in the 1960s (I. Ali 2020a). Rumors thereafter have continued in waves and never ended. Before going into detailed accounts of a rumor concerning vaccination and Osama-bin-Ladin, here are a few words about how a rumor spreads in Sindh province. Although this event occurred in the district Khairpur (different than the locale of the study) of Sindh and is about an animal called "honey badger" during 2016, it provides empirical evidence about the way rumors circulate. The event has occurred in the recent past; thus, it helps us to comprehend how rumors and conspiracy theories emerge during a challenging situation. It illustrates how a rumor travels in the chosen area, and people start buying it as truth. This case would supply a context to understand various narratives related to vaccination. I learned about the event from my family and friends via mobile calls. The first time, I heard about these narratives from my family, as I usually made a phone call to them during my (post-fieldwork) stay in Vienna, Austria. One day, they shared stories, and then due to my curiosity, I followed it. One day, I called one of my friends in my hometown, who started continuously telling the following story:

> During July and August 2016, word-of-mouth spread about a small animal. The rumor has it that a small animal appears and attacks people after sunset, especially with its paws that are highly poisonous. The animal is aggressive and dangerous, and no one knows its origin. It has the potential to kill an entire family at one time.

> Consequently, the attacked person dies. There were two different narratives. First, the animal is an Indian conspiracy. Since the country's border is adjacent, someone set them free in Pakistan while importing them. An alternative version of it was that these animals were in a zoo in India, which had been deliberately broken to set them free to cause havoc in Pakistan. Secondly, the animal had just emerged from somewhere and was unknown to this area.
>
> Fear grew larger and stronger as the rumor spread; villages started to ensure security by assigning duties to different individuals to provide 24-hour fool-proof security. People, especially children, were afraid to sleep. The male members stopped sleeping at an *Otāq* (men's guest house) or walking outside the house during the night, especially after sunset. People made frequent announcements about seeing the animal in this and that area. Such statements caused people to gather with their dogs and weapons such as sticks, rifles, pistols, and axes. These gatherings attracted the local media – print and electronic – that reached those sites and broadcast the news. A few deaths occurred, which were associated with the animal. The dead bodies contained "paw"-like marks. The dead bodies further added fear into an already chaotic situation. The terror of this rumor continued for over a month. On the other hand, some believed that the people who died were "thieves".

As I have shown at several places in this thesis, before May 2011, there was a perception in Pakistan about vaccination being a "Western plot" or a conspiracy. In essence, the theory goes that vaccination aims to sterilize Muslim women to decrease the population because the West feels threatened. This viewpoint became visible after launching the family planning program in the country (see earlier section). The program received considerable resistance. The reference point of 2011 does not mean that the perception is no longer there. However, the reshaping of it owes significantly to a critical event that happened in 2011, in which a "bogus" vaccination drive was conducted.

Vaccination arrived when the family planning was receiving great resistance. Hence, people perceived it in the same way as they perceived (and refused to accept) the contraceptives. Local people suspected that their refusal of contraceptives forced the officials to devise procedures to control the population by vaccinating children to make them infertile. The perception that vaccination was a replacement for contraceptives provided a base for believing that vaccination was also a "Western plot" for sterilizing Muslims.

Yet the local perception of vaccination differs in the county. In the northern areas of Pakistan, people are resisting the vaccine, while in other parts, mostly, they are outright

refusing it (Murakami et al. 2014; Andrade and Hussain 2018). The resistance primarily depends on the recent incident – the "fake" vaccination – while the latter one always has some historical roots. Some anthropologists have explored these connections between history and rumors (e.g., I. Ali 2020a; Sobo 2016; Biehl 2016; McGranahan 2016).

In 2015, the National Geographic Channel produced a series of articles with four parts (McGirk 2015b, 2015a; Mullaney and Hassan 2015; Motlagh 2015). Three of them mainly focused on Pakistan's immunization program while linking the vaccination and anti-vaccination sentiments with critical events shaped by global politics. The first article, entitled *How the bin Laden Raid Put Vaccinators Under the Gun in Pakistan*, contains eye-opener reasoning on the anti-vaccination movement that "some clerics claimed falsely that the vaccine was made of pig products, which are taboo for Muslims. Even more bizarre was a story, widely circulated after the U.S. invasion of Afghanistan, that the vaccine contained urine from then-President George W. Bush" (McGirk 2015a).

To produce such anti-vaccination sentiment in Pakistan, several clerics utilized the channels of the Friday Sermons and other platforms. The KPK province especially witnessed it in the form of sermons and distributions of pamphlets. The ideology – "stopping and aborting the children through artificial methods is intervening into the business of God" – played a pivotal role in spreading such views. These standpoints cultivated grounds for the clerics to propagate refusal of the vaccinations. On 13 June 2012, the *Express Tribune* (2012a) released a news report that a *Cleric declares Jihād [sic] against polio campaign* in the *Punjāb* province while declaring it "un-Islamic". Eventually, the police tried to arrest him, but he escaped. The report reads:

> When the local cleric, Maulvi Ibrahim Chisti, found out about the campaign, he immediately went to the biggest mosque in the area and declared that polio drops are "poison" and against Islam. He added that if the polio team forced anybody to partake in the vaccination campaign, then *Jihād* [sic] was "the only option". As a result, the polio team returned to Muzaffargarh city without conducting immunisation activities and reported the matter to Muzaffargarh Health Executive District Officer (EDO), Dr. Aashiq Hussain, who in turn informed the Muzaffargarh District Coordination Officer (DCO), Tahir Khursheed. A police inquiry was ordered, after which a raid was carried out in the cleric's area. However, Chisti had already escaped by the time the police arrived. Residents said the cleric had tried to convince them that the polio campaign was a "Western conspiracy" to render the population impotent. After the police raid, the polio team

> returned to Khan Pur Bagga Sher to implement the polio immunisation campaign.

These news-reports receive global attention. These are broadcasted though not frequently. As in 2007, the *Guardian* – the UK leading daily – also reported, *Polio cases jump in Pakistan as clerics declare vaccination an American plot* (Walsh 2007). The clerics' interpretation plays a massive role in creating anti-vaccination sentiment in the country (Warraich 2009).

The production and circulation of the mentioned news reports signify a perception that continues to exist in Pakistan. The intensity in specific cases may be smaller or larger, but the prevalence of the reports itself speaks enough. The reports function as counter-narratives against the biomedical standpoint on vaccination. The following section elucidates the conversion of that perception into reality.

11.2.3.3 "Vaccination Suicide": A Reality!

The previous description mentioned the details about vaccination based on events that occurred up to 2011. The current description is a post-2011 analysis, which describes some contemporary controversies related to vaccination. The anti-vaccination sentiment was further exacerbated after using the vaccination for a different purpose or with a "hidden agenda" as some claim. The American CIA administered a "fake" vaccination drive in Pakistan's northern areas in 2010, and then focused on Abbottabad city only to learn of the whereabouts of the most wanted person on the planet at the time: Osama-bin-Ladin (McGirk 2015b, 2015a; Mullaney and Hassan 2015). The vaccination functioned as a means to an end: not to improve health but to find and kill bin-Ladin.

All media across the globe reported and broadcasted on radio and television this news of the "fake" vaccination campaign. The circulated news was that the CIA started searching for Osama-bin-Ladin in spring 2010 by hiring a local doctor, Dr. Shakeel Afridi, and nurses from Pakistan to implement a door-to-door vaccination drive against hepatitis B (Fox News 2012; Online Mail 2012; J. Ahmed 2014; Marszal 2016; S. Shah 2011). The sole purpose was to collect the DNA from syringes used to immunize the children living in that villa and make a connection to Osama-bin-Ladin.

As mentioned earlier, the *National Geographic Channel* produced four investigative reports, and three of them particularly focused on vaccination in Pakistan. The articles

describe how vaccination was used as a cover to obtain information about Osama-bin-Ladin and how that operation further affected the immunization program in the country. About that vaccination drive, McGirk (2015a) writes:

> The Pakistani health official that [the] CIA operatives approached was Dr. Shakil Afridi. Tall and stout, with a cropped mustache that gave him a military bearing, Afridi had the right credentials from the CIA's perspective. He was a Pashtun and spoke the local language, Pashto. He had conducted a successful vaccination campaign near the Khyber Pass, in north-western Pakistan. He had lived in California for several months and had family in the United States. The doctor says that he never knew he was working for the CIA and that he was approached by a local representative of Save the Children, who asked him to run the vaccination campaign. (Save the Children denies having any connection with the CIA or any intelligence agency, or having any role in the subterfuge.) Either way, the offer of the equivalent of $12,500 (U.S.) to organize and administer the vaccinations came at a moment when the doctor was short on cash. Earlier, Afridi had been kidnapped and held for ransom by Lashkar-e-Islam, an extremist militia outlawed in Pakistan. The group's commander claimed that he'd heard rumors the doctor was overcharging patients in his private clinic. Afridi's family denied the allegations but paid a $10,000 ransom. According to Afridi's attorney, the Lashkar-e-Islam commander pocketed half and distributed the rest to the patients that Afridi allegedly had overcharged.

McGirk (2015a) further describes,

> When Afridi banged on the Abbottabad villa's colossal metal gate, a woman answered and refused to allow the children inside to be vaccinated. Stubbornly, Afridi demanded the cell phone number of the man of the house so that he could arrange for the children to be vaccinated at a later date. This cell phone number proved to be a vital piece of information to his handlers. It belonged to Ibrahim Saeed Ahmed, who turned out to be bin Ladin's guardian and messenger. The CIA knew of his existence but had never located him. Ahmed was the al Qaeda leader's sole link to the world outside the villa's 20-foot-high (6-meter) walls. Chasing down the lead from that phone number would lead to a major coup in the U.S.-led war on terrorism, but it also would set back the war on polio.

Using vaccination in that specific case shows the strategic planning behind that particular "vaccination" campaign. The doctor looked like a strong Pathan who had, McGirk noted, "the right credentials from the CIA's perspective". The newspaper *Dawn* (2012) published that US Defense Secretary Leon Panetta, in his interview on 27 January 2012, also confirmed the CIA's launching of this "fake" campaign and praised Dr. Afridi for helping the agency. After that, the security agencies of Pakistan detained the doctor in custody "for launching the fake polio vaccination campaign and tipping the US government off

about Osama". However, an alliance of about 200 US-based NGOs – many of them working in [actual] humanitarian operations in Pakistan – wrote a letter to the CIA director expressing deep concern over a vaccination campaign that may jeopardize the lives of their aid workers.

Consequently, this critical event changed the state of the vaccination program in Pakistan. The doubts regarding the Western, especially the US, involvement in the country with a "hidden agenda" had turned into reality. McGirk (2015a) mentions the views of an international health worker: "after Abbottabad, these rumors became fact in the minds of many Pakistanis". The local people started to suspect vaccinators with doubts regarding their possible connection to the CIA. This perception became rather prominent in the northern areas of Pakistan, and the areas of Pathan settlements all over the country. Dr. Afridi was charged with "conspiracy against the state and high treason" on 6th October 2011 and is still in jail and awaiting trial (J. Ahmed 2014; Marszal 2016). In this regard, one of Pakistan's security analysts – Zaid Hamid – argued to the Aljazeera television:

> What the government has done is they have committed a vaccination suicide themselves. The fact is that in Pakistan, there's a powerful perception which is backed by facts on [the] ground, that this vaccination campaign in Pakistan has been used by [the] CIA and foreign secret services for espionage and spying. When these facts were identified (...), the rage and anger in the nation were palpable (...) American CIA has committed the greatest disservice to humanity by using these humanitarian programmes for spying and espionage against the state of Pakistan.

"Killing through Drones and Saving through Vaccines?": Adding further to this sentiment, the USA also launched drone technology for targeting the strongholds of the *Tālibān* in Pakistan's northern areas. McGirk (2015a) cites the Bureau of Investigative Journalism, based in the United Kingdom, that between 2010 and 2014, around 400 strikes occurred, which killed "intended targets but also hundreds of Pakistani civilians" with a belief "that as many as two-hundred of the victims were children." The drones have garnered proponents and opponents in the country. Nevertheless, there are news reports that drones have also contributed to shaping anti-vaccination attitudes.

The effects of drones are threefold. First includes the killing of the terrorists, which is, however, beyond my scope of discussion here.[115] Second, they destroy the infrastructure that requires human and financial resources to rebuild. Third, the direct repercussions include the reactions related to violating a country's sovereignty and killing innocent people, considering that to be "collateral damage". Fair (2014) has described how drones create a sense of "second-class" citizenship, in which some citizens are considered as secondary or "objects", not humans. This reaction then spreads to the rest of the country. How does it spread? I want to mention a case from my fieldwork in the following section that occurred during the supplementary immunization activities (SIAs).

> In May 2014, the Sindh health department's 12-day SIAs, in collaboration with GAVI, activities to vaccinate 13.3 million children are already underway. Teams are scattered and working across the province. I am today with another TSV, who is in his 50s, in the *Sakhar* district, on his 70cc (cubic centimeter) motorbike (as it is locally called). He carries a register and a list of teams to know his field and locate them. The hot wind is blowing. The day is warm, and warm wind burns our uncovered body parts, i.e., face, hands, and feet. Simultaneously, the wind functions as a dryer to dry our perspiration while riding on a bike. Despite that, our body feels the intensity of summer heat. We are keeping scarfs on our head to protect ourselves from heat. The marks of sweating are noticeable on our clothes, especially after drying up owing to the wind passing by due to bike speed. While following small busy streets, beeping the horn often, we are reaching mobile as well as fixed teams. Spending 15-30 minutes, we move to the next team. We keep searching for mobile teams since they are continuously moving. After visiting around eight teams, we reach a fixed team sitting in a hospital situated in the city center – this is the same hospital where children were brought during the measles outbreak in 2012-13 by the ambulance from the selected village.
>
> As soon as we reach this big hospital, which is full of people who are coming and going, we find the vaccination team sitting in a corner inside the hospital. The supervisor ensures that everything is according to the plans. I am also wondering whether the protocols are followed, such as vial labeling, and the procedures of vaccination. Of course, I am ensuring to be friendlier and avoid any "power" relationship and being treated as a "boss". However, the cases of refusals are among my prime focuses.
>
> This team consists of two mobilizers, who are mobilizing people for the vaccination, and one vaccinator who is sitting on a chair with a table in front containing a vaccination brochure, vaccinator cooler, and register. Meanwhile, one mobilizer informs us of a case of refusal. The refusal in a

[115] See Johnston (2016) on the matter.

city and especially in a fixed center increased curiosity significantly inside me as to why that person was refusing.

Accompanying the mobilizer, we go to a family that has come to receive some medication. The family consists of a man, woman, and two children less than five years of age. The man, let us call him Gul Khan, seems to be in his late 40s and had a long, predominantly black beard, six feet tall, wearing an off-white *Shalwār-Qamīs* and glasses. The woman accompanying him is in a black burka (gown) that covers her whole body except her eyes and hands. The children, however, are wearing pants and shirts.[116]

I converse with the man to introduce myself and to be familiar with him: "*Aslam-o-Alikum*, brother, how are you?" I talk to him in the *Sindhī* language (the province's major language) while preceding this by offering my hand for a handshake. Although the mobilizer informs me that this person speaks Urdu, not *Sindhī*, I deliberately choose the *Sindhī* language to know his proficiency in the language of the area and decipher whether he is from Sindh.

"*Walikum-o-Aslam*!" he responds but does not answer the rest of my question. That shows whether he avoids speaking in *Sindhī* or knows nothing about the language. Lack of knowledge could help to infer that he had newly migrated to the area.

Given that, I switched from *Sindhī* to Urdu – using Urdu for a decade has changed my accent from most of *Sindhī*, who speak the language as their mother tongue. The accent gives him the impression that perhaps I am also not from this area. This impression makes him a bit more comfortable to communicate with us.

To my question, he states that basically, he is from the KPK province and has recently migrated here because of the poor law and order situation in that province.[117] He claimed, "There [in KPK] the situation of 'terror' is prevailing, and imminent danger impends in the area. People are dying. Americans are targeting and killing people in the name of the war on terrorism. The army of the country and "*Tālibān*" are killing. Whether it is

[116] The dress pattern is signifying a cultural "mosaic". The parents' dress seems purely "Islamic" while the children are wearing "Western" dress. A contradiction appears that "Western" dress code is acceptable (for the children), but not the "Western" vaccine. This tension intrigues me: what is the parameter to differentiate between "us" and "them"? How do people make sense of a phenomenon: what is the dividing line?

[117] Apart from it, thousands of Pashtu speaking people migrated to the Sindh province from Afghanistan and KPK province. Now, they are settled in the city of Karachi as well as in the towns and villages of the province. Those who are living in the villages have learnt the Sindhi language. They are mostly engaged in transport like driving buses in Karachi, and trucks and tractor-trolleys in the towns and villages. In the towns and villages, most of them are doing the work in the mountains – crushing stones and supplying them, as they have trucks. In Karachi, clashes have erupted many times among "*Muhājir"* (a term used for those who migrated to Pakistan after the Indo-Pak separation in 1947), *Pashtun* and *Sindhī*. In the towns, these Pashtun "immigrants" have been incorporated into the local life. They attend marriage and death ceremonies of the "native" people (Gayer 2003; John 2003; Gayer 2014; Yusuf 2012; T. Ahmad 2014).

> the USA, the Pak army, or the *Tālibān*, whoever is involved, *Baygunāh* (sinless, impeccable)* people are targeted and being killed. Innocent children are killed. It is exactly a war-like situation. These recent activities together have wreaked havoc in the area. We did not have any other choice than being killed or migrating.
>
> Furthermore, concerning the reasons for vaccination refusal, he claims: I know what the primary purpose of this vaccination is. It is not, indeed, for saving our children, but has some other ulterior motives. On the one hand, you [indicating towards the USA] are killing our people and children through drones and, on the other hand, showing great concern to save our children through vaccination. Is what you say not a huge contradiction? Is it not ethical, especially killing the innocents? Do you not see a prominent difference?
>
> Better my children should remain unvaccinated; they will be healthy then. God will protect them from any illness. [In Urdu] *Allāh Mālik Hey* (God is the owner).* [Secondly], many people now know how the vaccine was used in the KPK. It has not faded into oblivion. The media informed [us] that the mass campaign was a fake drive – it was a means to an end. The purpose of the vaccine, thus, is not literally to save the children but to safeguard some hidden interests. I cannot risk the lives of my children for the thing, which is neither suitable for them nor us but has something behind it.
>
> He is quite assertive while uttering those words. Despite our continuous mobilization, he shows anger and resistance against getting his children vaccinated. He allowed nobody to immunize his children and left the hospital soon. Afterward, we both return to the site of immunization.

As usual, both children made it onto a list of refusals compiled by the concerned vaccination team – the list of "Metrix". Although this was a short encounter, Lal Khan's response elucidates the spread of anti-vaccination sentiment, his affiliation with his native province, and annoyance with global politics. This anti-vaccination sentiment and global geopolitics have cultivated suspicion among the people. The suspicion has led people to target the vaccination teams, which I discuss under the following heading.

11.2.3.4 Vaccination Teams under Attack

The "fake" vaccination campaign, as aforementioned, ignited the already exiting anti-vaccination sentiment. The clerics began an anti-vaccination move in general and the *Tālibān* in particular distributed pamphlets for banning (especially polio) vaccination (Andrade and Hussain 2018). After that, attacks on the vaccinators started, killing and abducting them. The driving suspicion was that they collect some secret information and

are “agents”. The government employed police officers to escort vaccination teams, but attacks continued and are continuing despite that.

In 2016, the newspaper *Dawn* reported that militants had made 96 assaults on the teams and law enforcement agencies (LEAs) since 2012 (Mansoor 2016). According to this report, the geographical breakdown of attacks is as follows: 41 in KPK; 18 in the FATA; 17 in *Baluchistān*; 13 in Sindh; and five in *Punjāb*. The attacks took the lives of 33 polio workers; out of those, 14 died in KPK, seven in Sindh and six each in *Baluchistān* and Fata. However, the number of police officers and LEAs who died in these attacks is around 70 each in *Baluchistān* and Fata, 18 in KPK, and 10 in Sindh. Eight civilians lost their lives in attacks: three each in *Baluchistān* and Fata and two in KPK. Volunteers also died (11 in 2013 and 32 in 2014). Moreover, some 31 policemen and paramilitaries; 26 polio workers and 20 civilians were injured too. Most of the attacks occurred in 2013-14.

11.2.3.5 Lacking Exact Awareness of Vaccines

In addition to the vaccine-Western plot connection, another reason related to vaccine refusals is the lack of an accurate awareness about vaccines. A clear inequality of knowledge exists, as for most of the people living in rural areas, a vaccine is a *Teeko* (injection): a generic term used for every shot given for whatever reason. These inhabitants are given no knowledge about the specific properties of a particular vaccine to protect against one specific disease. During a campaign, vaccinators come and ask to give the vaccination. The narrative in a house or village runs that [in *Sindhī*] *Teekan Wāro Āyo Āhy* (a vaccinator has arrived);* or *Furran Wāro Āyo Āhy* (the one who gives drops has arrived).* The vaccination teams, in rural areas, call someone to inform them about the vaccination and ask them to bring children. Usually, people do not enquire about the vaccine, and a vaccinator does not inform them about which vaccine it is. The vaccine is given, marked “done” (see photographs 54-57 in the annexure), and the vaccinator is gone. This is how things often happen in the country.

In this regard, I would like to share two different encounters from my fieldwork. The first is based on my autoethnographic account from my field diary:

> I am sitting in my home. Meanwhile, children start shouting [in the *Serāikī* Language] *Tīkain Wāly Āy Hin, Teekain Wāly Āy Hin* (the vaccinator teams have arrived).* After a few minutes, I see a girl who seems in her twenties, in my house. To my query, my mother responds that she is a vaccinator.

> She is the one who always comes here and gives *Tīkay* (lit. injections)* to our children. The matter interests me, thus, I talk to her about why she is here and what she is doing. She replies, "I am a mobilizer for bringing children to the vaccinator." And, in my family, no one knows that she is a mobilizer indeed. My casual dress—*Goadd or Lungī* (a piece of cloth that is wrapped around the waist and worn in place of trousers, especially by men from South Asia) and *Qamīs* (loose shirt)—does not provide any indications that I am doing my Ph.D. abroad. This dress pattern gives her the flexibility to communicate with me. For this, I keep questioning. She starts telling me that they vaccinate children to protect them against various diseases. I ask which vaccine it is. She replies that the present dose contains vitamins and a vaccine against measles. Simultaneously, she seems in a hurry and apologizes that they have to cover a wide geographical area, so we should facilitate her by bringing all the children as soon as possible.
>
> Following her request, we come to the main entrance of our house, where a vaccinator is eagerly waiting while holding a small cooler and a register. After looking at him, I recalled my childhood memories and realized that he was a dispenser. I recognize him, but he does not recognize me as I have been away from my village for more than a decade. To vaccinate the children, he opens the cooler to take a vial of the vaccine and fill an injection. He also asks one of the children to move her arm forwards. The baby girl follows the instructions and keeps her eyes closed due to expected pain. The mobilizer moves forward to support the vaccinator to hold the right arm of the baby girl after folding the sleeves of the child. The dispenser administers the injection but follows no prescribed protocols: He does not give the vaccine subcutaneously. I am aware of the protocols after working on this present thesis and know that there is a prescribed way to give a subcutaneous measles vaccine. I ask him, "Is there not a specific way to administer this vaccine? It seems you have not followed the given recommendations." To my queries, he is stunned. He replies:" Yes, there is a specific way and how I have administered is the right way. I have been following it for many years.' His answer, then, astonishes me. He asks me who am I. After that, I give them a brief introduction, including of my project, and explain that I am exploring this arena for my Ph.D. research and follow a 12-day campaign of supplementary immunization activities (SIAs). Through this, I learned about the specific protocols to follow. It further enhances his worries. Afterward, he tries to follow the protocols and departs for another part of the village.

The second experience is of a "fixed vaccination team" that also comes from my field diary. As mentioned earlier, there are two types of vaccination teams: fixed and mobile. Briefly, fixed teams sit in one place such as a bus station and at a hospital to immunize the children. Mobile teams visit each house in a city or village to vaccinate the children.

> I see a fixed team that is vaccinating in *Islāmābād*. The team has one female and one male team member. The female is sitting on a chair with a small

> table in front of her containing a vaccination banner and a vaccine cooler, a register, and a pen. The male member is, however, wandering around to see families with children to mobilize them and bring them to the vaccination spot. Both are wearing a cap like a baseball cap with an EPI logo. The team is sitting under a newly constructed overpass near a bus station, where pieces of paper and plastic are visible here and there.
>
> I go to talk to them. After receiving their consent, we start a discussion about the vaccination program in the country. The team shows a willingness to share their experiences. About the mobilization, the team replies: "We ask people to let us give them the vaccination. If a person insists on us telling them about the benefits of vaccination, we suggest that they consult a doctor. Further to this, if they resist the vaccination and consider it bad, unnecessary, harmful, or refer to any economic or political or religious contexts, we then do not insist much, but report the case to our higher authorities."
>
> Furthermore, explaining the mentioned contexts, they share, "Some people refer to the "fake" vaccination, "Western plot," or economic motives behind vaccination. To them, vaccination encompasses some secret agendas and intentions. Knowing the situation, we, therefore, avoid insisting too much on them. The insistence can be harmful to us, as there are many cases of killing vaccinators. We feel scared, as well."

Such occurrences are not limited to a few vaccination teams. There are different scales to observe and elaborate on them. In urban settlements, linking vaccination to political interests is higher as compared to rural settings. Nonetheless, other links such as a vaccine being a harmful substance to inject into the body and immunization is a "Western plot" to control the population are common. The capacity of vaccination teams also significantly differs between rural and urban areas due to several reasons. Some of them could be the quality of education, lack of exposure, lack of training, and the geographical spread of the area.

11.2.3.6 The Body Does Not Need Intrusions

Another form of refusing vaccines is related to perceptions of the body. Many believe that the body is powerful and needs no external support. In the selected villages, the body is not perceived as a "machine," but rather more holistically, as something that sees no separation between body, mind, and soul. Disturbance in any one among these disturbs the others. Although no one knows where the soul resides in the body, it receives significant attention during daily discussions. The body contains an internal mechanism, which is quite strong and capable of countering any external threat or a foreign invasion. To maintain the potential of a body, one needs to follow the given sociocultural directions,

mentioned in Chapter 6, about a food regimen and physical, psychological, and spiritual exercises. In that way, the body is rendered potent to grow internally (Kumar 1997).

According to one *Hakīm*, as discussed in Chapter 7, "Pakistan's Healthcare System: An Overview," the body has no mechanism to digest all the substances put into vaccines. A vaccine is, therefore, harmful to the body. It makes the body dependent on further medication. It disturbs the natural mechanism of the body, especially for children, whose bodies are not yet fully developed but in a state of development. Vaccines often have side effects, which quickly appear in the form of fever and pain. That shows a resistance of the body against this external substance. In this regard, one male interlocutor from the village of *Rāmpur*, in his 50s, says:

> We survived without any vaccine. Our parents taught us what was beneficial and harmful for our bodies like food, *Ibādat* (worship, prayer), speaking the truth, avoiding excessive sex, and physical work. They taught us to stay happy and not to worry about anything. We have an expression: *Khushī Jehrrī Khorāk Konhy, Gham Jehrrī Bemāri Konhy* (no food nourishes as well as happiness (for health), and similarly being worried has no parallel illness).* That means we need to stay happy and avoid apprehension, as both impacts on health profoundly. These expressions convey meanings based on wisdom and experience(s) of our previous generations. During our childhood, we consumed butter, fresh fruit, and milk, which strengthened our body. We had our home-grown food, for example, chicken, eggs, vegetables, and wheat. Everything was pure, but not now. We use chemicals, herbicide and pesticide to produce crops, which ultimately, come into us when we eat that food. No food, presently, is without any chemicals.
>
> Consequently, these chemicals have brought various illnesses such as *Sai* (hepatitis) and cancer, which were unknown to us. People are dying due to them. The chemicals have destroyed our livers. To avoid such illnesses, you need further medicines like vaccines. You are healthy, but you still need such medication. That is like becoming ill through consuming chemicals in the food and then taking medicine to recover. We have been continuously fooled. We were happy in our childhood. Our parents were delighted while plowing in the field, then consuming pure food.

This statement signifies a holistic and comprehensive view of life. People do not see any separation among sociocultural, psychological, spiritual, and environmental factors. The passage describes the production of illness(es) and the need to cure it or them. This tale tells the story of what I call the "economy of illnesses," which has been increasing with time. The intention to serve humanity or the purpose of medicine to cure human suffering

has been blurred with profit-oriented business. The increased use of chemicals has lessened the potential of the body and made it vulnerable to further attacks. Hence, we need vaccines. There is nothing wrong with declaring that if "pure" food is consumed, then there are fewer chances of getting an illness. Many studies have proven it with sound evidence.

11.2.3.7 Mistrust in Vaccines

The current discussion may reiterate some of the earlier discussions and explanations, yet that is worth doing. Is the substance of a vaccine beneficial or harmful for the body? Questions like this invite a discussion about perceptions of the body, as described above.

As also said earlier, mistrust of vaccines is not exclusive to Pakistan, but can also be found across the globe with higher or lower rates depending on the country or region (Tafuri et al. 2014). Stuart Blume (2006) discusses the anti-vaccination movements in Britain and the Netherlands. Some studies have specifically linked the measles-mumps-rubella (MMR) vaccine with autism or shown that vaccines cause reactions and allergies. The controversy was instigated with the publication of Wakefield and colleagues (1999), then followed by various studies refuting the claims of Wakefield and colleagues that there was a link between MMR and autism (Wakefield et al. 1999; T.S. Rao and Andrade 2011). Yet, in actuality, Wakefield and his colleagues never claimed such a link; they simply suggested that that further research was needed to find out if there was. Nevertheless, their article was retracted by the *Lancet,* and Wakefield lost his medical license as a result of extreme pressure by vaccine advocates and Big Pharma, as he describes in his book *Callous Disregard: Autism and Vaccines—the Truth Behind a Tragedy* (Wakefield 2010). Although he himself claims not to be an "anti-vaxxer" but rather an advocate of one vaccine at a time, he is still regarded as a culture hero for the anti-vaccine movement in the US and around the world.

This negotiation of a vaccine is comparable to other areas of science. Some studies elaborate on a relationship between vaccines and autism, and others reject these claims. This contest has generated questions about knowledge production: what counts as truth? What is evidence, and how it is produced? Who should we trust, if not the scientists? What happens when scientists disagree? The contestation highlights a term that as I coin, an "economy of knowledge production." Many resources are invested to generate the

desired results and claims about a phenomenon, and it is true that vaccines are big business.

Suspicion of vaccines has two levels: mistrust in the ingredients in a vaccine and mistrust in its actual ability to immunize. However, in Pakistan, vaccination suspicion is more about the running, making, and implementation of the vaccination program—about the intentions of the stakeholders, national and global. In other words, the first form of mistrust asks what is a vaccine, while the second form of mistrust is about why is an expensive vaccine free of charge?

This section deals with people's perceptions of the substance of a vaccine: its ingredients. From the beginning of the EPI program, the perception of the "Western plot" to sterilize Muslim women has been prevailing in the country. Since then, one could observe waves of this suspicion. The suspicion is a result of colonization that is part of the societal memory, which transfers from generation to generation through the process of enculturation. People doubted the substance of contraceptives, injections, and vaccines, considering that they significantly disturb and change body functions. Consequently, a female body never conceives –the vaccine interferes with God's business, which is a big sin. I have already discussed the "vaccination-reproduction connection." Some of the other significant reasons for the increase in this suspicion include lack of efforts to mobilize people, insufficient resources, a dearth of required awareness, education, and an increase in "extremism."

Furthermore, as stated in Chapter 7, owing to practicing *Unānī-Tib* and Ayurvedic medical systems, people perceive a body as a combination of individual elements and humors. The balance among them guarantees "health" and imbalance causes illness, and so specific guidelines, and regimens exist to ensure this balance. People, for instance, use food as a medicine, but not "medicine as a food." On these grounds, people question the substance or the ingredient of a vaccine while referencing their life histories and their folk wisdom. They believe that elements of a vaccine significantly affect the internal functions of a body. For them, a vaccine is a shortcut, and ultimately, in the long run, it makes the body weaker and more vulnerable to various other illnesses. The substance artificially causes an interruption in the processes of "natural" mechanisms that make the body healthy. This belief was further strengthened by reports of measles vaccines,

causing morbidity and mortality. The news circulates quickly due to accessible media, contrary to the past. People listen, quote, and claim that "we were right to believe vaccines are not safe for our children. Vaccines do not save people any longer." People suspect a vaccine that may cause deaths. The reactions against vaccines, especially the reported deaths of children linked to vaccines, in any case, require a systematic and objective analysis exploring the reasons. Lay people tend to believe in cultural narratives. The government established several committees in the country to unearth the explanations. With unbiased and researched results, one can construct a counter-narrative and convey the benefits of a vaccine to people. These reactions to the vaccines have increased the "vaccine hesitancy" of people: their likelihood of refusing or resisting a vaccine (see section 11.2.3).

11.2.3.8 Mistrust in the Government: Vaccine Good for the Government or People?

In Pakistan, the bond between the citizens and the government has never matured. The causes are numerous: historical, political, and "ethnic." Frequent terms like "puppets," "corrupt," "irresponsible," "uneducated politicians," "filling their own pockets," reflect this relationship. Mistrust of a vaccine is highly related to mistrust in the government. Let me present another anecdote from the field:

> On a sweltering day of summer in May 2014, when the heat of the sun is burning, the body is perspiring and often needing water, the supplementary immunization activities (SIAs) are underway in the Sindh province. The district headquarters is engaged in allocating resources, distributing teams, receiving records while sitting in an air-conditioned control room. These officials are also supervising the vaccination teams in air-conditioned vehicles with escorting police vehicles (see photographs 13 and 15 in the annexure 1). I am with a *Talukā* superintendent vaccination (TSV) on his bike to inspect fixed and mobile teams. Our journey starts by visiting a fixed center in a hospital of *Sakhar* city. TSV checks the entire process of vaccination, accurately the record and vaccine, in order to ensure whether everything is going according to the designed plans. The team replies that everything is "normal" and working. The "inspection" continues, and cases of refusals are recorded in a list. We keep moving from one team to another. After a few hours, we reach the premises of the city.
>
> He calls a mobile team using his mobile phone. 'Although this is not an easy task, as you need to locate the teams, to encounter a harsh environment, to handle any [undesired] situation—whatsoever, you must do it. Thus, let us go to that mobile team,' he informs me. From constant noise pollution of rickshaws and vehicles, we turn to an unpaved street with dust enough to

make us dusty. Nonetheless, there are big trees on both sides, giving an impression of an avenue and reducing the effect of summer heat.

We take almost half an hour to reach the team. One team member, who vaccinates, is sitting on a chair with a vaccination banner with a white background and red highlighters to highlight the text.[118] The banner reads [in *Sindhī*]: "*Ur'rrī Jay Khātmy Lai Muham* (a movement for measles elimination).* In black, the text further reads: '*Izāfi Tuko*' (Additional vaccine);* '*Cha Mahīnan Khān Ddah Sāl Jay Har Bbār Lāi Zarurī*' (necessary for every six-month-old to a 10-year old child).* Moreover: '*Hifāztī Tuko Aj Hī Waijhi Sarkārī Isptāl Yā Sehat Jay Markaz Khān Muft Laggrāyo*' (Get preventive injection [vaccination] from any hospital or a health center free of charge).* The banner furthermore contains cartoons about two babies holding a smiling syringe in their hands. There are two words below this figure, which reads as '*Tundrast Pakistan*' (Healthy Pakistan).* At the bottom of the poster, there are icons and names of the following organizations: (1), Expanded Programme on Immunization, Government of Pakistan; (2) Ministry of National Health Services Regulations and Coordination; (3) the World Health Organization (WHO); (4) United Nations Children's Fund (UNICEF); and (5) Global Alliance for Vaccines and Immunization (GAVI).

Around 20 people, including children, surround the said vaccinator. The remaining two team members (one male and one female) knock at each door and ask people to bring their children for the vaccination. The children receiving the vaccine are crying loudly. Some of them are crying even before the inoculation. The cries are "infectious". The supervisor reviews all proceedings, inspects the record and vaccine. He is checking the record, and I am observing the entire event while talking to people standing around. Meantime, the female team member reports about a woman who does not allow her children to be vaccinated. As always, I take a considerable interest in the matter. The supervisor, the team member, and I go to that house — a house with one room and a broken main gate. The female mobilizer calls the woman and asks her to please come outside for a moment. Although the woman responds after a while, she arrives. She seems to be in her 40s and is wearing old clothes with a small piece of cloth on her head. Let us call her *Māī Karmā*. Her hands contain wheat flour, as she perhaps is busy preparing lunch. *Māī Karmā* comes without washing her hands, maybe owing to our constant shouts. Her appearance shows that she, in terms of economic resources, is a poor woman.

After that, the mobilizer introduces us to *Māī Karmā*. We ask her to let us know the reasons for her reluctance to vaccinate her two children – one boy and one girl. She completely ignores us and wants to go back to

[118] The colours of the banner also reflect a meaning. Red is simultaneously sign of life and danger. An expression of "[a] movement for the elimination of measles" is highlighted with a red. The "additional injection" is written with black, perhaps indicating the "darkness" of incompletion of the aims. "Healthy Pakistan" is written in yellow and green, respectively. That means, health signifies a "noble" phase and bringing health to the country would make it prosper (green).

> prepare her lunch. However, our continuous insistence stops her, and she responds with questions: 'Why should I vaccinate my children? What has the government done for me, even though I am a [in terms of economic resources] poor woman and go for work daily? My husband does not live with me, so two children are my responsibility. I am performing all these duties as a single parent. With what I earn, I buy things for basic needs such as food and clothes. It is a tough life. Despite that, the government does not think about us. At my neighbors, the government distributed the *Benazīr* Income Support Programme (BISP) cards but did not issue one to me.[119] I am also a needy and deserving person. You can look at my situation. And, now vaccination, why? If the government does not care about us, then why should we?
>
> Furthermore, after getting children vaccinated, the children also get fever and pain. To heal them, we do not have any medicine. We cannot buy from a [medical] store, as we lack money. When we go to these people [indicating towards the vaccinators], they neither respect us nor give us *Dawā* (medicine). To look after our children, we need to stay at home to warm clay for massaging the injected place, so that they can get some rest. Consequently, the entire day passes by, and we cannot go to work. If we do not work, then, how should we manage to buy food and eat? We need to stay hungry or leave the children crying and suffering from fever and pain.

At very surface-level, the reasoning of *Māī Karmā* is so sound and well thought out, and shows that vaccination programs should be accompanied by food vouchers or money to buy food for those who really need it, or medicines for the kids to help with the fever and pain. With a critical look, this excerpt unpacks various levels of mistrust. First, *Māī Karmā* bargains with the government indirectly through these vaccinators, considering them as (officials of) the government. She does not trust the government, believing that the vaccination is good for the government, not for her children. Although she is unaware of funds and guidelines recommended to the government by the global stakeholders such as WHO, she indicates this indirectly. She understands that there are some benefits for the government if she allows the vaccination of her children. She sees no good for her children, only "fever and pain." She instead forecasts "suffering" and problems in the form

[119] According to BISP website (2019a, [itaic in original]), in July 2008 BISP was inaugurated as the National Cash Transfer Programme (NCTP) "as *the premier safety net institution*". BISP originated at the time of precipitous food price inflation, as prices of food, grain and fuel became highest, comparing data from the last 30 years. The situation of already vulnerable households was further exacerbated by the global economic downturn in 2009. The BISP focused on the poor women by providing unconditional cash transfers with an objective to protect them from the adverse consequences of decelerated economic growth. During fieldwork, I witnessed the BISP deliveries. These women have a card to withdraw money from automated teller machines (ATMs). The locations of the ATMs, during the days of cash delivery, are full of women. Most of the women do not know how to operate the cards. They need someone to help them withdraw the money. This has created a different kind of dependency and "malpractices." Many people working as "mediators" and "facilitators" get some "commission" or "token."

of wasting her time and not earning. As a result, her children will suffer from both the direct consequences of fever and pain and the indirect consequence of hunger.

The second level is the trust deficit between the people and the medical practitioners. This can be seen when *Māī Karmā* complains that she is neither treated with due respect nor receives medicines she needs.[120] She thinks that these officials are powerful, and if they are dominant in the hospitals, then, in her house, it is she who has the authority to accept or reject something, including vaccination.

Analysis of this "refusal" shows that there is an invisible discourse beyond this apparent refusal. The refusal carries importance for officials and the government. Her one refusal increases the rate of unvaccinated children that leads other children (not merely of the country but the world) to vulnerability. A single refusal can cause an outbreak and wastage of resources. In other words, her refusal pushes the government into a critical situation in terms of the obstacles it creates in following the received guidelines of the global stakeholders. The government is responsible for meeting objectives and implementing the protocols. Ultimately, the global stakeholders would state that "there is a lack of commitment at the government level" (a WHO official expressed these views during our discussion).

Again, a single refusal encompasses enormous importance. It significantly affects policies and translations of those policies. Although invisible, *Māī Karmā* is an equal stakeholder in the making of such a program. There is no doubt about her absence in the meetings, which take place in an air-conditioned environment, but her "refusal" is there and functions as an active "actor" in the light of Latour's concept of network theory (Latour 2005). Her refusal is visible in the form of numbers. It compels powerful stakeholders to hold meetings to deal with the situation and devise "satisfactory" plans. It forces these stakeholders to show a high level of "optimism," as Closser (2010) finds in her work on polio. The optimism never ends between the government and the WHO officials. The WHO also is responsible for completing the translation of the promised objectives of the "donors" such as the Bill and Melinda Gates Foundation. This is how a single refusal, together with others, affects policymaking. Although she is unfamiliar with the names of

[120] This signifies the genre of literature produced in the arena of the "doctor-patient" relationship (Becker and Nachtigall 1991; Pappas 1990; Fainzang 2002), indicating the power and authority of the medical professional.

the big cities and hotels where those decisions are made, and economically and politically poor local woman pivots decision making at a global level.

The cycle of negotiation continues. Refusals (can) cause further outbreaks. The continuation of dealing with the refusals, therefore, requires more planning and vaccination movements. During the vaccination campaign, refusals occur again. The cycle repeats. The power of these local people has gone unnoticed in discussions considering the "less powerful." Although some works discuss refusals (Sobo 2016; McGranahan 2016; Blume 2006; Fairhead and Leach 2007), these have received less attention.

In other words, the mistrust between the citizens and the government is quite visible in the vaccination programs. That mistrust leads to further "critical events," quoting Veena Das (1995), as some of these events can be meetings, outbreaks, and travel bans. The refusal based on mistrust shapes further instances of mistrust. It makes the bargaining and negotiation visible. A refusal hints at a "breaking of promises" and challenges the power and the network of relations running between various stakeholders.

Furthermore, *Māī Karmā*'s views illustrate that she comprehends that although she has difficulties in getting food to fulfill her and her children's basic needs, the government offers a vaccine but not sufficient food. That means she faces problems in the present while the government talks about future problems. She understands "first things first". Dealing with "secondary" things creates suspicion in her mind that there is something behind the vaccine. No one tells her about the obscure underlying objective, but she reads between the lines. *Māī Karmā* knows that her children would suffer enormously if not given food but can recover from measles – after seven days – with home-based measures, as she recovered during her childhood. In simple words, she knows that vaccination has an alternative, but food does not.

In the end, the vaccinator and supervisor assure her that she would receive respect and be offered medicine when she visits the hospital. Afterward, she brings her daughter to get vaccinated. The girl was crying before vaccination and continues after, too. Out of fear, her son hides somewhere in the house. *Māī Karmā* says, "I could not bring him as he was crying loudly and was scared. I have already done you favor to bring one child." That means she has done what she could do. She does not bring her son, and we return while

mentioning an "unvaccinated" child in our booklets.[121] Let us now move further to the final form of mistrust that is in the global stakeholders and has links to geopolitics.

11.2.3.9 Mistrust in the Global Stakeholders

How does mistrust occur between the local and the global? Current mistrust has significant links to colonization. The injuries and wounds colonizers caused still prevail. People remember the *Lut Mār* (occupying and taking away the resources in a violent way)* of *Gory* (White people, referring to British colonizers)* and are still suspicious about their presence in the country. I remember that during workshops in Pakistan in the late 2000s, a female colleague asked the officials of USAID, "Why does the US want the welfare of Pakistan? What is the interest lying beneath this?" The official became numb. "She twisted the answer but did not hit the point directly. She has not told the truth," the colleague commented afterward in our informal gathering.

Mostly such suspicions are unquestioned; nonetheless, their presence is undeniable. During the vaccination campaign, a case of mistrust in the global stakeholders occurred; such mistrust is dominant in the KPK province and the *Pashtun* community in particular. Journalists and public health researchers have produced a stream of work on it (Mushtaq et al. 2015; Hussain, Nagaraja, and Menezes 2015; S.O. Ahmad et al. 2016; L. Roberts 2019); nonetheless, this stream flows in one direction because of the lenses of their disciplines.[122] During the SIAs, I observed several refusals.

Different levels of mistrust regarding the vaccination campaigns signify the interconnections, interplays, and intertwinement of the local, the national, and the global, all of which influence each other (see the section on "vaccination suicide"). The interconnections, at times, are visible as well as subtle. These refusals and mistrusts differentiate between "us" and "them." They strengthen and indicate a strong sense of unity among "us." Annika Rabo (2005, 163) rightly argues that these comparisons allow to manifest and create a political order of inclusion and exclusion, and these "boundaries of 'us' and 'them' are contextually fixed." This has been discussed in terms of the roles that refusals and mistrust play (McGranahan 2016; Sobo 2016).

[121] After my fieldwork, I did not follow whether she was given any medicine for her daughter, when she visited a biomedical facility again.
[122] I have cited this literature throughout this thesis, thus, I just mention a few of them here.

11.3 Concluding Remarks

Reviewing a brief account of vaccination globally, the chapter dealt with general perspectives on immunization from Pakistan. Pakistan, as a signatory of the UN, is bound to making efforts to vaccinate each child to eliminate infectious diseases. Yet several infectious diseases, such as polio and measles, prevail, and controversies surround vaccination. Owing to that, the country has remained in the limelight worldwide. The controversies are serious that reveal a different ideology, such as vaccination is a "Western plot" or a conspiracy against Muslims. Of the reasons mentioned above, there are explanations related to sociocultural factors, economic aspects, political whys, and wherefores, and geo-bio-political connections. Nonetheless, the weavings are inseparable, as there are significant interlinkages among them. On these grounds, family planning was considered as a "Western plot," "un-Islamic," and *Harām* (something forbidden in Islam) in Pakistan that cultivated grounds to be suspicious of the immunization program, too.

There are rumors and conspiracy theories at play. The politics and controversies surrounding vaccination have links with the key events related to geo-bio-politics. Consequently, the vaccination teams have faced assaults, in which over 100 of them have died. Ideas woven around vaccination have roots in several rumors and realities that have significantly affected a life-saving scientific advancement, i.e., vaccination.

Moreover, there are substantial issues in cold chain maintenance, lack of skilled vaccinators, and weaknesses in the catchment areas in terms of distance and their geographical location. These factors, including the perception, significantly affect the vaccine uptake. The country has been considered responsible for transmitting polio to many countries, which made vaccination mandatory for Pakistani travelers who would like to travel abroad to show a vaccine card at airports. However, I described while presenting my anecdote to show a gap that exists between theory and practice of vaccination, as no one checked my "yellow (vaccination) card" at the airports—both in Pakistan and in Austria.

Precisely, all factors can be associated with the prevalence of infectious disease in the country. There are many critical reasons—rooted not merely in the present, but also in the past—behind this critical state of vaccination that I already described in several

places, including this chapter. For example, local people linked vaccination with the reproduction due to colonization, and then supported this argument with the "fake" vaccination drive in 2011 that was termed as a "vaccination suicide." Due to these several crucial factors, the engaged stakeholders have been negotiating vaccination.

I demonstrated that refusals and showing resistance against vaccination is not a cause, but instead an effect of something. Implementers of vaccination campaigns seem highly focused on dealing with the effects but not the causes. In essence, the causes are ultimately cultivating an environment of anti-vaccination sentiment. Dealing solely with the effects is an apparatus of neo-liberals to advocate "the dominance of a competition-driven market model" for governing "the nobodies" (Galeano 1991).

Therefore, addressing the low-vaccination uptake and prevalence of infectious disease requires a thorough understanding of responsible reasons. Such perspectives should be apprehended in the context of several interconnected heterogeneous domains: the social, economic, political, and historical background. Considering the outlined qualitative aspects of vaccination would significantly help to create an effective vaccination program in the country. Summing up, I want to suggest that vaccination should be separated from (geo)politics. Moreover, in the next chapter, I describe these reasons further with a specific focus on measles vaccination.

CHAPTER 12: MEASLES VACCINE: FROM GENERAL TO PARTICULAR

Vaccination, as a general endeavor, was elaborated in the earlier chapter. The current chapter elucidates the historical development of the measles vaccine (MV) and then traces its usage in Pakistan. Drawing on the information on suspected side effects, rumors and conspiracy theories related to measles vaccination in the country, the chapter inquires: how measles vaccination has been linked to reactions in the children, and how news reports of side-effects have been discussed and contested online on the websites of some English newspapers of Pakistan.

12.1 Revisiting the Measles Vaccine

The unrelenting investigations to discover the causes of measles never ceased until Thomas C. Peebles – a pedestrian and a lab fellow in the lab of John. F. Enders – visited a suburban school in Boston, America, where an outbreak of measles occurred (Enders et al. 1957). The team collected specimens from throat swabs and blood and brought them to the laboratory for experiments in 1954. Enders used "sacrificed kidneys," crumbling and trypsinizing[123] them to develop the required cell cultures with nutrient media that led to the successful cultivation of measles virus in these cells, which was then passaged or sub-cultured further (Katz 2009, 4-5).[124]

That experiment in the same year proved a "breakthrough," as Enders and Peebles positively isolated the measles virus from David Edmonston – an infected eleven-year-old boy of that school. The strain of that virus was named after Edmonston. This cultivated virus, later, was inoculated into measles-susceptible monkeys, which first developed fever, rash, viremia, and then "measles-specific-antibodies." Afterward, Enders harvested these yielded cells in the human amnion cell, where their replication occurred effectively, then he inoculated the virus into pathogen-free chicken eggs via an intra-amniotic method. The trial of the cultivated fluid further proceeded while putting it into the human amnion cells, where the virus multiplied. After six passages in the fertile eggs, Enders and his colleagues prepared cell culture from the chick embryo and

[123] Trypsinisation is the method of dissociating cells using trypsin, a proteolytic enzyme that breaks down proteins for dissociating adherent cells from the vessel in which they are cultured.
[124] Often known as a "passage" or a subculture: a passage number is the number of times a cell culture was subcultured, and a number of passages will make or break an experiment.

incubated it in the tubes. This experiment showed "visible cytopathology" and "demonstrable replication" (Katz, Milovanovic, and Enders 1958).

To compare it with the "early kidney-cell-propagated," 13-times passaged or sub-cultured chicken cell material was inoculated for a second time into the measles-susceptible monkey, which that time showed no measles symptoms such as no rashes or detectable viremia, but instead complemented the "fixing and virus-neutralizing antibodies" (Enders et al. 1957). The experiment ended by inserting the virulent human kidney cell virus into the immunized monkeys, who maintained full resistance against measles.

After testing this live-attenuated vaccine on animals, the first-time vaccine was applied to immunize humans in an "institution of physically and intellectually challenged youngsters" in the USA, where outbreaks triggered morbidity and mortality every second or third year. Katz and colleagues (1960, 6) describe how it was evaluated in humans:

> Following discussions with the institutional director, we were able to meet with the parents of several dozen children who had not yet suffered measles. After explaining to them the background of our potential vaccine and our plans for a clinical trial, most of them agreed to have their children participate. Using the same materials with which we had inoculated one another in the laboratory, we proceeded to inject a dozen susceptible children subcutaneously with the vaccine and several with sterile tissue culture fluid as a placebo. We examined them daily, obtained nasopharyngeal cultures and venous blood samples on alternate days and followed them carefully over the next three weeks. Five to 8 days after inoculation, many of them developed fevers that persisted for several days and were then followed by an evanescent rash. Throughout this time, they nevertheless remained well and went about their normal activities. No virus was recovered from the throat cultures or blood, but within two weeks all had detectable measles virus-neutralizing and complement-fixing antibodies in their sera.

The vaccine developers did not aim "to patent the virus or to seek monetary return," but soon after, numerous universities and pharmaceutical firms in the US jumped in to produce the Edmonston measles virus vaccine (Katz 2009), turning it into a lucrative business. Some investigators and firms produced "for-malign-inactivated, alum-precipitated measles vaccines" with comparatively low temperatures and increased passages, but the Enders team continued working on the live-attenuated one (ibid., 7-8).

On 21st March 1963, both the vaccines were licensed in America. The subsequent vaccine showed no "enduring immunity" among the recipients against their exposure to "wild-measles", who "developed a severe measles infection with high fever, unusual rashes on the extremities, pneumonia and some central nervous system obtundation" (Fulginiti et al. 1967; Annunziato et al. 1982). Owing to these reasons, the inactivated vaccine was withdrawn in 1967 (Katz 2009; Hamborsky, Kroger, and Wolfe 2015). In 1969, "the responsibility of wild measles virus for subacute sclerosing panencephalitis (SSPE) was discovered" (Katz 2009, 8). Katz further mentions that by then, millions of children received this vaccine of live-attenuated measles virus that led to reducing the annual measles cases by over 90 percent. Also, he mentions that by 1993 transmission of measles was halted in the USA and by 2002 in the entire Western hemisphere in 2002.

Afterward, David Morley, a British pediatrician, was in constant contact with the Enders and colleagues and informed them about measles-caused mortality in Nigeria, where 125 children out of 555 died in his clinic. Enders ensured the effectiveness of a vaccine, for which "premature studies would be regarded as taking advantage of human guinea pigs rather than as a humane medical mission." However, Katz moved to Nigeria in 1960 with the Edmonston vaccine, produced by Merk, which was in "commercial production" (Katz 2009, 8). The local mothers desperately brought their children to know about the mortality and morbidity caused by measles. Although these children were also suffering from malaria, protein malnutrition, and intestinal nematode infestations, their response to the vaccine was encouraging, and they developed antibodies in due time (Katz, Morley, and Krugman 1962).

Katz writes that their Nigerian experience led to the measles vaccine being considered on a global scale and then added to the Expanded Programme on Immunization (EPI). Despite that, millions of children were still dying each year due to no international effort for measles, while polio received global attention (Katz 2005). Nevertheless, in 2002 the American Red Cross, International Red Cross and Red Crescent Societies joined by the CDC, UNICEF, the UN, and the WHO formed the Measles Partnership (Measles and Rubella Initiative) with its goal to reduce measles mortality from 873,000 annually (WHO figures for 1999) to half in the next five years (Katz 2009).

12.1.1 "Measles and Rubella Move Fast. We Must Move Faster"

Consequently, the Measles and Rubella Initiative (M&RI) was inaugurated as a global partnership to ensure coordination against measles and rubella to eliminate them. (Rubella is a contagious viral infection best known for its distinctive red rash, also called German measles or three-day measles.)[125] Considering as a problem, the Initiative (2019) has a catchy slogan— "Measles and Rubella Move Fast. We Must Move Faster"— to indicate the rapid escalation of both viruses that need extravagations to contain them. It further reads, "The Measles [and] Rubella Initiative is committed to ensuring that no child dies from measles or is born with congenital rubella syndrome. We help countries to plan, fund, and measure efforts to stop measles and rubella for good" (ibid.).

The initiative follows the footsteps of the Global Vaccine Action Plan as the latter helps countries to raise vaccination coverage against all diseases – including measles and rubella – and to fund, plan, implement, and monitor the quality of supplementary campaigns. The M&RI supports the investigation of outbreaks and provides the technical and financial support required for dealing with measles effectively. To strengthen the immunization system, it proposes solutions and supports a global network for measles and rubella. It focuses on reducing measles-caused mortality worldwide by 95 percent by 2015 and eliminating both the diseases in at least five of the six WHO Regions by 2020. The initiative has assisted 80 countries since 2001 by providing 2 billion doses of measles vaccine, to increase the coverage to 85 percent globally and reducing measles-caused deaths by 79 percent as per the then-Millennium Development Goals (MDGs) 4.[126] Following the mentioned objectives, 29 countries received support – bundled vaccines, operational costs, or technical assistance – to reach more than 221 million children during 2014. Thus far, this partnership has invested more than USD 1.2 billion in such activities.

The principal supporters of this global initiative are countries affected by measles, rubella, and congenital rubella syndrome. The M&RI (2019) feels obliged to its several individual private donors and supporters and is content that "together we move faster".

[125] In terms of viruses, measles and rubella are distinct, allowing rubella to be less contagious and as serious as measles. According to M&RI (2019), rubella can have severe consequences for pregnant women while giving birth to a baby with Congenital Rubella Syndrome (CRS).
[126] Now they are called "Sustainable Goals (SDGs)".

A total of 24 key members support this initiative.[127] After offering this brief overview of the history of measles vaccination, I now describe its situation in Pakistan.

12.2 Measles Vaccine in Pakistan: Suspected "Reaction" and Deaths

As noted above, the measles vaccine is part of Pakistan's EPI program. Earlier in Pakistan, a single dose of measles vaccine—called "measles 1"—was compulsory to give to nine-month-old infants. Over time, the EPI introduced a booster dose— "measles 2"—to give during the 15th month (Tariq 2003).

Nonetheless, growing concerns have been emerging regarding this vaccine, especially at a local level, and on its effectiveness and suspected reactions in the country. On the effectiveness of the measles vaccine, Khan and colleagues (2015) found in their study in Peshawar that measles has occurred in those who received the measles vaccine. On the suspected reactions, the media have repeatedly reported concerning suspected reactions in children and about local people, who are suspicious about the side effects of the vaccination: the reaction can result in deaths of the children. Besides its purpose to immunize bodies against attacks of external forces (e.g., bacteria, viruses), vaccine reactions in those bodies have also been seen. The reactions to this vaccine are not merely limited to fever and pain but have been linked to children's deaths in Pakistan.

In other words, the vaccine substance is questioned and suspected: precisely contested. First, despite receiving a measles vaccine, one remains susceptible to contract the virus. Second, it does not solely kill the external forces, but in some cases, it may kill the vaccinated body as well. Thus, the measles vaccine carries risks. Vaccine reactions, therefore, are another strong reason to refuse the vaccine.

Surfaced in the media predominantly, these occurrences and concerns were reported from across Pakistan when the measles vaccine caused a suspected reaction and some

[127] (1) Anne Ray Charitable Trust; (2) American Academy of Paediatrics; (3) the Bill and Melinda Gates Foundation; (4) the Canadian International Development Agency (CIDA); (5) the Church of Jesus Christ of Latter-day Saints; (6) the GAVI Alliance; (7) Global Payments, Inc. (8) Herman and Katherine Peters Foundation; (9) International Federation of Pharmaceutical Manufacturers Association; (10) International Federation of Red Cross and Red Crescent Societies; (11) the International Paediatric Association; (12) Izumi Foundation; (13) Jeppesen; (14) the Lions Clubs International Foundation; (15) Japanese Agency for Development Cooperation (JICA); (16) Merck Co. Foundation; (17) Norwegian Ministry of Foreign Affairs; (18) ONE Campaign; (19) Sabin Vaccine Institute; (20) Task Force for Global Health; (21) United Kingdom Department for International Development (DFID); (22) the Vodafone Foundation; (23) the World Bank; and (24) the Women's National Basketball Association (WNBA).

deaths. In particular, the reports came during a nationwide vaccination campaign of the Ministry of National Health Services in 2014 against measles to celebrate the World Immunization Week Campaign for vaccinating children less than ten years of age. On May 22nd of 2014, the Pakistani English newspaper *Express Tribune* (2014; 2014a) published two reports related to reactions: (a) *A normal reaction?: Six more children faint during measles drive* and, (b) *30 children fall sick in Swat upon receiving measles vaccinations*. The reports generated a debate in the country, in which various competing narratives emerged, especially in the print, electronic and social media.

The online version of these stories received numerous comments showing contestation. Although the first news did not receive a single comment, the second story received 12 comments, in which people critiqued, supported, or held a neutral position concerning vaccination (Express Tribune 2014a). One can question the underlying purpose of comments, as these may be willingly and strategically written. Yet the commentators' ability to read and write in English is important since it distinguishes them from the rest of the inhabitants of Pakistan. The knowledge of English may help to assume that these people are 'educated' and take an 'interest' in politics nationally as well as globally. These comments would help to make sense of the competing narratives told around the case of vaccination. I mention such comments to show why and how many people contest the measles vaccine, along with the cultural reasons I explained in chapters 9 and 10.[128]

While criticizing the news report, some commentators satirically criticized the media for false reporting and transmitting disinformation on the side effects of vaccines, which would encourage people to not get immunized. For some, the media should "refrain from such headlines and stop giving a tool in the hands of extremists," as immunization-caused "sickness" is "very normal". A vaccine like any medicine could cause allergic reactions, and the risks involved in the measles vaccine are minimal; hence the better option is to receive a vaccine rather than contract measles. Yet some critiqued people who reported reactions because it is abnormal to develop side effects. There were suggestions that the concerned authorities need to explain the misconceptions related

[128] I have not translated these comments, except modifying, correcting the spellings or editing errors, since commentators used the English language. However, I have changed the order of comments to maintain coherence.

to vaccination that is already making it tough to vaccinate children (Express Tribune 2014a).

Moreover, other groups discussed the vaccine itself, noting that it might have been expired in the absence of required facilities to maintain the cold chain, which is complicated. In a country like Pakistan, where power cuts and low-voltage electricity are chronic problems, appropriate maintenance of vaccines can be problematic. Falling unconscious is not a side effect of the measles vaccine. The hospitalization of 30 children is a clear sign that something fundamental went wrong with the given vaccine. There are chances that the vaccine was modified and thus became ineffective. Immunization should be temporarily halted until the vaccine is re-examined in order not to waste efforts being put into this vaccination drive and leave people unprotected (ibid.).

Furthermore, commentators linked the higher rates of unexplained vaccine side effects to corruption at the governmental level. As one commentator writes, some government officials possibly bought expired vaccines at a lower price and "pocketed the rest of the sanctioned money" (Express Tribune 2014a). Others mentioned that since the vaccination is spreading diseases rather than protecting against them, an ordinary person should be aware of the "Western conspiracy" against the Muslims and Pakistan.

One thought-provoking comment was from an American person named Jay, as mentioned on the website.[129] His interest in following vaccine-related news from Pakistan and adding his perception to create an impression was astonishing. Jay criticizes the multi-million pharmaceutical companies that are injecting chemicals into children. To give a better idea, I reiterate his comment with minor corrections related to punctuations:

> Hello. I was surfing the [Inter]net, and this article got the better of my curiosity. They usually give the MM&R [Measles, Mumps, and Rubella] vaccine here in the states. I read some responses on other pages from citizens here, and so many had the same story. I don't know if I got the shot in my school days or not, so I cannot refer to my own experience for you, but there are many people out [t]here that said they got sick after the vaccine (some immediately, some precisely one week later). Many of them said they were so violently sick, they had to go to the hospital. Yet,

[129] Jay is a name used for male gender, so I have used masculine pronoun.

> in story after story that I read, all the "professionals" told them the sickness, while cause unknown, was definitely not related to the vaccine– and when you read about the vaccine, they keep researching and changing it because it does not even seem to be effective, or (...) not promising enough to overcome the effects caused by it.
>
> I love my country and stand behind its citizens, but these multimillion-dollar companies injecting our children with harsh chemicals does not seem right to me. They require them to have the Hepatitis C vaccine. How many small children are really in jeopardy of Hepatitis C (but they do not need for Hepatitis A/B, shingles, smallpox, Pneumonia). My grandma refused to let her kids have the Polio vaccine back in the 50s, and she was right not to as it was causing Polio (...) (Express Tribune 2014a).

Analogously, the newspaper *Dawn* (2014b) published a report, *Two More Children Killed Due to Anti-Measles Vaccine in Charsadda* district of KPK. The newspaper *Express Tribune* published another story: *Alarming Situation: Four Children Reportedly Die*. These reports stimulated dialogue on the website and similarly received numerous comments: criticisms of the government, suspicions about the vaccine, and the validation of the stories. I call it an online dialogue or a virtual group discussion and describe it below.

12.2.1 An Online Dialogue: A Virtual Group Discussion

12.2.1.1 "Two More Children Killed due to Anti-Measles Vaccine"

This news report received 40 comments.[130] In the commentary, several subjects were brought up: the greater good and acceptable risk, health officials, the governance and political parties, vaccine and autism, rumors and conspiracy theories, and the criticism on the media. Although categories overlap, I have classified them for a better understanding of the negotiation processes. The dialogue starts, when a commentator, who calls him/herself *Citizen*, asks: "If vaccination kills people, then how could they believe that vaccination is good?"

The greater good and an acceptable risk: Although these commentators try to take a balanced approach to the suspected reactions while compelling society to ponder over "an acceptable risk," they view the reactions as inherent "loss" that can be justified in the name of greater "good."

[130] The comments have been corrected, e.g., "Childer" to "children" or inserting articles and rearranged to maintain the coherence among them to show an online dialogue. Some commentators have used pseudonyms, and some names seem real. Moreover, I have left out two comments because both seemed an advertisement.

Tom writes, "[Although it is] not a great comfort for the parents of the children who died, many more children would die or be disabled in an epidemic of measles. The same goes for polio vaccination. No medical procedure is without [a potential] risk." Therefore, society must "decide what is for the common good and what is an acceptable risk to endure for the good that is done." Tonya asks, "[H]ow many people in that country died from measles? Vaccines kill only a few, where the disease kills millions. I have a father that suffered from polio; he will testify that vaccines save [lives]."

Imran Ali, writes, "the Institute of Medicine in its 1994 report states that the risk of death from vaccines is extraordinarily low." All deaths from one area may not be due to a vaccine, but to sudden infant death syndrome (SIDS). Therefore, he considers that this vaccine reaction incident requires an appropriate investigation.

Criticizing health officials: In contrast to Tom, a few other commentators focus on a probable agency of deaths. (a) Considering the deaths that occurred due to the carelessness of in-charge officials, Ahmad argues, "The health minister should be held responsible for these deaths, and immediate action is necessary for those officials who are involved in this process." (b) Jungraiz opines, "This is so troubling. Why is this happening, [perhaps due to an] expired vaccine?" (c) Yet Ishrat Salim claims that deaths occur due to untrained vaccinators, using the same syringe, not using vaccines according to the protocols. Lazy and untrained vaccinators tend to use the same vaccine and syringes to spare time and quickly do the job. (d) Saleem thinks, "They [the officials] are using a '*Do* Number' (of poor quality: the expression is used for the things, which are not genuine, pure, but [a] copy of original).* (e) Moreover, Ali Ahmed, another commentator shares his experience working as a registrar in a *Karāchī* hospital:

> When I was doing [a] residency and [working] as registrar in [a] big hospital in *Karāchī*, I used [to] see many children dying from measles, tetanus neonatorum and T.B meningitis (...) and after [the] EPI [the expanded programme on immunisation] programme I really saw children dying from measles, no case of tetanus in newborn and BCG [Bacillus Calmette–Guérin] prevented T.B. meningitis. The case of death may be [a] faulty vaccine not meeting the standard or due to some other cause, so we should not blame [the] vaccination programme.

(f) Mobeen from New York shares, "I am vaccinating Childers of all ages from last 25 years, and never ever been a child died of the vaccines. What is wrong with Pakistani

vaccines." Are these vaccines pure, or have these been "mixed with something or the injection is given intravenously?"

Issues in governance: Mahmood is worried about the significant impact of such reactions that will "kill all the efforts to convince people to vaccinate children. This is poor governance!" Similarly, Salman that it is happening during Pakistan *Tehrīk-i-Insāf* (PTI): "Poor [governmental] show:" it is abysmal![131] Dr. Ain-ul-Momina criticizes, "(…) Imran [the current Prime Minister], Nawaz Shareef [the previous Prime Minister] took the vaccine before going to India. So much for KPK [Khyber Pakhtunkhwa] government (PTI) busy blaming others with no time take stock of its own doings." A person who uses initials of his/her name, K.C., views that it is a result of "a bribe." Zaim also criticizes, "Imran Khan [the PM], stop criticizing [the] Federal and *Punjāb* governments. You are not either better. Check your governance [in KPK]." Zubair criticizes *Pakistan Tehrik Insaf* (PTI):

> So much for *Sehat ka Insaf* [Justice for Health]. Had it been not for an ill-planned and poorly executed vaccination campaign, these children would have been alive and those suffering would not have suffered. Anyways 'who' is worried about a handful of children getting sick or dying. We have greater problems at hand [such as] stopping NATO [the North Atlantic Treaty Organization] supply, *Dharnas* [protests] and staging rallies against election rigging to deal with. Welcome to *Naya* [New]* Pakistan.[132]

Lubna thinks, "What a joke! [the government] must be using expired vaccines donated by the WHO: the poor Pakistanis."

Vaccination and autism: The dialogue further discusses the relationship between vaccination and autism. Some propose that the vaccine causes autism, and others reject it. One commentator, named Imran, argues:

> There is ample proof that vaccination causes auto-immune diseases, asthma, autism, and other allergies. Vaccinations weaken the immune system. No research has been done on vaccination because it is a very lucrative business for [the] pharmaceutical industry in North America. The only research was done [by] a doctor [named] Andrew Jeremy Wakefield, and he was later ridiculed instead of finding the link between measles vaccination and autism. After his research, no one is allowed to do

[131] As noted earlier, the PTI is a political party that continuously protested against the ruling party—at the federal level for corruption, and probable rigging in the general elections held on 11 May of 2013—the Pakistan Muslim League (Nawaz) (PML-N) that won the elections. For the first time, in 2018's general elections, the PTI won and became a ruling party at the federal level.
[132] *Nayā* Pakistan was a slogan used by the PTI government.

> independent research in North America on vaccination. Pharmaceutical industries only sponsor all research; not even the government can sponsor such research. I will not travel to Pakistan at any cost, and I am sure a lot of other people think the same. This [lack of tourism] will bring the economy of the country down ... I hope PM [Prime Minister] Nawaz Shareef also has to take the vaccination on his next trip abroad, and it will be a headline about what happens to him next. Side effects of vaccination are death.

A few people object to Imran. *Jamāl* views, "Imran, you are ill-informed and your assertions wrong. Vaccines have saved countless millions. Deaths are extremely rare in a properly administered program. If the vaccine is prepared carelessly and has many contaminants, this [reaction] will happen. Teams must be trained to treat such reactions!" Furthermore, Ali Ahmed says:

> Imran, because signs of autism may appear around the same time children receive the MMR [measles, mumps, and rubella] vaccine, some parents may worry that the vaccine causes autism. Vaccine safety experts, including experts at CDC [Centers for Disease Control and Prevention] and the American Academy of Paediatrics (AAP), agree that the MMR vaccine is not responsible for recent increases in the number of children with autism. In 2004, a report by the Institute of Medicine (IOM) concluded that there is no link between autism and the MMR vaccine, and that there is no link between autism and vaccines that contain thimerosal as a preservative.

Sajjad also makes a counterargument:

> Imran, unfortunately, every statement you made is completely false. 'Ample evidence?' there is not even scant evidence, only conjectures and half-baked theories. On the other hand, evidence supporting [the] safety and efficacy of vaccines is overwhelming. A study in Denmark reviewed half a million children (537,000) and found zero links between vaccination and autism. There is no grand conspiracy to hide the side effects of vaccines. In fact, in 1999, a new vaccine Rotashield, was banned and withdrawn from the market upon discovery of a previously unknown side effect. As for Mr Wakefield & his so-called study, it has been conclusively proven that he took a bribe from the largest medical malpractice law firm in [the] U.K. to falsify the data in his study in an attempt to create medical malpractice business for his clients. Reports of deaths from Measles vaccination in Pakistan are most troubling. There is something criminal going on here, intentionally or unintentionally. Millions upon millions have been vaccinated against Measles in [the] USA without a single death!

Another commentator, who uses initials of his/her name, S. Y., responds "Imran, there has actually been a good deal of research after the example you listed supporting Dr.

Wakefield's theory, but it is never widely publicized even though the studies are published in several medical journals. There is also ample evidence of the neurotoxicity of several ingredients present in vaccines, especially detrimental to infants because of their size and still developing systems."

Furthermore, Dr. Saqib Sardar views, "All vaccines, and all medicines have benefit and potential for adverse reactions. Please also report the hundreds of children who die because they have not taken the vaccine." Tricia responds that children in the USA rarely die from measles. One can check the mortality chart from the Centre for Disease Control and Prevention (CDC).

S.Y. mentions:

> Just so you know, the American court system ruled back in the 80s that vaccines were 'Unavoidably Unsafe' and then exempted the vaccine manufacturers and physicians from liability due to vaccine-related adverse reactions and death. Now there is a tax on all vaccines which goes into a fund to pay out to those injured people who go to the Vaccine Injury Court, which has paid out several billion dollars over the years. Including cases involving autism.

Abrar argues, "After years of research, no correlation between vaccines and autism has been found. Please do us all a favor and get your information from [the] latest reputable sources rather than spew out what you discussed with your buddies over a cup of tea last evening. Most medical journals are not funded by big pharma."

Rumors and conspiracy theories: Some commenters also discuss conspiracy theories. For instance, Coupe (pseudonym) asks that who decided to import the faulty vaccine from Bharat [India], and can the government figure this issue out? "Can we please permanently ban any import of medicines from Bharat." Adi responds to Coupe, "Perfect, stop getting medicines from Bharat, [and] ask China, let me know how you make out with that." Two more commentators counterargue against Coupe. (a) *Chakra Gaye*, after using a teasing name, asks Coup: Which country is called Bharat? (b) Naseem Altaf also questions, "What made you think that it was from Bharat." Altaf suggests that the manufacturer must be brought to book: it is essential to disclose the name and details of the manufacturer for knowing whether it was the manufacturer's fault, or there was something wrong in the system, or in the procedures of vaccinators. One commenter, named Unbelievable, states:

> The rest of the World uses Measles vaccine without a problem - so what is up with Pakistan. Enough with the ignorant conspiracy theory nonsense so typical with Pakistan. The E.T. [Express Tribune] article indicates that 40 percent of the people providing vaccinations are not properly trained - that's fixable. Further - chronic power outages might contribute to inappropriate vaccine storage, and someone needs to be in charge of certifying that the vaccines have been properly stored/handled. Time to step up to the plate and join the 21st century.

Moiz Omar argues, "Our local vaccination supply may not be good or they [vaccinators] are incorrectly vaccinating [the children]. The equipment may possibly be unsterilized. Please, anti-vaccination conspiracy theorists, do not start now."

Criticizing the media: There were two comments, which criticized the role of media. (a) Mansoor Naqvi thinks that it is not a responsible piece of journalism while significantly knowing that people hold different views on the vaccination, "and vaccines are safe unless scientifically proven otherwise, the onus is upon the journalist to either investigate and report the real cause or to find proof that the vaccines cause this. Otherwise, report the truth that the deaths are caused by medical negligence unrelated to vaccines." Likewise, Shahid questions: "Why doesn't this article mention the statements" KPK's doctors, including Director General, who view "no link between measles and those deaths?" Shahid further writes that we know many "infants die in our poor country every single day! And people are so cynical about vaccinations in our country now, that any infants who die soon after having received the vaccine would probably be considered to have died from it. All the others would continue to be attributed to *Kala Jadoo* (black magic), *Nazar* (jealousy), etc."

Becoming perplexed, Naseem Altaf writes, that Imran (…) cases of children's death need a serious investigation to find the real cause.

Without offering my analysis on this online dialogue, I mention below another news-report. Thereafter, I mention the analysis.

12.2.1.2 "Alarming situation: Four children reportedly die"

On this news report of the Express Tribune (2014b), eleven people commented, which I also have categorized for better readability.[133]

The first-hand view of "reactions": In terms of the situation caused by the vaccine, a person named Zakir states, that in his children's school, two buses full of students were shifted on an emergency basis to a hospital, which is run by Worker Welfare Board. He offers a "firsthand" view of the situation and tries to validate the news report that it is not false.

Issues of governance: Anam satirically questions, "So much for *Sehat Kā Insāf*." She points out that the PTI's initiative of "Justice for health" in the KPK province shows no progress, though the political party claimed to improve things after power. The party has not done anything extraordinary. [134] Although the party made significant pledges, it could not deliver as the party was ruling the KPK province after winning the general elections in 2013.

The role of media and vaccination: Shahid criticizes publishing the news because it would generate anti-vaccination sentiments in the country. He argues that when doctors and other health officials have clarified "that the measles vaccine is safe and *not* causing these deaths," why the newspaper is justifying "stooping so low and publishing this misleading headline." Shahid further argues that the paper did not realize the potential effects of the report that may "lead to more people refusing vaccination and resulting in more deaths from measles," as "measles causes almost *one million* deaths" in the country annually.[135]

Nonetheless, Jeff Mountain counter-argues to Shahid that needless to say, doctors and health officials declare vaccines safe. Yet a healthy child becomes immediately sick, and eventually die after giving the vaccine. Hence, did that sound safe to him [Shahid]? Mountain further argues that health officials have a career, and mostly, they need to

[133] I have corrected the comments for clarification. For example, its = it is; that's = that is or correction spelling, editing errors.

[134] The party ruled the KPK province after winning the general elections at a provincial level, for the first time in 2013.

[135] The commenter, to give an emphasis, has used the uppercase and I have just changed the words from uppercase to lower case and then italicised them to retain the emphasis.

"protect" additional income, e.g., "payoffs by pharmaceutical companies." Given that he questions Shahid, "What would you expect [from them]? You have a brain. Use it. Do your research."

A few other commentators also criticize Shahid for his claims. Dee responds to Shahid, "Wow, a million [deaths], that is quite a trick considering there were only 14,000 cases in 2012. Sadly, 306 died with measles, not necessarily, from measles." Megan Lane criticizes, too, to Shahid that according to the WHO, in 2011, Pakistan reported less than 5,000 infections, hence, where exactly Shahid brought that number of one million. Taking on Shahid, Kari also argues that the global deaths associated with measles are even not a million: according to the WHO, there are around 122,000 deaths per year. Therefore, Kari suggests it is better not to "assume that the doctors are right; adverse reactions to the vaccine are not uncommon."

Another person with the name "Me" also takes on Shahid, "The latest figures from the WHO show the number of measles cases in Pakistan has increased from 4,000 in 2011 to 14,000 in 2012. Of those, 306 died last year – up from 64 deaths in 2011. One million deaths, eh?"

In this regard, two more commenters question vaccines. First, based on his/her vaccination experience from the USA, Treacy claims that vaccines are unsafe, as her/his son had "a serious vaccine injury." For these "injuries," the USA has set a special fund for paying compensation to these affected families. Furthermore, Treacy claims that the CDC website contains a list of side effects caused by the measles vaccine. Given that how one can consider "mercury, [and] formaldehyde squalene, which are toxic to the body, are good for" one's health? Therefore, "Educate yourself. It is better [to have] sanitation, clean water, and nutritious foods that combat disease."

Second, Dean contends, "Vaccines are a lethal scam. Do not vaccinate if you love your kids. Agenda 21 of the UN [United Nations] wants to reduce the population. So, does the agenda of the New World Order." Moreover, Christina Waldman questions, "I do not find the information as to which measles vaccine and who manufactured the measles vaccine given to the children who died after receiving it, in the article."

12.2.2 Briefly Analyzing the Dialogue

The commentaries described above are like an ongoing virtual group discussion, which may be placed in the broader contexts. Via vaccine, these people contest several ideas and practices. Although the newspapers are in English and limit readership owing to the language barrier, these comments reflect the intensity of the dialogue incited in the country. These commentators are negotiating the vaccine and vaccination. The centers of criticism include the vaccine, vaccination, the media, the national politics, the government, and the global stakeholders (e.g., the WHO). The comments are best to be understood in the wider national and global (geo)political and economic contexts.

These online comments highlight an ongoing contestation and a social conflict surrounding the vaccination program in Pakistan. Is the vaccine safe? What kills the children after receiving the vaccination, if not the vaccine? These are, nonetheless, earnest questions to be raised about the creation of entire vaccination programs. Such reactions reveal something somewhere in the process of vaccination is "wrong."

Some comments are brief yet full of allusions. For instance, one that hints at the New World Order is in the making through vaccination and highlights the vaccine-reproduction connection mentioned earlier in this chapter.

Needless to say, we cannot generalize the sentiments expressed by such commentators to the rest of the country. Nonetheless, the analysis of these comments yields exciting insights about the controversies and points of view about what is going on in the country and how vaccination in Pakistan is dynamic and distinctive from other countries. The question about what is normal and abnormal in the domain of immunization has received plenty of attention from these commentators. These comments reveal how people are negotiating vaccination by finding a "scapegoat." People often need somewhere to go with their anger and confusion and blaming and shaming serve that purpose and make the people doing it feel powerful. Many commentators have anonymized their personal threats yet made their points simply and vividly. Unquestionably, the methodology of these or similar comments can be questioned due to their accuracy, agency, and obscuration: who is behind them? As some comments can be "funded" to deliberately phrase from a specific angle or perspective. Nonetheless, this "paid-comment/content"

phenomenon also signifies playing politics via conspiracy theories—this world of politics occurs on a grand global scale.

Moreover, these suspected reactions of the vaccine also have effects at the local level. Parents become conscious to decide against vaccinating their children. They seek help from their peers to overcome their anxiety and make a rational decision. In the following section, I describe one anecdote in which my interlocutor sought my opinion to have his son vaccinated.

12.2.3 Consequences of Suspected Side-Effects: (Not) Vaccinate a Child?

After this last incident of the vaccine reactions in which four children died, Mr. *Bādal* – one of my interlocutors from village *Rahīmpur* – sought my opinion about the vaccination: should he vaccinate his baby boy? The following description is from my field diary:

> He and his family had been longing to have a son for years, as he had daughters, but no son. It is important to mention that patriarchy is dominant in Pakistan, where the line of succession runs through a male ego. Therefore, *Bādal*, *Samrīn* – his wife – and their respective families were eagerly desiring and making vows for a male baby. Ms. *Samrīn* suffered enormously in that way, as her-in-laws usually, directly, and indirectly, indicated that she had not given them a son. She was always considering herself significantly inferior and more misfortunate than the women with sons. Mr. *Bādal* was also highly worried about having a son. The couple, including the mother of *Samrīn*, made significant efforts to have a baby boy in terms of vows at various shrines, offerings, prayers, supplications, and food regimens.
>
> After four daughters, during conception, Mr. *Bādal* used to bring *Samrīn* for an x-ray to ensure whether it was a male or female baby. After two confirmations that it seemed to be a female baby, he opted for abortion. The first time *Samrīn* agreed. However, after experiencing the pain of abortion, next time, she utterly refused to do so, but an enforced abortion happened. She could not resist, as in most cases, a male dominates decisions at a household level. This enforcement made *Samrīn* ill; she suffered psychologically, emotionally, and physically. Her treatment continued for a couple of months until she fully recovered.
>
> Moreover, her daughters, especially the elder one, often asked them to have a brother. The daughters prayed to God for a brother. The daughters, particularly when looking at someone else's brother, used to mention that they also wanted a brother for their parents. The situation further changed for *Samrīn*, when *Bādal*'s brother's wife gave birth to a son. Everyone was indirectly taunting her. She, while pretending to be brave enough, patiently waited for her turn, and continued to pray.

> Meanwhile, she conceived and refused an x-ray. *Samrīn* and *Bādal* had a severe fight, including a physical assault. She, even then, refused and went to her parents' home for a few months until the phase of abortion was gone. Indeed, *Samrīn* stayed there until her delivery. Fortuitously, this time, she gave birth to a son in a maternity home. It brought great happiness for them, for their daughters and family members. The birth of a son relieved her extreme pressure and shut the mouths of in-laws.

This story of longing to have a son illustrates everyday experiences to comprehend the subtle connections and contexts. This longingness put me in a state of worry. The *Samrīn-Bādal* story quite resonates with the tale of Hussain mentioned earlier, who died – as her mother claimed– due to vaccination in the *Benazīrābād* district. The single child counts as an individual considering quantified models that Adam (2016a) calls Metrics, which are applied in global health projects worldwide. Nonetheless, a child irrespective of gender simultaneously counts as equal to the world for parents, especially for the mother. The hankering to have a child, especially a male baby, further adds importance for the parents.

Thus, on the one hand, I was thinking about them, about their son, and their longing for a son. On the other hand, the making of a vaccination program was sufficiently visible to me after researching this arena for years. Most of the grey areas, such as issues in maintaining the cold chain, were no longer hidden. Indeed, I am not an opponent of vaccination, but I adopt a rational position for sure. The vaccine itself, if administered according to the required protocols such as cold chain maintenance of vaccine and proper injecting into the body, is undoubtedly helpful. However, if there are lapses in the rules, then the vaccine provides no protection but puts the receivers in a precarious position. Knowing all that, I felt numb and could not give a good suggestion despite my intentions. I could only make things more complex and put the responsibility on his shoulders to decide. Although the fact that I did not provide this valuable suggestion made me feel exceedingly bad, there was no other suitable option available except complicating the answer.

All these news stories and the first-hand story of my informant illustrate several aspects of the vaccination program in Pakistan. The claimed deaths resulting from vaccine reactions consequently spread fear and cause anxiety among parents, which ultimately led towards resistance to and refusals of entire vaccination programs. The question of my interlocutor mentioned above is a vivid example of this fear and anxiety. These reports

do have profound effects. Apparently, they have compelled people to think about vaccination and its potential consequences. This situation of parents being anxious and critical is not merely limited to the vaccine itself, but the practice of the immunization. To say it more clearly, people are fearful of improper administration of vaccination.

12.2.4 Food—Not Measles Vaccine

Some vaccine refusals occur due to an association between the measles vaccine and potential fever and body pain. These associations make parents understandably anxious. During fieldwork, several parents complained that their children did not receive treatment for the side-effects of the vaccine, as a vaccine often causes fever and suffering to their children.

In the previous chapter under the heading "mistrust in the government" about *Māī Karmā*, mother of two children, separated from her husband, complained,

> After receiving the vaccine, our children became sick. They got a fever and cried. This sickness bothers us, as the healing, the effects of the vaccine consumed our time. When we go to these people (indicating towards the vaccinators) at their hospitals, they do not give us medicine for it. We, then, make some efforts such as warming clay in the fire and then placing it on the scar of injection (vaccination). We are poor people, work on a daily wage. What should we do then, sit with the children or go and earn something? We need to eat. Work brings us food, not the vaccine. For us, food is essential, not the vaccine.

This statement is specifically about the measles vaccination, but not the full immunization program underway in the country. The quotation relates to the debate on needs and wants. Food is a need – indeed, a basic need – while a vaccine appears to be a want. Food is necessary for the present, while vaccines hold importance for support in the future. What if food is not obtained? Indeed, they cannot imagine a future which is still to come, in which the "disease" would occur, and the child would "suffer". There is a local expression [in *Sindhī*] "*Pait Wāri Lāi Kach Warī Khay Na Mārjy*" (do not kill who is in your lap for the one who is in your belly).* These everyday expressions and experiences need to be considered since they play a significant role in making choices. For this woman, "the child" is a child in the belly while she or other family members are those who are grown and in the lap. They can contribute to the household.

12.3 Concluding Remarks

Tracing the general history of the measles vaccine (MV), this chapter 12 highlighted various perspectives and rationales woven around MV in Pakistan. The weavings reveal scales and types of mistrust. As argued in the earlier chapter, these explanations can better be understood at the backdrop of an ongoing interplay between and among sociocultural, and politico-economic factors. People suspect the "substance" of the vaccine as well as suspect those who administer and advocate the vaccination. This suspicious perception is highly interlinked with the general perception of vaccination, e.g., a "Western plot." In this chapter, I also demonstrated how people negotiated the measles vaccine during an online dialogue on media websites. Based on different orientations, standpoints, and experience, they brought different claims and counterargument either the vaccine is safe or unsafe. These people criticized the media, the government, the vaccine, and its use and global stakeholders. These online sites have emerged as vibrant platforms to context the phenomena of infectious diseases, including the vaccination.

The last chapter, "Summary and Conclusion: Future Perspectives," summarizes and concludes the entire thesis while providing some practical suggestions and recommendations to deal effectively with measles and controversies surrounding the vaccination.

CHAPTER 13: SUMMARY AND CONCLUSION: FUTURE PERSPECTIVES

Microorganisms causing infectious diseases have been challenging humankind at the latest since we began to live in close quarters as agriculturalists around 10,000-12,000 years ago. The current 2020 COVID-19 pandemic—that has overwhelmed the entire world—is a convincing example of those extraordinary challenges. By the mid of August 2020, as I am completing my thesis, the pandemic is still unfolding, having already infected around 22.5 million people and caused 783,000 deaths globally: these figures are constantly changing. As the pandemic progresses, we gradually learn from diverse sources and our firsthand experiences that its velocity of ethical, socio-cultural, and politico-economic implications is significant yet differs considerably at diverse locations. It has substantially affected economies worldwide, disrupted lives, exposed the existing forms of institutionalized inequalities, and highlighted the politics of care.

Considering this difference in impacts that also occurred during the outbreaks of measles around the globe, chapter one dealt with two measles outbreaks that challenged Pakistan, mainly Sindh province, infecting thousands of people and taking lives of hundreds. With a focus on these types of the unequal unfolding of outbreaks, this long-term ethnographic project explored the following central questions. Why does measles still cause outbreaks in the province, especially in rural areas? How do different stakeholders, ranging from local people to global level institutions, perceive and deal with measles? Why are vaccination programs not more effective? And, which ways can anthropology help us understand the occurrence of measles through its unique perspective? These questions were chosen to understand the world in which various forms of structured inequalities are appropriated—these disparities create fertile grounds for several infectious diseases, including measles, to overwhelm specific populations.

For data collection, I employed several ethnographic theories, processes, and methods. The locale of the project was "multi-sited," and it employed the extended case method. As central field sites, two villages—*Rahīmpur* and *Rāmpur*—from two different districts, i.e., *Sakhar* and *Tharpārkar*, both of Pakistan's Sindh province, were selected. Precisely: this chapter laid the entire foundation of the project—the focus, the scope, theories and methods, and the locale.

In chapter two, "Theoretical Framework: Many Anthropologies," I reviewed the relevant literature. Employing the interpretive and the critical approaches in medical anthropology as the major theoretical frameworks, I have also significantly borrowed and benefited from several other theoretical frameworks for conducting this project and analyzing its results. These include "anthropology of infectious diseases," "anthropology of global health," "anthropology at home," "autoethnography," and "native anthropology."

Those theoretical concepts I did employ significantly helped me to develop the central thesis of this project, which is that geopolitical and economic regimes have cleverly and subtly carved out diverse local and global inequalities, which then lead to various health crises, including the measles outbreaks in Pakistan. The existence and specific shape of measles in Sindh province is a result of this unequal distribution of resources, lack and shortcomings of healthcare institutions as well as a dearth of adequate facilities, and the lack of education of lay people about health and effective healthcare, in particular about the benefits and the importance of vaccination.

Furthermore, based on my literature review and my ethnographic study, I call for new subfields: "anthropology of vaccination," "anthropology of Pakistan," and its provinces (e.g., "anthropology of Sindh"), and "medical anthropology of Pakistan." In this work, I have provided constructive criticisms of some of anthropology's significantly cited and discussed theoretical threads and concepts, intending to provoke and invite further debates.

In chapter 3, "Researchlogue: Design, Methodology, and Circumstances Behind Gathering the Data," I discussed the research design and methodology, which provided the base to conduct the research. After making efforts to describe my mixing of methods and to provide personal anecdotes from my field diary, I explained those critical and essential circumstances under which the data were gathered and analyzed. Here the significant considerations were not only the data collection but also the discussion revolved around the ethical boundaries, the study's limitations, problems encountered, and the ways to handle them. This chapter introduced a new method I call *Kachaharī*: although this method exists in the local culture of Sindh (and across South Asia, indeed), it can be termed as a novel method because no social scientist prior to me has used it. It is crucial to mention that I have not used *Kachaharī*, which has colonial roots, but the one that is

rooted in the socio-cultural patterns, especially of Sindh (see chapter 4). It consists of mostly informal and voluntary social gatherings, in which people sit, share, discuss and talk about life: personal, collective, sociocultural, economic, political, religious, news, and other affairs. *Kachaharī* resembles focus groups, yet in this case, the discussion is led by the participants, not the anthropologists. *Kachaharī* brings local knowledge and wisdom into focus and anthropology. I am convinced that this method will add a new perspective to anthropology after challenge the existing methods, such as focus group discussion, which germinated in the "West."

For setting the locale of this project, the fourth chapter, "The Settings - from the Sindh Province to the Selected Villages," paid its attention to historical and ethnographic characteristics of Sindh province, with an emphasis on the two selected villages: *Rahīmpur* and *Rāmpur*. As mentioned in the previous chapter, the underlying reasons to choose these villages were several. After learning that measles is considered as a necessary sacred illness, I wanted to select two villages in Sindh province that had experienced severe measles outbreaks yet differed from each other in terms of religion and geographical location. These significant differences included the fact that *Rahīmpur* village lies in the northern part of Sindh with many more Muslims than Hindus, while *Rāmpur* is in a southern district of the province with a much higher number of Hindus than Muslims. In this way, I could highlight the difference religion makes in the public perception of measles, its proper treatment, and in perceptions of vaccination and vaccination campaigns.

This selection proved pivotal due to providing different perspectives. Although in *Rahīmpur* people call it "*Ur'rrī*," and in *Rāmpur* they name it "*Ourhī.*" Yet the general perception in both villages is that measles is an extraordinary illness, which is a necessary and sacred event. In the former village, there is no specific name among Muslims to demonstrate which particular manifestation of *Mātā* it is; however, in the village of *Rāmpur*, there is a specific name: *Sitālā Mātā*. Furthermore, Muslims observe specific rituals during the course of measles, but they do not perform any worship during their daily lives. In contrast, Hindus do organize and perform worships—*Thadrrī*—fortnightly to invoke *Mātā* to keep her pleased (see chapter 9).

In chapter 5, "the Critical Geopolitical Events: Making Sense of Anti-vaccination Sentiment," I described critical geopolitical events that have affected the immunization activities in Pakistan. This chapter not only traced indelible impressions of geopolitics but also provided a substantial analysis of those that are visible regarding the current state of Pakistan: socio-culturally, politically, and economically. I demonstrated how geopolitical regimes have influenced the appearance of rumors, conspiracy theories, and resistance, as well as caused institutionalized forms of socio-economic and political disparities that result in health problems like outbreaks of infectious diseases and resistance against vaccines and vaccination programs. These programs have received resistance from what is called the "extremist" segment—e.g., the *Tālibān*—in public society, who relate vaccination to ongoing geopolitics, and some religious leaders, who play politics; hence they can be termed as political actors. The officials of the government and global stakeholders hold these "extremists" accountable for the low uptake of vaccination and multiple killings of the vaccinators. However, broader geopolitical and economic factors lie underneath and have germinated the seeds of extremism in the country.

Historically, external problems and internal crises have gone hand in hand in Pakistan's over 70-year history since its formation as an independent state. External events have caused as well as aggravated the internal crises. The impact of British colonization, as described by the renowned economist William Easterly (2006, 298), resulted in "the massacre during partition, four international wars, two genocides, six secessionist[s], and umpteen communal massacres". The results of the aftermath still appear in one form or another. Thereafter, in the 1980s, when the USSR invaded Afghanistan, Pakistan became a vital ally of the USA in a massive covert program to raise and equip an army of Islamic fighters, the *Mujāhidīn,* who eventually turned against the US and greatly fostered global terrorism (Wynbrandt 2009, 202).

The roots of this extremism lie in the 1980s. The impudent attempts to transform the country by Zia-ul-Haq, a dictator who, after a coup, became the President of Pakistan in 1977 after declaring martial law, were supported by external events. These steps led towards a difficult-to-repair rift among the masses. These events are still creating further fractions in the country in diverse forms. After this critical event of producing *Mujāhidīn*,

the running of Pakistan, as historian Ian Talbot argues, never goes beyond the cliché of the three "As:" Allāh, the Army and America (cited by Cohen 2004, 267).

These, undoubtedly, were critical events, which have substantially contributed to present-day Pakistan. For example, these same *Mujāhidīn*, later called Pakistani *Tehrīk-i-Tālibān* (TTP), took over the *Swāt* region of Pakistan in 2008 and executed several people at the *Mingorā's Khoonī Chowk*. They also conducted many assaults on vaccinators and carried out suicide bombings and assaults at public gatherings, mosques, shrines, airports, educational institutions, and army installments.[136]

These past and present events since then have significantly shaped the general perceptions and practices that people in Pakistan hold, and perform, including those about vaccination. These have resulted in competing narratives. Consequently, the extremists maintain their intransigent hostilities and positions against the immunization program.

The sixth chapter, "Health and Illness: Socio-cultural Understanding," revisited and addressed general ideas and practices about health and illness. Understanding these conceptions and practices are essential for deciphering dealings with measles. This chapter describes the socio-cultural understanding of health and illness. Presenting how people make sense of health and illness, I illustrated: (a) people's conceptions of health that refers to the parameters to define what it means to be healthy; (b) the necessary preventive measures that are taken to maintain health; (c) dealing with illness in terms of knowing its causes or etiology and proposing decisions on whether to ignore an illness

[136] The incident in which ten militants attacked Jinnah International Airport in *Karāchī* on 8th June 2014, is a well-known example (Golovnina 2014); the TTP and the Islamic Movement of Uzbekistan (IMU) – an Al-Qaeda linked military organisation – claimed responsibility for this attack. Consequently, on 15th June 2014, the country's army launched Operation *Zarb-i-Azab* – a joint military offensive – against several militant groups in the North Waziristan region along the Afghanistan border. This operation targeted several extremists' outlets including, for instance, the TTP, the IMU, the East Turkestan Islamic Movement, *Lashkar-e-Jhangvī*, *Al-Qāeda*, *Jundullāh* and the Haqqani network. Against this operation, six militants carried out an appalling massacre of schoolchildren of the Army Public School of *Peshāwar* that occurred on 16th December 2014. It was believed that the militants were foreign nationals: one Chechen, three Arabs and two Afghans. This deadly and inhumane assault killed around 150 people, including 132 schoolchildren. The Guardian (2014), a UK's leading newspaper, called this attack "Pakistan's 9/11". Afterwards, several changes took place in the country: they included, lifting its moratorium on the death penalty and authorising military courts by a constitutional amendment. The army launched another country-wide operation called *Operation Raddul Fassād* to target these radicals. These events have a direct impact on the vaccination at least from two perspectives: (a) it does not seem easy for vaccinators to vaccinate children in those areas, and (b) it creates a resentment among many people against the government, including its officials, and the "Western" world.

or consult a specific medical system. People seek health measures by consulting a specific medical system, e.g., *Ayurvedā*, *Unānī-Tib,* or biomedicine, which are greatly shaped by factors such as beliefs, perceptions, economic situation, education, the ill person's gender and the geographical area and accessibility to a medical system. The model's levels do not necessarily function in a unilateral pattern, but they also overlap.

Expounding on the previous chapter 7, "Medical Pluralism in Pakistan: Competing Healthcare System," revisited the medical pluralism in the country. In Pakistani culture, the primary options for dealing with the illness include *Ayurvedā*, *Unānī-Tib*, biomedicine, homeopathy, home-based remedies, and ritual shrine behaviors. Each system encompasses a specific, sometimes overlapping body of knowledge and practices around the questions of conceptualizing, sustaining, and restoring health. Dealing with an "illness," "sickness," or "disease" differs in the form and content of the related etiology, diagnostics, and therapeutic practices. The apparent intention of all the mentioned systems, nonetheless, is the same: alleviating illness-related suffering and restoring people's health.

The country has legally incorporated *Unānī-Tib*, *Ayurvedā*, and homeopathic traditions into its healthcare system. There are recognized colleges, which offer education and degrees. Nevertheless, as compared to these systems, the government has placed the most emphasis on the biomedical healthcare system, which was introduced by the British in the old India. This system significantly impacted on the folk healthcare system (Zaidi 1988; Banerji 1981). Despite the government's substantial attention to the biomedical healthcare system, there remain several critical issues in it, including a dearth of health facilities; unemployment of doctors; lack of motivation in medical staff, particularly those who are working in rural settings; the monopoly of pharmaceutical companies and their profit-center approaches; and, most importantly, lack of clean drinking water and proper sanitation. The single most crucial healthcare intervention is the provision of clean water; the Pakistani government has failed to provide that for too many of its people despite investing millions in hospitals and biomedicine. There is a "class-bias" (Zaidi 1988, 2), which reflects the overall patterns of the economy. That means people holding less economic and political power are more prone to these forms of institutionalized webs of inequalities and violence, and their voices remain muted. Herein, I sought to make these voices heard.

Although the healthcare system of Pakistan is struggling with significant challenges, the country is on the list of those countries that do not spend the required resources. From 2000-01 to 2019-20,[137] the average percentage of its GDP that Pakistan spent on health care has never even reached 1.00 percent (Government of Pakistan 2016b, 2017b, 2019b). Only during the last two budgets (2017-18 and 2018-19), the country has spent 1.2 and 1.1 percent of its GDP. These insufficient expenditures do not allow the construction of adequate and effective healthcare facilities, do not deal with logistical issues in vaccination, improve hygiene and sanitation, overcome illiteracy, nor remedy public lack of knowledge. Undoubtedly, these issues merit immediate action.

In contrast, the government regards a rapid increase in the population to be the main reason for the deficiencies of the healthcare system. The government contends that it has made efforts; it identifies the following: "the high population growth, uneven distribution of health professionals, deficient workforce, insufficient funding and limited access to quality health care services" (Government of Pakistan 2017, 187). This quote makes clear that at least some in the government understand the problems, yet in general, the government does little to alleviate them.

In the eighth chapter, "Measles Worldwide: Epidemiological and Biomedical Perspectives," I presented certain epidemiological data about measles at the global, South Asian, and Pakistan levels. Despite the global measles and rubella initiative (M&RI), these data demonstrate a worldwide increase in cases of measles, including in Pakistan. Measles incidence rates have increased from an average of 24.6 per one million population during 2000–2009 to an average of 80.4 during 2010–2018 (Mere et al. 2019). This resurgence has received attention in the media and by the global stakeholders who view measles as a challenging infectious disease that can rapidly spread from one person to another, from one country to another. Stakeholders, such as the WHO, have already accepted that the elimination of measles seems highly challenging while linking the continuous occurrence of measles to local belief systems.

Yet these stakeholders have paid insufficient attention to the network of inequalities that are contributing to the resurgence of measles. A belief system is not the sole reason for measles outbreaks, because most of the countries with a high incidence of measles still

[137] According to this document, these are expenditures for March-July 2020.

suffer from the effects of colonization and their economic and political structures are still insufficient and inappropriate to run these countries effectively. This insufficiency and inappropriateness create and multiply (standing) webs of inequalities, such as dependence on foreign aid and support, which have further critical consequences, including increasing people's sense of dependency and damaging their dignity (see chapter 4, which contains a description of how children were carrying empty pots during a drought in the Thar Desert).

After delineating biomedical and global perspectives on measles, chapter 9, "Measles from a Cultural Perspective: Emic Perceptions and Practices," focused on measles in Sindh province: it detailed the positions, perceptions, and practices of local people, *Hakīm*, and government officials relating to measles, as each stakeholder views and negotiates the phenomenon of measles differently and then takes measures accordingly. From the local standpoint, measles—as a necessary sacred illness—needs to be handled by observing the ritual of *Chandā*, in which a child is kept under a *Chillā* (quarantine), and certain stringent "dos" and "don'ts" are carefully observed. For these ideas and practices, government officials and doctors blame local people—and yet there is some wisdom in such practices, most notably in the quarantining of the ill. It is a fact that most children recover from measles, so often, the best that parents can do is keep others from becoming infected as they care for their sick child.

Narrowing the focus further, in the tenth chapter, "Two Measles Outbreaks and Multiple Narratives," I paid thorough attention to the measles outbreaks of 2012-13 and the different perspectives that emerged around them. I discussed how a negotiation process started when local politicians paid money as well as supplied an ambulance to the local people for bringing their sick children to biomedical hospitals. Moreover, the same politicians wrote letters to the federal government concerning measles, which initiated discussions and debates that took place in the Senate, the Upper House of Pakistan's Parliament. Consequently, the *Wafaqi-Mohtasib* (Federal Ombudsman) formed a committee to pay attention to the matter and find out the reasons for these outbreaks. The committee consulted several stakeholders, including the governmental institutions (about health and economy), and global stakeholders, such as the WHO. The Federal Ombudsman's report concludes that the most crucial cause of the measles outbreak was a "failure" of the Expanded Programme on Immunization (EPI) system, which is further

deteriorating. Vaccine coverage is critical yet differs from province to province: *Punjāb* province, with around 60 percent coverage, was better than the rest of the provinces, where the coverage is around 50 percent.

The EPI coverage in Pakistan is unacceptably low and lacks appropriate accountability. Nobody has been held responsible, while the visible difference between reported use of the vaccine and the outcomes requires accountability because the health administration, district administration, and provincial governments are responsible for ensuring the coverage. Such stakeholders should be held accountable for this failure in performance. As an EPI district official during a *Kachaharī* with me claimed "(…) The lack of sincerity, commitment, and ownership of the health officials at the service delivery level is the major reason for the outbreak."

Moreover, there is a lack of a reliable, active surveillance system. Such a system should be activated at the national, provincial, and district levels; otherwise, the signals cannot systematically reach the health managers. Due to this lack, the outbreak gets reported first in the media. Moreover, the lapses in the cold chain make the quality and efficacy even of the appropriate procured vaccines questionable. Further challenges include persistent load-shedding and insufficient investment in the EPI infrastructure at the provincial level. Almost all trained human resources were shifted to polio, considering it as a more pressing issue—the focus results in a lack of attention to other diseases such as measles.

Chapter 11, "Vaccination and Anti-Vaccination Campaigns: Competing Perspectives," dealt with the aforementioned significant links between perceptions about vaccination and critical geopolitical events — as I showed, the immunization program has been facing multiple challenges in the form of controversies and tensions. Although there are efforts to eliminate infectious diseases and overcome suffering, at the same time, the country is facing anti-vaccination movements that reveal a different ideology. To recap from previous chapters, the perception had it that vaccination is a "Western plot" or a conspiracy against Muslims, so it holds some "hidden interests." This perception became a reality in 2011 when the American CIA used a fake hepatitis vaccination drive as a cover in *Abbotābād* city for discovering the location of Osama-bin-Ladin. The agency hired a local doctor named Dr. *Shakīl Afrīdī*, who is still in jail on charges of treason against the

country. This campaign was termed as a “vaccination suicide” in Pakistan. Afterward, the vaccination teams came under attack, and extremists killed more than 100 vaccinators. Evidently, ideas woven around vaccination have roots not only in rumors but also in realities.

These perceptions and practices have challenged the elimination of communicable diseases such as polio and measles. There is a growing number of parents who refuse a vaccine as well as resent vaccination. These perceptions result in children with no vaccination. For instance, in 2015, the *Dawn* newspaper published a report stating that around 440,000— including 75,000 children in Sindh—of the country’s children never received a polio vaccine (Mansoor 2015b). Although the figures are about the polio vaccination, they precisely demonstrate the state of vaccination in the country. If polio vaccination is in such a critical state after a significant focus of the governmental and global stakeholders, then clearly an entire immunization program such as that for measles can be in critical condition.

Owing to this, and to recap further, the country has remained under the limelight at the global level. At the beginning of the 2000s, the country was criticized due to transmitting polio to approximately 24 formerly polio-free countries, as most of those cases had originated in Pakistan. Consequently, the Saudi government made vaccination mandatory for Pakistani travelers to Saudi, especially for the Hajj and Umrah, and the WHO also made it compulsory for Pakistanis who would like to travel abroad to show a vaccine card at airports, as explained in chapter 11.

Necessarily, after describing the vaccination endeavor, I also explicated the historical development of the measles vaccine (MV) and then traced its usage in Pakistan in chapter 12, “Measles Vaccine: From General to Particular.” I illustrated the rumors and conspiracies about suspected side effects related to measles vaccination. Analyzing contemporary media reports, the chapter offered an understanding of how people link measles vaccination to detrimental health reactions in children, and how they discuss news reports of side-effects online on the websites of the English newspapers of Pakistan.

This anthropological study of the case of vaccination revealed that various perspectives and rationales are woven around it. These weavings demonstrate scales and types of trust and mistrust, as explanations relate to socio-cultural factors, economic aspects, and geo-

bio-political connections. Yet the weavings are inseparable, as there are significant interlinkages and entanglements among them. On these grounds, family planning was considered as a "Western plot," "un-Islamic," and *Harām* (something forbidden in Islam) in Pakistan; all of that cultivated fertile grounds to suspect the immunization program. I elaborated that such perspectives should further be apprehended in the context of several interconnected heterogeneous domains: the sociocultural, economic, political, and historical backgrounds. Considering the qualitative aspects of vaccination that I have outlined herein would significantly help to create an effective vaccination program in the country.

Two Perspectives on Measles: Summing Up

In this thesis, I examined measles from two perspectives—as a disease and as an analytical window to the world. From the first perspective, I demonstrated that the occurrence of measles outbreaks is related to structured disparities that are, in turn, related to socio-cultural, political, and economic factors that occur at local, national, and global levels. These factors can be individual or collective. From the second perspective, measles as a window has substantially helped me to understand the interplays among these factors. Understanding forms of institutionalized vulnerabilities and inequalities has assisted me in reaching that macro-level where policies are formulated, and decisions are taken, which afterward can produce certain forms of "structural violence" at national and local levels. Put simply, I elucidated that measles offers a platform to observe and analyses the links between micro and macro levels, local and global scale, and particular and general: how these different worlds are interconnected, which seem different yet significantly affecting each other. Through measles, it has become possible to study and understand various forms of social negotiations, tensions, and contestations. One can see the currents of trust and mistrust occur between and among them.

Measles outbreaks are effects of continuous socio-cultural, economic, and political (local and global as well as present and past) processes. Hence, the outbreaks can best be understood against a broader and historical spectrum of economic and (geo)political inequalities, which are enormous and prominent, persistent, and deepening.

In short, I argued that contemporary inequalities are the result of disproportionally distributed wealth. First, these inequalities provide a fertile ground for diseases, such as

measles, to cause an outbreak due to inappropriate vaccination. Second, disparities shape who will contract the virus and be significantly affected. Third, these variations affect local people's perception of whether or not to view the disease as a problem severe enough to bring the infected child to a biomedical center. Fourth, because they are economically poor, local people do not want to give up their daily wages to take the time to visit a hospital. Fifth, there not enough healthcare facilities and providers to deal with measles, often rendering moot the question of whether to go to a hospital or not, thereby creating a sort of "Catch 22". These interwoven factors make their implications challenging to understand; thus, the Pakistani government finds it easier to "blame the victims" and blame population growth than to effectively deal with the problem.

In this thesis, I presented challenges to existing customary ways of writing and to the theoretical as well as methodological orientations of the discipline, as well as to the prevailing modes of politics and governance at national and international levels. I presented some of these challenges in the following section.

13.1 Practical Suggestions and Recommendations

I will present my practical suggestions after making two points, one theoretical and one practical.

Theoretically, much attention has been paid to the critical medical anthropology school of thought, but issues in applying critical frameworks to low-income countries have received insufficient attention. Insufficient attention has been drawn to the risks and precarity that may emerge for specific anthropologists after employing a critical framework. Every researcher—especially those who come from low-income countries where several (geo)political risks already prevail—can not analyze a phenomenon from a critical perspective without inviting serious risks and dangers. Although the work on this direction has already started, there is a vast gap available documenting and exploring these experiences by conducting critical (auto-)ethnographies of the scholars at risk.

Practically, global stakeholders, such as the USA, should refrain from policies and practices that have disturbing ethical and political implications, such as withholding foreign aid or granting it for political reasons such as gaining power in a particular region. Such policies adversely affect the lives of millions of people. These stakeholders should not misuse life-saving endeavors like vaccination programs. Since life cannot be

separated from politics, in my view, the solution cannot be to ban politics from health but to install the right politics (such as allotting more than 1% GDP to the health sector). Yet I suggest geopolitics and vaccination should be separated to that extent that one may not misuse the life-saving project.

The government of Pakistan should provide people with the required infrastructure (including clean water and adequate sanitation), education, and healthcare facilities. The perception and practice of measles as a sacred illness are stronger in the rural areas than the urban areas, in part due to local culture and in part to unavailability and inaccessibility of the said facilities or mistreatment upon arrival there. Regarding this local dealing with measles as irrational and superstitious makes it easy for the government to blame the victims instead of itself for low vaccine uptake and measles outbreaks.

The government should build the capacity of vaccinators that should significantly focus on the necessary information: what the vaccination is and why it is necessary. Many vaccinators are unaware of the advantages of immunizing children and are therefore unable to explain them to reluctant parents. Nor do they know the ingredients of vaccines, leaving more unanswered questions. The second area of training should be the roles and responsibilities of the vaccinator. Some of them lack awareness about the geographical boundaries of their field and their responsibilities therein. The health of a nation can significantly depend on them.

Thus, the vaccinator should be provided with practical transport to reach distant areas, and with better pay. Given that federal level supervising teams travel in air-conditioned vehicles and are well-paid, it is necessary to significantly raise the salaries of vaccinators and provide equally comfortable transport for them, as they are the ones on the ground facing severe challenges such as harsh weather and threats against their lives.

The government should also better maintain the cold-chain system. In areas where electricity is unavailable, the government should find viable means, such as solar-powered batteries, to maintain the required temperature of vaccines. These measures are particularly necessary at the bottom level, i.e., the Basic Health Units (BHUs).

Additionally, the functioning of the biomedical healthcare system should be improved. The staff should be trained in how to politely and ethically deal with people in respectful and culturally sensitive ways. Their improper dealings with locals also contribute to anti-biomedical and anti-government sentiments. Lay people see these healthcare providers as the faces of the biomedical system and the government. For effective capacity building, the government may engage specialists like anthropologists, who are well-positioned to bring the otherwise unheard perspectives of local people to the notice of health officials, including the government.

The government should engage social scientists, including anthropologists, not only in the making of the vaccination program at the policy level but also at the delivery level. These scientists can help to address the areas related to misinformation and mistrust. The government must understand that health is not the domain of medicine only but has multiple aspects that require a multidisciplinary approach.

Besides, there is a need to sensitize the media about reporting on outbreaks of infectious diseases, especially on the suspected reactions to vaccines. The media should publish well-researched news reports on such critical themes, engaging social scientists in their reporting process.

It is also necessary that the government revisit its relationship with its citizens. For building a trustworthy relationship, the government should eliminate all forms of corruption that are occurring at the federal to the union council (UC) level.

The government should revisit the "development" budget as related to infrastructure, education, and health. Right from the independence of the country, the health budget has hardly crossed one percent of the country's gross domestic product (GDP), except for the last two years (2018-19). In contrast, the country has spent too much on the defense sector. It is highly suggested that the government should significantly revise its budget and allocate enough resources to infrastructure, education, and health.

There is a dire need to inaugurate more healthcare facilities and produce more healthcare providers. As suggested above, revisiting the health budget would allow the government to increase facilities and produce providers sufficiently.

Moreover, it is indispensable that the government utilize the research conducted by social scientists, including anthropologists, as well as allocate enough resources to facilitate further research. The decisions should be based on thoroughly researched evidence.

Rumors and conspiracy theories are social phenomena. These also emerge and spread from person to person under specific circumstances like viruses (I. Ali 2020d, g); thus, the government and the planners of vaccination should pay close attention to what I call *epidemiology* of rumors and conspiracy theories.

Many of my suggestions seem idealistic, yet I believe that with sufficient effort and will, they can be achieved.

ABSTRACT

The subject matter of this long-term ethnographic research is two measles outbreaks that occurred in 2012-13 in Pakistan—particularly affecting Sindh province—in which thousands of children contracted the virus, and a few hundred died. The outbreaks due to their scale received significant attention from a complex array of stakeholders who enacted their authority and displayed their interwoven yet competing narratives and agendas around measles. Paying close attention to these processes of negotiation and contestation, this project explores these narratives and reasons behind the continued occurrence of measles in Sindh. It looks at measles from two perspectives: as a disease and as an analytical window on the social world, where inequalities are produced, negotiated, and reworked.

I argue that measles outbreaks are, on the one hand, a result of several chronic disparities such as the improper distribution of economic resources, inadequate and ineffective healthcare facilities, and lack of awareness about the benefits of vaccination. These inequalities occur at local, national, and global levels. On the other hand, measles as an analytical window to the world offers a view into the domain of human relationships, where an interplay between these levels occurs, narratives are formulated, and inequalities are produced and maintained.

For this project, I conducted ten months of ethnographic fieldwork in Pakistan in 2014, with two short-trips in 2015 and 2017. Although this is a multi-sited project, I mainly focused on two villages in Sindh province—*Rahīmpur* from *Sakhar* district with a largely Muslim population, and *Rāmpur* from *Tharpārkar* district with a predominantly Hindu population. The villages were selected due to their contrasts both in terms of religion and because the former was profoundly affected, while the latter village was less severely affected by two consecutive measles outbreaks in 2012-13. *Rāmpur* village was also chosen due to its location in the Thar Desert and constant media attention to that entire area because of the deaths of children associated with malnutrition and measles.

To explore the processes of construction and negotiation around how to make sense of these outbreaks, I employed several ethnographic methods, including participant observation, interviews with key interlocutors, autoethnography, and a new method that I developed and called *Kachaharī,* which has its roots in the local socio-cultural patterns. Although *Kachaharī* is similar to focus group discussions, it differs significantly in terms

of the discursive authority during the discussion, as it is the local people who drive the discussion.

Theoretically, I have substantially borrowed and benefited from several theoretical approaches and concepts, including the interpretive or meaning-centered approach, the critical approach in medical anthropology, "anthropology of infectious diseases," "anthropological studies on global health," "anthropology at home," and "autoethnography;" and "native anthropology." Within these approaches, I have utilized various theoretical concepts, including "structural violence," "social suffering," "critical events," and "global assemblage." Furthermore, based on my literature review and my ethnographic study, I call for new subfields: "anthropology of vaccination," "anthropology of Pakistan," and its provinces (e.g., "anthropology of Sindh"), and "medical anthropology of Pakistan." I intend to provoke critical discussion based on my critical reflections and proposals of new strands of literature within anthropology, especially medical anthropology.

This body of literature framed my perspective for comprehending how institutionalized forms of inequalities and structured vulnerabilities shape specific perceptions and practices about measles and vaccination. I tackle the questions of why local people perceive measles as a necessary sacred illness and vaccination as a "Western plot," and how they express forms of institutionalized disparities through refusing and resisting vaccination and weaving rumors about it. The literature informed my analysis to help me understand what lies behind conspiracy theories, such as vaccination as a "Western plot" or that the measles vaccine causes side effects, including deaths. The core argument of this thesis is that these perceptions and practices should be comprehended within a broader context of economic and (geo-) political situations. Politics surround measles and vaccination at different levels—the local, national, and global. For instance, a local woman refuses to vaccinate her children because the government does not supply her with an "income card"; local people's perception that vaccination is a "plot" became a reality after a "fake" vaccination drive in 2011 in Pakistan designed to discover the whereabouts of Osama-bin-Ladin. Government officials and global stakeholders consider local people responsible for the outbreaks due to holding "traditional" beliefs, and for low vaccine uptake due to refusing vaccination for what locals consider to be "valid" reasons.

Nonetheless, I argue that the structured forms of inequalities shape these local ideas and practices. Therefore, a comprehensive understanding of the economic and (geo)political context of ideas and practices of vaccination is essential for helping to improve immunization uptake in Pakistan and elsewhere. Precisely, for effectively dealing with measles and changing local perceptions about vaccination, the government and the global stakeholders must minimize the existing economic and political disparities, provide people with adequate and effective healthcare facilities and services, train and facilitate vaccinators, and separate life-saving medicine—including vaccination—from politics.

ZUSAMMENFASSUNG

Gegenstand dieser ethnografischen Forschung sind zwei Masernausbrüche, die 2012-13 in Pakistan – insbesondere in der Provinz Sindh – auftraten und bei denen tausende Kinder an dem Virus erkrankten und einige hundert starben. Aufgrund des dramatischen Ausmaßes erhielten die Ausbrüche große Aufmerksamkeit von unterschiedlichsten Interessengruppen, die ihre jeweiligen Autoritäten ausspielten und ihre verwobenen, aber konkurrierenden Erzählungen und Agenden rund um Masern ins Rennen führten. Im Rahmen der vorliegenden Untersuchung werden die Narrative und Argumentationen für das anhaltende Auftreten von Masern in der Provinz Sindh unter besonderer Berücksichtigung dieser Aushandlungs- und Streitprozesse untersucht. Masern werden aus zwei Perspektiven betrachtet: als Krankheit und als analytisches Fenster zur sozialen Welt, in der Ungleichheiten erzeugt, verhandelt und überarbeitet werden.

Ich gehe davon aus, dass Masernausbrüche zum Einen auf chronische Unterschiede, wie die unangemessene Verteilung wirtschaftlicher Ressourcen, unzureichende und ineffektive Gesundheitseinrichtungen und mangelndes Bewusstsein für die Vorteile von Impfungen, zurückzuführen sind. Diese Ungleichheiten treten auf lokaler, nationaler und globaler Ebene auf. Zum Anderen bieten Masern als analytisches Fenster zur Welt einen Blick in den Bereich menschlicher Beziehungen, in dem ein Zusammenspiel zwischen diesen Ebenen stattfindet, Erzählungen formuliert und Ungleichheiten erzeugt und aufrechterhalten werden.

Für dieses Projekt führte ich 2014 zehn Monate ethnografische Feldforschung in Pakistan durch. Zusätzlich sammelte ich bei zwei Kurzaufenthalten in den Jahren 2015 und 2017 weitere Daten vor Ort. Obwohl es sich um ein Projekt mit mehreren Standorten handelt, konzentrierte ich mich hauptsächlich auf zwei Dörfer in der Provinz Sindh: Rahīmpur im Bezirk Sakhar mit einer weitgehend muslimischen Bevölkerung und Rāmpur im Bezirk Tharpārkar mit einer überwiegend hinduistischen Bevölkerung. Die Dörfer wurden aufgrund ihrer religiösen Kontraste ausgesucht und weil das Erstere stark betroffen war, während das Zweitere 2012-2013 weniger stark von zwei aufeinanderfolgenden Masernausbrüchen betroffen war. Das Dorf Rāmpur wurde auch aufgrund seiner Lage in der Thar-Wüste und der anhaltenden medialen Aufmerksamkeit für dieses Gebiet im Zusammenhang mit starker Kindersterblichkeit aufgrund von Unterernährung und Masern ausgewählt.

Um zu untersuchen, wie diese Masernausbrüche im Rahmen von Konstruktions- und Aushandlungsprozessen mit Bedeutung aufgeladen werden, habe ich unterschiedliche ethnografische Methoden angewendet, darunter: Teilnehmende Beobachtung; Interviews mit regional einflussreichen Gesprächspartnern; Autoethnografie und eine neue Methode, die ich entwickelt und *Kachaharī* genannt habe und die ihre Wurzeln in lokalen soziokulturellen Mustern hat. Kachaharī ähnelt in seiner Form Fokusgruppendiskussionen, jedoch unterscheidet es sich in Bezug auf die diskursive Autorität während der Diskussion erheblich, da es die Menschen vor Ort sind, die die Diskussion vorantreiben.

Zur theoretischen Bearbeitung des Themas habe ich verschiedene Ansätze und Konzepte übernommen und für das vorliegende Projekt und nutzbar gemacht, darunter: den *Interpretativen oder Bedeutungszentrierten Ansatz*; den *Kritischen Ansatz in der medizinischen Anthropologie*; die *Anthropologie von Infektionskrankheiten*, *Anthropologische Studien zur globalen Gesundheit* und die *Anthropology at Home* sowie die *Autoethnographie* und die *Native Anthropology*. Im Rahmen dieser Ansätze habe ich verschiedene theoretische Konzepte verwendet, darunter: *strukturelle Gewalt; soziales Leiden; kritische Ereignisse* und *globale Assemblage*. Darüber hinaus füge ich anhand meiner Literaturübersicht und meiner ethnografischen Studie neue Themenbereiche zum anthropologischen Diskurs hinzu: *Anthropologie der Impfung*; *Anthropologie Pakistans und seiner Provinzen* ("Anthropologie Sindhs") und *Medizinische Anthropologie Pakistans*. Mein Ziel ist es, auf der Grundlage meiner kritischen Überlegungen und Vorschläge für neue Literaturstränge in der Anthropologie, insbesondere der medizinischen Anthropologie, eine Diskussion zu diesen Themen zu provozieren und zu forcieren.

Die oben angeführten theoretischen Konzepte haben mich dabei unterstützt, zu verstehen, wie institutionalisierte Formen von Ungleichheiten und strukturelle Schwachstellen spezifische Wahrnehmungen über Masern und Impfungen beeinflussen. Ich beschäftige mich mit der Frage, warum die Menschen vor Ort Masern als notwendige heilige Krankheit und die Masernimpfung als „westliche Verschwörung“ wahrnehmen und wie sich Formen institutionalisierter Disparitäten zeigen, indem Impfungen abgelehnt und Gerüchte darüber gewoben werden. Ebenso half mir die Literatur dabei, Verschwörungstheorien auf einer analytischen Ebene zu bearbeiten, um zu verstehen,

wie Impfungen als „westliche Verschwörung“ konstruiert werden oder Narrative über Nebenwirkungen des Masernimpfstoffs entstehen.

Das Hauptargument der vorliegenden Studie ist, dass diese (scheinbar nur medizinischen) Wahrnehmungen in einem breiteren Kontext wirtschaftlicher und (geo-) politischer Situationen verstanden werden sollten. Masern und Impfungen berühren unterschiedliche politische Ebenen: lokal, national und global. Zum Beispiel weigert sich eine Frau vor Ort, ihre Kinder zu impfen, weil die Regierung ihr keine „Einkommenskarte“ zur Verfügung stellt. Die Wahrnehmung der Bevölkerung, dass Impfungen eine „Verschwörung“ seien, wurde nach einer „gefälschten“ Impfaktion im Jahr 2011 in Pakistan Realität, um den Aufenthaltsort von Osama-bin-Ladin herauszufinden.

Regierungsbeamte und globale Interessengruppen betrachten die lokale Bevölkerung aufgrund ihrer„traditionellen“ Überzeugungen, der damit verbundenen Verweigerung der Impfung und der daraus resultierenden geringen Durchimpfungsrate als verantwortlich für die Ausbrüche. Aus Sicht der Bevölkerung handelt es sich um rationale Gründe.

Ich zeige auf, dass die strukturellen Formen von Ungleichheit die lokalen Ideen und Praktiken prägen. Daher ist ein umfassendes Verständnis des wirtschaftlichen und (geo) politischen Kontextes von Impfideen und -praktiken von wesentlicher Bedeutung, um die Akzeptanz von Impfungen in Pakistan und anderswo zu verbessern. Gerade um effektiv gegen Masern vorzugehen und die lokalen Wahrnehmungen zum Thema Impfungen zu verändern, müssen die Regierung und die globalen Interessengruppen die bestehenden wirtschaftlichen und politischen Ungleichheiten minimieren, den Menschen angemessene und effektive Gesundheitseinrichtungen und geeignetes ausgebildetes Impfpersonal zur Verfügung stellen und nicht zuletzt lebensrettende medizinische Maßnahmen vom Feld der Politik trennen.

EPILOGUE

I conducted this research mainly in 2014. After that, several extraordinary and critical events have occurred across the world, including in Pakistan. Worldwide, the first and foremost event is the ongoing global pandemic of COVID-19, which has impacted us all (see, for example, I. Ali 2020a, b, c, d, e, f, g; I. Ali and Davis-Floyd 2020; Davis-Floyd, Gutschow, and Schwartz 2020; Manderson and Levine 2020; I. Ali and Davis-Floyd 2020, unpublished). In our lifetimes (as many would agree), we have never seen such an extraordinary viral outbreak, which has exerted overwhelming impacts on our minds, socio-cultural systems, economies, and political conditions. At the time I am writing this epilogue (August 2020), Pakistan is amidst the COVID-19 pandemic that has to date infected around 291,000 people and caused over 6,000 deaths: Sindh province stands at the top, where the virus has infected around 125,000 people. As with measles, rumors, conspiracy theories, and politics have surrounded this new outbreak (I. Ali 2020a, g; I. Ali and Davis-Floyd 2020; I. Ali, Salma and S. Ali, unpublished).

Furthermore, in the beginning of 2019, Pakistan reported outbreaks of dengue and HIV in *Punjāb* and Sindh province. One *Taluko* (subdistrict) of Sindh's *Lārrkānno* district reported over 1,000 cases of HIV in the recent past (I. Ali 2019a, c). Many of the affected were children: the youngest case was of a six-month-old infant. After the outbreak, the stigma related to the virus panicked people of the area. Sadly, one husband killed his wife while alleging that she had illegitimate relations with another man and that this was how she contracted the virus (Ibid.). Moreover, hepatitis and malaria are endemic in the country. Pakistan and Egypt are the two major contributors at the world level, as approximately 80% of the world's hepatitis patients live in both countries (I. Ali 2019c; Ashraf and Ahmad 2015).

Outbreaks of the stated infectious diseases can also be seen and analyzed against a background of constant economic and political inequalities between and within countries. These inequalities create structured vulnerabilities for a specific population to contract viruses, and these infections increase the suffering further. Pakistan constitutes a persuasive example of such persistent inequalities. Due to these disparities, I write elsewhere that COVID-19 may overwhelm Pakistan (I. Ali and S. Ali, in press). Although it is too early to anticipate, the pandemic has already started affecting the country.

Given the ethical, socio-cultural, and politico-economic implications of the pandemic, will it positively or negatively affect local and global perceptions of the structured forms of disparities—especially the ideas and practices of "oppressors" who substantially control resources? (I. Ali, unpublished). The question is not only applicable in the Pakistani context, but it can also be raised at the broader level, as I indicated in chapter 1 about the global level contexts that also result in several forms of structured inequalities. This is a complex question that needs detailed research—on which I will focus in the future.

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ANNEXURE 1: PHOTOGRAPHS FROM THE FIELD

Photograph 1: Mobile Team Vaccinating Children in a *Semi-Katchā* House in the *Rahīmpur* Village

Photograph 2: An Outreach Team Vaccinating Children at Under Construction Mosque Near the *Rahīmpur* Village

Photograph 3: The Cooler Containing the Vaccine and a Vaccinator Maintaining the Record District *Sakhar*

Photograph 4: A Male Vaccinator Administers a Vaccine to a Child in District *Sakhar*

Photograph 5: A Female Vaccinator Administers a Vaccine to a Child in District *Tharpārkar*

Photograph 6: A Mobile Vaccination Team Vaccinates Children Near the *Rahīmpur* Village

Photograph 7: Mobile Teams Vaccinating Children in the Outskirts of Mīthī City, *Tharpārkar*

Photograph 8: Mobile Teams Vaccinating Children in the Outskirts of *Mīthī* City, *Tharpārkar*

Photograph 9: Mobile Teams Vaccinating Children in District *Tharpārkar*

Photograph 10: Mobilizer Announcing the Vaccination at an *Otāq* of Near the *Rahīmpur* Village

Photograph 11: A Fixed Vaccination Team at the District Headquarters Hospital, *Mīthī* City, *Tharpārkar*.

Photograph 12: A Vaccinator on his Motorbike in Premises of the *Rahīmpur* Village

Photograph 13: Government and WHO Officials the air-conditioned Vehicle Followed by an Escorting Police Jeep in a Village of District *Sakhar*

Photograph 14: Government and WHO Officials Inspecting SIAs Drive Under a Police Security in a Village of District *Sakhar*

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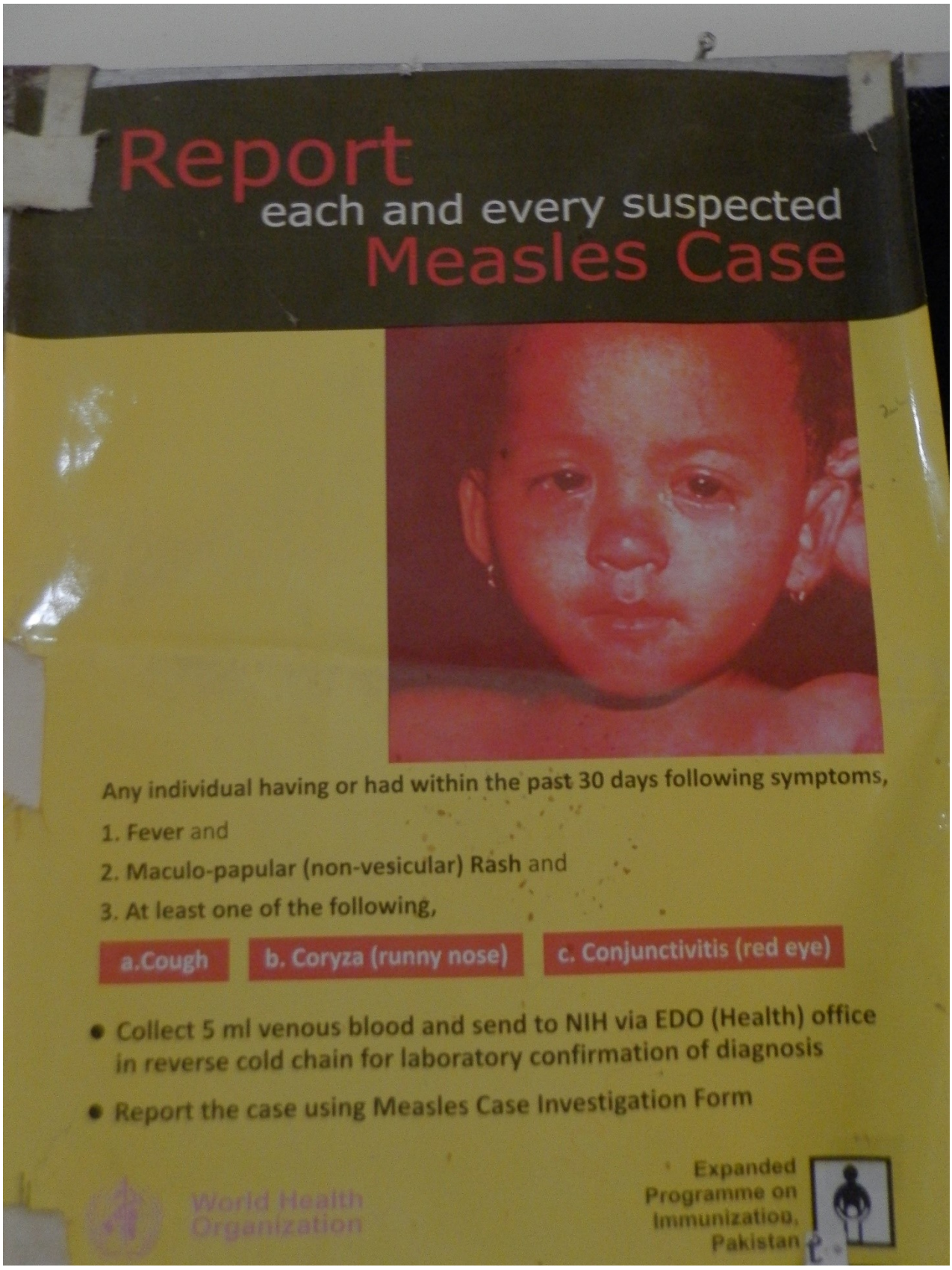
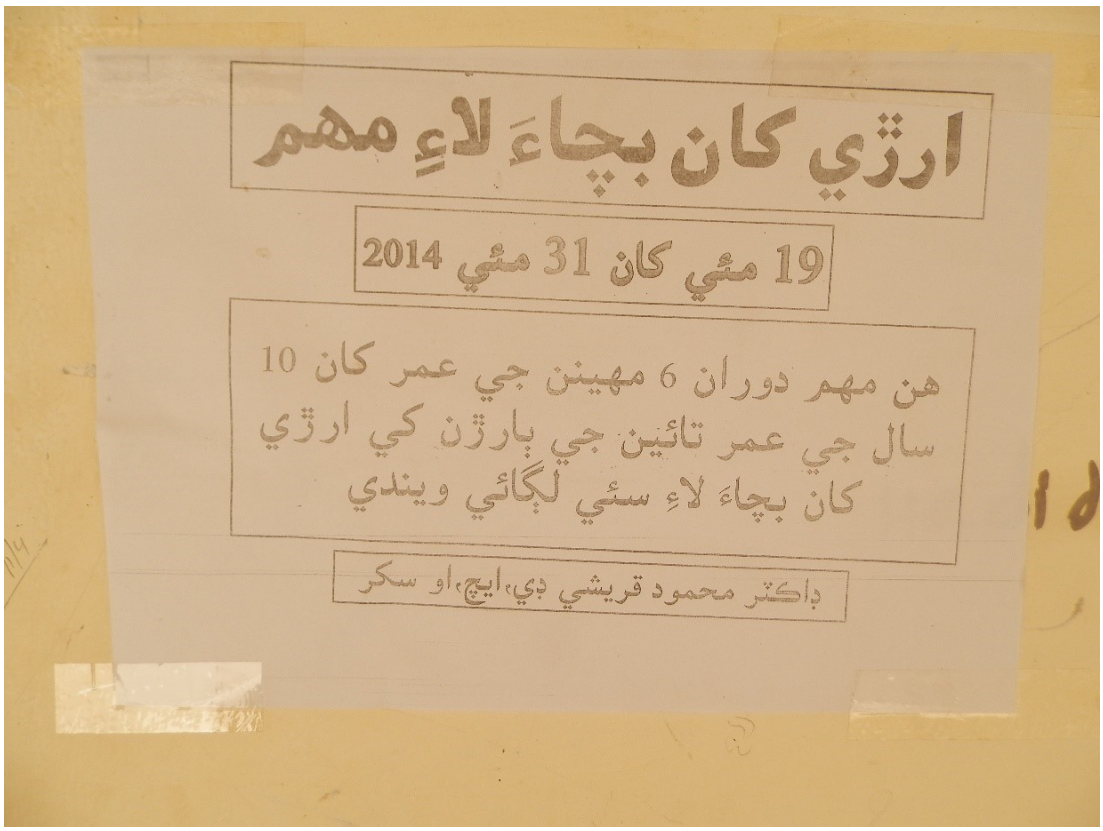
Photograph 18: A Government Supervisor Inspects the SIAs in District *Tharpārkar* and Briefs Me.

Photograph 19: A Brochure of the Government and WHO to Report Measles Cases at a Governmental Health Facility



Photograph 20: Banners About SIAs Against Measles in District *Sakhar20*

Photograph 21: A Governmental Notice About SIAs Against Measles in District *Sakhar*



Photograph 22: A Brochure of the INGO World Vision about Eliminating Measles in the Sindhi Language

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Photograph 57: Children of the *Rāmpur* Village Raise Their Hands Who Received the Measles Vaccine in SIAs

Photograph 58: Vaccination Record in the Sindhi Language "To Fulfil your Responsibility, to Vaccinate Your Children as Per Schedule."*

ANNEXURE 2: MEDICINAL PLANTS

Table 2 Inventory of local knowledge regarding medicinal plants of Thar

S. N^{O}	BOTANICAL ORIGIN	PART USED	USED FOR
1	*Abrus precatorius*	Leaves, root and seed	Tonic, emetic and purgative
2	*Abutilon indicum*	Leaves, bark and root	Diarrhea, bronchitis, bladder inflammation and laxative
3	*Abutilon hirtum*	Leaves, bark and root	Astringent, demulcent and laxative
4	*Abutilon muticum*	-do-	Used in piles
5	*Acacia farnesiana*	Bark, pods and gum	Astringent
6	*Acacia jacquemontii*	Gum	Tonic and astringent
7	*Acacia nilotica*	Gum, bark, leaves and pods	Tonic and astringent
8	*Acacia senegal*	Gum and bark	Applied to external inflammation and emollient
9	*Ajuga bracteosa*	Whole plant	Febrifuge, tonic, blood purifier and lowering blood pressure
10	*Albizia lebbeck*	Bark, seed, flower and pods	Restorative, used in piles, dysentery, diarrhea and gonorrhea
11	*Aloe barbadensis*	Whole plant	Colic, constipation, cathartic, stomachache and urinary diseases
12	*Alternanthra sessilis*	Whole plant	Tonic, Galactagogue and febrifuge
13	*Alysicarpus heterophyllus*	Root	Expectorant and coughs
14	*Amaranthus caudatus*	Whole plant	Colic, eczema, gonorrhea, impotence and demulcent
15	*Amaranthus spinosus*	Whole plant	Colic, eczema, gonorrhea
16	*Amberboa divaricata*	Whole plant	Febrifuge, aperient and expectorant
17	*Argemone mexicana*	Whole plant	Laxative, ant emetic, expectorant, purgative, antiseptic and recommended on skin diseases
18	*Aristolochia bracteolata*	Plant extract	Anthelmintic, emmenagogue, purgative and anthelmintic
19	*Arnebia hispidissima*	Whole plant	Extract from roots in mustard oil is applied to skin and hair diseases
20	*Astragalus hamosus*	Whole plant	Lactagogue, laxative and demulcent.
21	*Avicennia alba*	Pnematophores, bark and seed	Aphrodisiac, astringent and its poultice is applied to boils.
22	*Azadirachta indica*	Bark, leaves and fruit	Tonic, antiseptic, anthelmintic, astringent and anti histaminic
23	*Barleria prionotis*	Bark, leaves and roots	Febrifuge, expectorant, diuretic, tonic and antiseptic

Cont…

Table 2 Inventory of local knowledge regarding medicinal plants of Thar

24	*Blepharis linaraefolia*	Seed	Diuretic, earache and aphrodisiac
25	*Cadaba farinosa*	Roots and leaves	Antispasmodic, purgative and anthelmintic
26	*Calotropis procera*	Latex	Antiseptic
27	*Callicarpa macrophylla*	Leaves and root extract	Anti rheumatic and tonic
28	*Capparis decidua*	Whole plant	Expectorant, laxative, diaphoretic and antidote
29	*Capparis zeylanica*	Whole plant	Febrifuge, tonic and antiseptic
30	*Cassia angustifolia*	Leaves and fruit	Febrifuge, anthelmintic, tonic anti-rheumatic and antiseptic
31	*Cassia fistula*	Leaves, fruit and bark	Laxative, emollient, febrifuge and tonic
32	*Cassia italica*	leaves	Purgative
33	*Cassia tora*	Leaves and seed	Antidote, ring worms and scabies
34	*Citrullus colocynthis*	Fruit and root	Febrifuge, anthelmintic Purgative and anti-rheumatic
35	*Gynandropsis gynandra*	Fresh juice	Anti-rheumatic, vesicant and rubifacent
36	*Chenopodium botrys*	Whole plant	Antimycotic, ant diabetic and anthelmintic
37	*Menispermum hirsutum*	Fresh juice	Antirheumatic, laxative and alterative
38	*Coldenia procumbens*	Whole plant	Applied externally to boils and rheumatic regions
39	*Commiphora wightii*	Gum	Carminative, antiseptic expectorant and aphrodisiac
40	*Convolvulus glomeratus*	Whole plant	Purgative
41	*Cordea gharaf*	Bark	Used for gargle and astringent
42	*Cucumis propheratum*	Fruit	Purgative and emetic
43	*Desmostachia bipinnata*	Rhizomes	Diuretic, stimulant and dysentery
44	*Dicema tomentosa*	Whole plant	Febrifuge
45	*Eclipta prostrata*	Whole plant	Juice used as fixative, anti asthmatic, hair restorer and anti-rheumatic
46	*Enicostemma hyssopifolium*	Whole plant	Febrifuge and blood purifier
47	*Haloxylon salicornicum*	Whole plant	Poisonous

Cont…

Table 2 Inventory of local knowledge regarding medicinal plants of Thar

48	*Heliotropium bacciferum*	Whole plant	Antidote
	Heliotropium strigosum	Whole plant	Antidote
49	*Flueggea leucopyrus*	Whole plant	Fish poison and topical insecticide
50	*Frankenia pulverulenta*	Whole plant	Aromatic and demulcent
51	*Gisekia pharnaceoides*	Whole plant	Anthelmintic, aperients, anti dyspeptic and aperient
52	*Glossonia varians*	Fruit	Blood purifier
53	*Indigofera articulata*	Whole plant	Anthelmintic, tonic and used for dying hairs
54	*Ipomoea biloba*	Whole plant	Tonic, astringent and diuretic
55	*Launaea residifolia*	Whole plant	Febrifuge and lactagogue
56	*Lycium edgeworthii*	Fruit	Poisonous and aphrodisiac
57	*Malvastrum coromendelianum*	Leaves	Applied to wounds and inflammations
58	*Mimosa himalyana*	Leaves	Applied to piles and burns
59	*Pavonia odorata*	Whole plant	Tonic, anti-rheumatic, carminative, febrifuge and astringent
60	*Pedalium murex*	Whole plant	Used in impotency, aphrodisiac antiseptic and demulcent
61	*Paganum harmala*	Whole plant	Hypnotic, carminative, aphrodisiac and anthelmintic
62	*Phyllanthus multiflorus*	Bark and leaves	Applied to bleeding gums, diuretic and blood purifier
63	*Portulaca tuberosa*	Seed and shoot	Cooling, blood purifier
64	*Pteropyrumolivierii*	Whole plant	Sore throat and antiseptic
65	*Rhazya stricta*	Fruits and leaves	Tonic, sore throat, skin diseases
66	*Salsola baryosma*	Whole plant	Anthelmintic
67	*Salsola kali*	Whole plant	Anthelmintic
68	*Salvadora persica*	Bark, fruit and oil	Expectorant, aphrodisiac and anti-rheumatic
69	*Salvadora oleoides*	Bark, fruit and oil	Expectorant, aphrodisiac and anti-rheumatic
70	*Schweinfurthia papilionacea*	Whole plant	Astringent and effective against typhoid

Cont... Table 2 Inventory of local knowledge regarding medicinal plants of Thar

71	*Sida cordifolia*	Whole plant	Astringent, febrifuge, anti-rheumatic and recommended in spermatorrhea
72	*Solanum obicaul*	Root	Applied to ulcers and boils
73	*Sueda monoica*	Whole plant	Topical antiseptic
74	*Tamarix dioica*	Galls	Expectorant and astringent
75	*Tamarix gallica*	Galls and stem bark	Expectorant and astringent
76	*Terminalia chebula*	Fruit	Laxative, alterative, expectorant and cardio tonic
77	*Zelya pentendra*	Root and shoot.	Dyspepsia, Analgesic, anodyne and cathartic
78	*Tribulus terristris*	Whole plant	Febrifuge, tonic, blood purifier and expectorant.
79	*Trichodesma indicum*	Whole plant	Diuretic, anodyne and anti-rheumatic
80	*Trigonella occulata*	Seed	Dysentery
85	*Zizyphus numularia*	Fruits	Laxative, astringent and refrigerant

Source: (H. Ahmad, Bhatti, and Latif 2006, 79-82)

Table 2
Ethnomedicinal uses of plants in Thar Desert, Pakistan.

S. No	Taxon/VSN/Family	Local name	Life form	Habitat	Part used	Methods of preparation	Diseases treated*	Toxicity	FC*	RFC*	UV*	R.I*	FL*%	Comparative studies*
1.	***Abrus precatorius*** L. GY-64 Papilionaceae	Chanothi	Herb	Wild	Seeds, Fruit, Leaves	Powder, Paste, *Kushta* with Copper	**Stops pregnancy** (RS/I), **Abortive** (RS/I), Sexual disorders (RS/I), Sexual tonic for males (RS/I), Piles (DS/I), Asthma (RT/I)	Toxic if used in excess	31	0.058	0.29	47.27	90.32	1♦, 2♦, 3♦, 4♦, 5♦, 6▲, 7●, 8♦, 9♦, 10●, 11♦, 12▲, 13♦, 14♦,
2.	*Abutilon indicum* (L.) Sweet GY-52 Malvaceae	Garhparh	Herb	Wild	Leaves, Flower	Decoction, Paste, Powder	Diarrhea (DS/)I, Gonorrhea (RS/I), **Bladder–Urethra inflammation** (US/I), Jaundice (GS/I), Piles (DS/I), Bronchitis (RT/I),	Not toxic	29	0.054	0.29	47.27	62.07	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9▲, 10♦, 11♦, 12▲, 13♦, 14♦,
3.	***Acacia jacquemontii*** Benth. GY-54 Mimosaceae	Bhaori	Shrub	Wild	Leaves, Flower, Gum	Extract, Paste, Powder	Wounds (MS/E), Infections (MS/I), Teeth and gum disorders (DS/E), Stomach disorders (DS/I), Jaundice (GS/I), **Menses problems** (RS/I), Dysentery (DS/I), **Sexual weakness** (RS/I), Joint and bone pain (MS/I), Body weakness (BS/I), GIT problems (DS/I),	Not toxic	32	0.06	0.22	28.64	93.75	1♦, 2♦, 3♦, 4▲, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
4.	*Acacia nilotica* (L.) Delile GY-55 Mimosaceae	Babbar	Tree	Wild/ Cultivated	Soft stem, Leaves, Flowers, Gum, Fruit, Shoot, Root, Barks,	Powder, Extract, Decoction, Extract, *Kushta* in Gold, silver and mercury	**Sexual weakness in males and females**(RS/I), Stomach problems (DS/I), Blood purifier (CS/I), Sexual disorders (RS/I), Constipation (DS/I), Blood clotting factor (Hemophilia) (CS/I), GIT worms (DS/I), Dysentery (DS/I), Sexual tonic (RS/I), Mouth ulcer (DS/I), Wounds (MS/I), Tuberculosis (RT/I), Body tonic (BS/I), Vitamin source (BS/I), Skin boils (MS/I), **Leucorrhea** (RS/I), Contraceptive (RS/I), Diabetes (GS/I), Liver tonic (GS/I),	Not toxic	34	0.064	0.29	40.23	100	1●, 2♦, 3♦, 4♦, 5▲, 6♦, 7♦, 8▲, 9▲, 10▲, 11▲, 12▲, 13♦, 14♦,
5.	*Acacia senega l*(L.) Willd. GY-56 Leguminosae	Koonbhat	Tree	Wild/ Cultivated	Bark, Gum, Seed, Leaves	Extract, Powder	Joint pain (MS/I), Piles and hemorrhoids (DS/I), Gastric disorders (DS/I), Sexual tonic (RS/I),**Body tonic(BS/I) and brain tonic** (NS/I), Weakness after labor (BS/I), Body pain (BS/I), Indigestion (DS/I), Constipation (DS/I), Body weakness (BS/I), Liver heat (GS/I),	Not Toxic	36	0.067	0.34	45.69	97.22	1●, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8●, 9●, 10♦, 11▲, 12▲, 13♦, 14♦,
6.	*Achyranthes aspera* L. GY-06 Amaranthaceae	Ubatkandri	Herb	Wild	Leaves, Stem, Root	Ash, Extract, *Kushta* in Arsenic, Decoction, Poultice, Paste	Jaundice (GS/I), Constipation (DS/I), Urine enhancer (US/I), **Menses problems** (RS/I), Skin allergy and boils (MS/I), **Asthma** (RT/I), Cough (RT/I), Tuberculosis (RT/I), Chest disorders (RT/I), Scorpion bite (CS/I), Kidney stones (US/I), Skin disorders (MS/I)	Toxic if used in excess	34	0.064	0.25	44.78	97.06	1♦, 2▲, 3▲, 4▲, 5▲, 6▲, 7♦, 8▲, 9▲, 10▲, 11♦, 12♦, 13♦, 14♦,
7.	*Aerva javanica* (Burm. f.) Juss GY-07 Amaranthaceae	Booh	Herb	Wild	Leaves, Root	Decoction, Powder, Extract, Poultice	Piles and hemorrhoids (DS/I), Urine enhancer (US/I), Kidney stones (US/I), **Snake bites** (CS/E), Jaundice (GS/I), **Labor cases ease** (RS/I), Swollen parts (MS/E), Cancer (MS/I)	Not toxic	28	0.053	0.56	83.86	78.57	1♦, 2●, 3♦, 4●, 5♦, 6♦, 7♦, 8▲, 9▲, 10▲, 11♦, 12♦,13♦, 14♦,
8.	*Aerva javanica* var. bovei Webb GY-08 Amaranthaceae	Booh	Herb	Wild	Leaves, Root	Decoction, Powder, Extract, Poultice	Piles and hemorrhoids (DS/I), Urine enhancer (US/I), Kidney stones (US/I), **Snake bites** (CS/E), Jaundice (GS/I), Labor cases ease (RS/I), Swollen parts (MS/E), Cancer (MS/I)	Not toxic	28	0.053	0.38	62.27	71.43	1♦, 2▲, 3●, 4●, 5♦, 6♦, 7♦, 8▲, 9▲, 10▲, 11♦, 12♦, 13♦, 14♦,
9.	*Aloe vera* (L.) Burm. GY-50 Liliaceae	Kunwaar	Herb	Wild	Leaves	Paste	**Spleen enlargement** (GS/I), Fever (CS/I), Lung disorders (RT/I), **Diabetes** (GS/I), Sciatica (MS/I)	Not toxic	22	0.042	0.14	16.59	90.91	1♦, 2▲, 3▲, 4♦, 5▲, 7▲, 8▲, 9♦, 10▲, 11▲, 12●, 13♦, 14♦,
10.	*Amaranthus graecizans* L. subsp. silvestris GY-09 Amaranthaceae	Mareero	Herb	Wild	Whole, Leaves, Stem	Cooked paste, Hot paste, Smoke	**Constipation** (DS/I), Liver tonic (GS/I), Digestive tonic (DS/I), Night blindness (SO/I), Old fever (CS/I), Skin boils (MS/I), Eye weakness (SO/E), Respiratory problems (RT/I)	Not toxic	31	0.059	0.3	47.72	96.77	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
11.	*Amaranthus graecizans* subsp. Thellungianus (Nevski) Gusev GY-10 Amaranthaceae	Mareero	Herb	Wild	Whole	Cooked paste, Smoke	**Constipation** (DS/I), Liver tonic (GS/I), Digestive tonic (DS/I), Night blindness (SO/I), Eye weakness (SO/I), Old fever (CS/I), Skin boils (MS/I), Respiratory problems (RT/I)	Not toxic	31	0.059	0.08	14.09	96.77	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,

Table 2 (*continued*)

S. No	Taxon/VSN/Family	Local name	Life form	Habitat	Part used	Methods of preparation	Diseases treated*	Toxicity	FC*	RFC*	UV*	R.I*	FL*%	Comparative studies*
12.	*Amaranthus spinosus* L. GY-11 Amaranthaceae	Gadahmareero	Herb	Wild	Leaves, Shoot	Paste, Extract	Blood purifier (CS/I), Pulmonary congestion (CS/I), GIT problems (DS/I), **Eye Sight** (SO/E)	Toxic if excess used	27	0.051	0.18	26.13	92.59	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10▲, 11♦, 12♦, 13♦, 14♦,
13.	*Amaranthus viridis* L. GY-12 Amaranthaceae	Tandla	Herb	Wild	Leaves, Flower, Whole plant	Extract, Powder,	Flu (RT/I), Scorpion sting (CS/I) and Snake bite (CS/I), Rheumatism (MS/I), Skin allergy (MS/I), Piles (DS/I), Constipation (DS/I), Gall bladder stones (DS/I) and kidney stones (US/I), Diarrhea (DS/I), Urine problems (US/I), **Contraceptive** (RS/I)	Not toxic	34	0.064	0.18	26.13	97.06	1●, 2▲, 3▲, 4▲, 5♦, 6▲, 8▲, 8♦, 9♦, 10♦, 11●, 12♦, 13♦, 14♦,
14.	***Asparagus adscendens*** Roxb. GY-18 Asparagaceae	Kootri	Herb	Wild	Root	Powder, Paste	Sexual tonic (RS/I),**Sexual weakness in males and females** (RS/I), Dysentery (DS/I), Kidney stones (US/I), Jaundice (GS/I), Brain tonic (NS/I), Heart tonic (CS/I), Joint pain (MS/I), Piles and hemorrhoids (DS/I), Milk production enhancer in females (GS/I)	Not toxic	31	0.059	0.25	38.18	100	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7▲, 8♦, 9♦, 10▲, 11♦, 12▲, 13♦, 14♦,
15.	***Asphodelus tenuifolius*** Cav. GY-51 Liliaceae	JangliBasar	Herb	Wild	Rhizome, Leaves	Powder, Paste, *Kushta* in Arsenic, Nitric acid or Cinnabar	Asthma (RT/I), **Snake bite** (CS/E), **Scorpion bite** (CS/E), Sexual tonic (RS/I), Paralysis (NS/I), Epilepsy (NS/I), Headache (NS/I), Jaundice (GS/I), Brain disorders (NS/I), Spermatorrhea (RS/I)	Toxic if used in excess	30	0.057	0.32	45.68	100	1♦, 2●, 3●, 4▲, 5▲, 6●, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
16.	*Azadirachta indica* Adr. Juss. GY-53 Malvaceae	Nim	Tree	Cultivated	Seeds, leaves, Fruit, Root	Oil, Extract, Infusion, Decoction, Powder, *Kushta* in Silver and Copper	Hair tonic (MS/E), Lice killer (MS/E), Piles and hemorrhoids (DS/I), Menses problems (RS/I), Gastric problems (DS/I), GIT worms (DS/I), Eye disorders (SO/I), Diabetes (GS/I), Fever (CS/I), **Blood purifier** (CS/I), **Skin disorders** (MS/I), GIT Ulcer (DS/I), Stomach problems (DS/I), Sexual tonic (RS/I), Old fever (CS/I), Eczema (MS/E), Toothache (DS/I)	Not toxic	32	0.06	0.52	76.82	100	1♦, 2♦, 3♦, 4▲, 5▲, 5♦, 6♦, 7▲, 8▲, 9♦, 10▲, 11▲, 12♦, 13♦, 14♦,
17.	***Barleria acanthoides*** Vahl GY-01 Acanthaceae	Kinari	Herb	Wild	Leaves, Seeds	Powder, Extract	Cold (RT/I), Malaria fever (CS/I), **Respiratory disorders** (RT/I),	Not toxic	22	0.041	0.37	52.27	77.27	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
18.	***Blepharisses indica*** Stocks ex T. Anders GY-02 Acanthaceae	Utangan	Herb	Wild	Seeds, Root	Powder, Extract	Joint pain (MS/I), Back ache (MS/I), Sexual disorders (RS/I), **Sexual tonic** (RS/I), Liver tonic (GS/I), Lung disorders (RT/I), Spermatorrhea (RS/I), Skin boils (MS/I), Blood purifier (CS/I), **Premature ejaculation** (RS/I)	Not toxic	33	0.062	0.2	26.14	90.91	1♦, 2▲, 3▲, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10▲, 11♦, 12♦, 13♦, 14♦,
19.	*Boerhavia procumbens* Banks ex Roxb. GY-62 Nyctaginaceae	Teejhkathi	Herb	Wild	Root, Stem	Extract, Decoction, Paste, Powder	Constipation (DS/I), Respiratory problems (RT/I), Joint pain (MS/I), Paralysis (NS/I), Brain disorders (NS/I), **Spleen enlargement** (GS/I), Sciatica (MS/I)	Not toxic	29	0.055	0.56	95	65.52	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
20. C	*Calamintha debilis* (Bunge) Benth. GY-47 Lamiaceae		Herb	Wild	Leaves, Flower	Powder	GIT problems (DS/I), Respiratory disorders (RT/I), **Skin boils** (MS/E)		23	0.043	0.41	71.36	56.52	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦, 9♦, 10♦, 11♦, 12♦, 13♦, 14♦,
21.	*Calotropis procera* (Willd.) R.Br. GY-17 Asclepiadaceae	Akk	Shrub	Wild	Latex, leaves, Flower, Root,	Powder, Poultice, Extract, Poultice, *Kushta* made from Latex,	Stops vomiting (DS/I), Mouth ulcer (DS/I), Hair tonic (MS/I), Earache (SO/I), Malaria (CS/I), Fever (CS/I), Asthma (RT/I), **Respiratory disorders** (RT/I), Cough (RT/I), Piles (DS/I), Skin disorders (MS/I), Diarrhea (DS/I), **Blood purifier** (CS/I), Headache (NS/I), Skin Warts (MS/I), Gastric condition (DS/I), Pimples (MS/I), Tuberculosis (RT/I), Constipation (DS/I)	Toxic if used in excess	32	0.06	0.41	57.27	100	1▲, 2♦, 3♦, 4▲, 5▲, 6♦, 7♦, 8▲, 9▲, 10▲, 11▲, 12♦, 13♦, 14♦,
22.	*Capparis decidua* (Forssk.) Edgew. GY-30 Capparadaceae	Kirar	Shrub	Wild	Stem, Flowers, Leaves, Fruit, Seeds	Powder, Decoction, Paste, Poultice, Oil	**Bone fracture** (MS/I), Asthma (RT/I), Cough (RT/I), Dysentery (DS/I), GIT worms (DS/I), Jaundice (GS/I), Ring worm (MS/I), Sexual tonic (RS/I), Old wounds (MS/I)	Not toxic	35	0.066	0.29	54.32	100	1●, 2♦, 3♦, 4▲, 5●, 6♦, 7♦, 8▲, 9♦, 10▲, 11●, 12♦, 13♦, 14♦,
23.	***Cassia angustifolia***Vahl GY-27	Sana Maki	Herb	Wild/ Cultivated	Leaves	Powder, Paste, Decoction	**Constipation** (DS/I), Skin boils (MS/I), Blood purifier (CS/I), Obesity (MS/I), Joint pain (MS/I), Spleen disorders (GS/I), Sciatica (MS/I), Brain disorders (NS/I), **Sexual disorders** (RS/I)	Toxic if used in excess	34	0.064	0.29	54.32	88.24	1♦, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8♦,

	Caesalpinaicaeae													9◆, 10◆, 11◆, 12◆, 13◆, 14▲,
24.	***Cassia occidentalis*** L. GY-28 Caesalpinaicaeae	Ghorawalh	Herb	Wild	Leaves	Powder, Extract *Kushta* in mercury	**Constipation** (DS/I), Joint pain (MS/I), Stops dysentery (DS/I), Sexual tonic (RS/I)	Toxic if used in excess	31	0.059	0.38	64.32	67.74	1▲, 2◆, 3●, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
25.	*Celosia argentea*L. GY-13 Amaranthaceae	Salaaro	Herb	Wild/ Cultivated	Leaves, Flowers, Shoot	Paste, Powder	**Kidney-urinary problems** (US/I), Sexual tonic (RS/I), Kidney stones (US/I), Liver disorders (GS/I), Urinary inflammation (US/I), Constipation (DS/I), Skin disorders (MS/I), Abdominal problems (DS/I), Menses excess stoppage (RS/I), Skin boils (MS/I), Stomach stimulation (DS/I)	Not toxic	31	0.059	0.37	52.73	74.19	1◆, 2◆, 3◆, 4◆, 5◆, 6▲, 7▲, 8◆, 9▲, 10◆, 11◆, 12▲, 13◆, 14◆,
26.	*Cenchrus biflorus* Roxb. GY-70 Poaceae	Bhurt	Herb	Wild	Seeds, Leaves	Powder, Paste	Sexual tonic (RS/I), **Kidney stones** (US/I), Ureter stones (US/I), Kidney pain (US/I), Spermatorrhea (RS/I), Urethral ulcer (US/I), Teeth and gum ulcer (DS/I), Diuretic (US/I), Skin allergy (MS/I)	Not toxic	29	0.055	0.39	56.82	93.1	1◆, 2◆, 3◆, 4◆, 5◆, 6▲, 7◆, 8◆, 9◆, 10◆, 11◆, 12●, 13◆, 14◆,
27.	*Citrullus colocynthis* (L.) Schrad. GY-33 Cucrbitaceae	Trooh	Herb	Wild/ Cultivated	Fruit, Seed, Root, Leaves	Paste, Powder, Tooth brush	**Jaundice**(GS/I), Diabetes (GS/I), Tooth pain (DS/I), Old influenza (RT/I), Asthma (RT/I), Blood purifier (CS/I), GIT worms (DS/I), Constipation (DS/I), Joint pain (MS/I), Brain disorders (NS/I), Headache (NS/I), Paralysis (NS/I), Epilepsy (NS/I), Piles and hemorrhoids (DS/I), Blood formation (CS/I), Abdomen disorders (DS/I), Stomach ulcer (DS/I), Obesity (MS/I), Abdominal worms (DS/I)	Toxic if used in excess	36	0.068	0.38	54.78	94.44	1▲, 2▲, 3◆, 4◆, 5▲, 6◆, 7◆, 8●, 9▲, 10▲, 11▲, 12◆, 13◆, 14◆,
28.	*Citrullus vulgaris* Schrad ex Eckl. & Zeyh. GY-34 Cucrbitaceae	Chanhee	Herb	Wild/ Cultivated	Fruit, Seed	Fresh, Powder, Paste, Oil	Brain tonic (NS/I), **Urine enhancer** (US/I), Kidney stones (US/I), **Jaundice** (GS/I), Sexual weakness (RS/I), Liver tonic (GS/I), Old flu (RT/I), Digestive tonic (DS/I), Eye sight weakness (SO/I), Heart tonic (CS/I), Blood pressure (CS/I)	Not toxic	33	0.062	0.62	81.82	100	1◆, 2◆, 3◆,4◆, 5◆, 6◆, 7◆, 8●, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
29.	*Clerodendrum phlomidis* L. GY-85 Verbenaceae	Arni	Shrub	Wild	Leaves, Root, Stem, Flower	Extract, Decoction	**Blood purifier** (CS/I), Blood cancer (CS/I), Hair tonic (MS/E), Asthma (RT/I), Urethral ulcer (US/I), Urine production (US/I), Old fever (CS/I), Diabetes (GS/I), Piles (DS/I)	Not toxic	28	0.053	0.41	71.37	67.86	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7●, 8◆, 9◆, 10◆, 11◆, 12◆, 13▲, 14●,
30.	***Commiphora stocksiana***(Engl.) Engl GY-25 Burseraceae	Chandru	Shrub	Wild	Gum, Stem	Powder, Paste	**Bone fracture** (MS/I), Joint pain (MS/I), Joint pain (MS/I), Abortion (RS/I),	Not toxic	33	0.062	0.5	76.37	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
31.	*Commiphora wightii* (Arn.) Bhandar GY-26 Burseraceae	Googar	Shrub	Wild	Seeds, Gum,	Powder, Decoction, Extract, Smoke	Joint pain (MS/I), **Body tonic** (BS/ I), Piles (DS/I), Chest pain (RT/I), Backache (MS/I), **Insects and snake repellent** (I), GIT problems (DS/I), Fever (CS/I), Abdominal problems (DS/I)	Not toxic	34	0.064	0.31	45.23	88.24	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7●, 8◆, 9◆, 10▲, 11◆, 12◆, 13◆, 14◆,
32.	*Convolvulus arvensis* L. GY-31 Convolvulaceae	Haran chapri	Herb	Wild	Leaves, Seeds	Extract, Infusion, Powder	Blood purifier (CS/I), Cancer (CS/I), **Skin disorders** (MS/I), Kidney-bladder stones (US/I), Animal fever (CS/I), Liver heat (GS/I)	Not toxic	28	0.053	0.25	45.23	75	1●, 2▲, 3●, 4◆, 4▲, 5▲, 6▲, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆,13◆, 14◆,
33.	*Corchorus depressus* (L.) Stocks GY-82 Tiliaceae	Mundair	Herb	Wild	Leaves, Root, Fruit, Whole plant	Extract, Powder, Decoction	**Male sexual disorders** (RS/I), Sexual tonic (RS/I), Coolant (BS/I), **Liver tonic** (GS/I), Female sexual disorders (RS/I), Spermatorrhoea (RS/I) Urinary problems (US/I), Kidney stones (US/I), Urinary Bladder stones (US/I), Jaundice (GS/I), Brain tonic (NS/I), Hair tonic (MS/E), Blood purification (CS/I), Urethral infection (US/I),	Not toxic	34	0.064	0.27	45.23	100	1▲, 2▲, 3▲, 4▲, 5◆, 6▲, 7◆, 8◆, 9◆, 10▲, 11▲, 12▲, 13◆, 14◆,
34.	*Corchorus tridens* L. GY-83 Tiliaceae	Nar Mundair	Herb	Wild	Leaves, Fruit, Seeds	Powder, Extract,	**Menses problems**(RS/I), Hepatitis (GS/I), Itching in urine and retention of urine (US/I), Male sexual weakness (RS/I), Gastric pain (DS/I), Pneumonia (RT/I), **Spermatorrhea** (RS/I), Premature ejaculation (RS/I), Cooling agent (BS/I), Piles (DS/I), Gonorrhea (RS/I) and swelling of urinary bladder (US/I),	Not toxic	29	0.055	0.47	64.32	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
35.	*Cucumis melo* subsp. *agrestis* var.	Chibbar	Herb	Wild / Cultivated	Leaves, Stem, Fruit	Powder, Poultice, Fresh, Extract,	Jaundice (GS/I), Digestive tonic (DS/I), Urine disorders (US/I), **Constipation** (DS/I), Joint pain (MS/I), Constipation in cattle	Not toxic	35	0.066	0.39	43.18	100	1▲, 2▲, 3▲, 4◆, 5◆, 6◆, 7◆, 8●,

Table 2 (*continued*)

S. No	Taxon/VSN/Family	Local name	Life form	Habitat	Part used	Methods of preparation	Diseases treated*	Toxicity	FC*	RFC*	UV*	R.I*	FL*%	Comparative studies*
	agrestis Naudin, Ann. Sc. Nat. GY-35 Cucrbitaceae						(DS/I), Liver tonic (GS/I), Act as drink powder (DS/I), Cold (RT/I)							9◆, 10●, 11◆, 12◆, 13◆, 14◆,
36.	*Cyamopsis tetragonoloba* (L.) Taubert GY-65 Papilionaceae	Gwar	Herb	Cultivated	Leaves, Seeds, Fruit	Paste	GIT worms (DS/I), Urine production (US/I), Constipation (DS/I), **Milk production in females** (GS/I)	Not toxic	26	0.049	0.36	61.82	76.92	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11▲, 12◆, 13◆, 14◆,
37.	*Cynodon dactylon* (L.) Pers GY-71 Poaceae	Chabhar	Herb	Wild / Cultivated	Leaves	Extract, Ash and oil, Powder	Pain killer (MS/I), **Kidney stones** (US/I), Ureteral stones (Us/I), Snake bite (CS/I), Dog bite (CS/I), Wound healer (MS/I), Piles and hemorrhoids (DS/I)	Not toxic	26	0.049	0.31	43.18	92.31	1▲, 2▲, 3▲, 4▲, 5▲, 6◆, 7◆, 8▲, 9◆, 10▲, 11◆, 12▲, 13◆, 14◆,
38.	*Cyperus rotundus* L. GY-40 Cyperaceae	Nangermotha	Herb	Wild	Root	Powder, Extract, Paste	Brain tonic (NS/I), Piles (DS/I) and hemorrhoids (DS/I), Stop excess of urine (US/I), Hair fall (MS/E), **Skin fairness** (MS/E), Hiccup (DS/I), Menses problem (RS/I), Digestive tonic (DS/I), Heart tonic (CS/I), **Mammary glands enhancer** (GS/I), Cholera (DS/I), Muscular pain (MS/I)	Toxic if used in excess	28	0.039	0.31	43.18	76.19	1◆, 2▲, 3▲, 4◆, 5◆, 6▲, 7◆, 8▲, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
39.	*Cyperus longus* L. GY-39 Cyperaceae	Weenjhal	Herb	Wild	Leaves, Whole	Decoction	**Respiratory problems** (RT/I), Mouth freshener (DS/I)	Toxic if used in excess	21	0.053	0.36	59.32	92.86	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
40.	*Datura inoxia* L. GY-76 Solanaceae	Dhaturoo	Herb	Wild	Leaves, Seeds, Fruit, Root	Oil-paste, Powder, Smoke,	Pain killer (MS/I), Poisonous (NS/I), Cough (RT/I), **Asthma** (RT/I), Paralysis (NS/I), Sedative (NS/I), Malaria (CS/I), Influenza (RT/I), Anti-allergy (CS/I), Sexual disorders (RS/I), Tuberculosis (RT/I), Diabetes (GS/I), Sweating problems in feet (MS/I), Constipation (DS/I),Flu (RT/I), Anti-smoking (NS/I), Skin boils (MS/I), Joint pain (MS/I)	Toxic if used in excess	35	0.066	0.56	72.27	94.28	1◆, 2◆, 3◆, 4▲, 5▲, 6◆, 7▲, 8▲, 9▲, 10▲, 11◆, 12▲, 13◆, 14◆,
41.	*Digera muricata* (L.) Mart. GY-14 Amaranthaceae	Lulhar	Herb	Wild	Leaves, Stem, Seeds	Paste, Cooked, Decoction, Powder	Urine enhancer (US/I), Urethral ulcer (US/I), Hair fall (MS/ E), **Constipation** (DS/I), GIT problems (DS/I), Kidney-ureter stones (US/I),	Not toxic	27	0.051	0.26	45.22	92.59	1▲, 2▲, 3▲, 4▲, 5▲, 6▲, 7●, 8◆, 9▲, 10◆, 11◆, 12◆, 13◆, 14◆,
42.	*Euphorbia caducifolia* Haines GY-41 Euphorbiaceae	Dandathoor	Shrub	Wild	Stem	Latex, *Kushta* in different Arsenic, Mercury, Copper, Silver, Extract, Paste	Sexual tonic (RS/I), Heart tonic (CS/I), Paralysis (NS/I), **Earache** (SO/I), Ringworm (MS/I), Constipation (DS/I), Sciatica (MS/I), GIT worms (DS/I), **Jaundice** (GS/I), Joint pain (MS/I), Asthma (RT/I), Cough (RT/I), Blood purifier (CS/I)	Toxic if used in excess	28	0.053	0.33	63.86	96.43	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 10◆, 11◆, 12◆, 13◆, 14◆,
43.	*Euphorbia granulate* Forssk. GY-42 Euphorbiaceae	Kheerwalh	Herb	Wild	Whole plant	Extract, Paste	Skin diseases (MS/E), **Scorpion bite** (CS/E), **Snake bite** (CS/E)	Toxic if used in excess	25	0.047	0.55	77.27	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 10◆, 11▲, 12◆, 13◆, 14◆,
44.	*Euphorbia hirta* L. GY-43 Euphorbiaceae	Kaazidustar	Herb	Wild	Leaves, Stem	Extract, *Kushta* in silver, Mercury and arsenic, Poultice, Paste	Skin boils (MS/I), Menses disorders (RS/I), Sexual tonic (RS/I), Sexual weakness (RS/I), Pain killer (BS/I), **Premature ejaculation** (RS/I), Liver tonic (GS/I), **Leucorrhea** (RS/I), Piles (DS/I), Urethral ulcer (US/I)	Toxic if used in excess	28	0.053	0.36	52.27	96.43	1●, 2◆, 3●, 4◆, 5◆, 6◆, 7◆, 8▲, 9▲, 10▲, 11◆, 12▲, 13◆, 14◆,
45.	*Euphorbia prostrate* Ait GY-44 Euphorbiaceae	Dodak	Herb	Wild	Whole Plant	Extract Decoction, Paste	Liver ailments(GS/I), **Asthma** (RT/I), Joint pains (MS/I), Skin eruptions (MS/E), Ringworm (MS/E), Chronic fever (CS/I), Nerve tonic (NS/I), Blood purifier (CS/I), Jaundice (GS/I)	Toxic if used in excess	21	0.039	0.25	35.68	61.91	1●, 2◆, 3◆,4●, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
46.	*Euphorbia thymifolia* L. GY-45	Dodhwalh	Herb	Wild	Whole Plant	Latex, Extract	Diabetes (GS/I), **Blood pressure** (CS/I)	Toxic if used in excess	21	0.039	0.23	30.68	100	1◆, 2▲, 3▲, 4▲, 5◆, 6◆, 7◆, 8◆,

	Euphorbiaceae													9▲, 10◆, 11◆, 12◆, 13◆, 14◆,
47.	*Fagonia indica* var. *Schwein furthii* Hadidi GY-86 Zygophylaceae	Dhamao	Herb	Wild	Whole, Leaves	Decoction, Extract, Decoction	**Skin allergy** (MS/I), **Blood purifier** (CS/I), Old wounds (MS/I), Menses problems (RS/I), Cancer (CS/I), Blood poisoning (CS/I), Old Fever (CS/I), Jaundice (GS/I), Skin boils (MS/I), Liver tonic (GS/I), Eczema (MS/I)	Not toxic	34	0.064	0.33	47.73	100	1▲, 2▲, 3▲, 4▲, 5◆, 6◆, 7●, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
48.	***Firmiana simplex*** (L.) W.F. Wight GY-81 Sterculiaaceae	Karhayo	Tree	Wild	Gum, Seed, Stem bark	Powder	Dysentery (DS/I), Stomach ulcer (DS/I), Piles (DS/I), Male sexual disorders (RS/I), Heat from body (BS/I), Blood pressure (CS/I), **Sexual tonic** (RS/I)	Not toxic	30	0.057	0.25	35.68	93.33	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 11◆, 12▲, 13◆, 14◆,
49.	*Grewia optiva* Drummond ex Burret GY-84 Tiliaceae		Shrub	Wild / Cultivated	Root, Bark	Powder, Extract	Spermatorrhea (RS/I), Sexual tonic (RS/I), Asthma (RT/I), Jaundice (GS/I), Kidney stones (US/I), Hepatitis (GS/I), Diarrhea (DS/I), Dysentery (DS/I),	Not toxic	29	0.055	0.62	88.86	65.52	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12▲, 13▲, 14◆,
50.	*Heliotropium curassavicum* L. GY-23 Boraginaceae	Kharsan	Herb	Wild	Leaves, Root	Paste, Decoction, Extract	Wound inflammation (MS/I), **Skin allergy** (MS/I), Skin disorders (MS/I), Skin boils (MS/E), Skin cancer (MS/I), Blood purification (MS/I), Bone fracture (MS/I)	Toxic if used in excess	29	0.055	0.13	23.64	96.55	1▲, 2▲, 3▲, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 10▲, 11◆, 12◆, 13◆, 14◆,
51.	*Heliotropium europaeum* L. GY-24 Boraginaceae	Gorakhpaan	Herb	Wild	Leaves, Whole Plant	Decoction, Extract, Powder	Liver heat (GS/I), **Jaundice** (GS/I), **Blood purifier** (CS/I), Malaria (CS/I), Blood producer (CS/I), Stomach stimulant (DS/I), Stop bleeding from cut part (MS/E)	Toxic if used in excess	28	0.053	0.37	48.18	89.28	1▲, 2▲, 3▲, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 11◆, 12◆, 13◆, 14◆,
52.	*Ipomoea cornea* (Mart. ex Choisy) D. Austin GY-32 Convolvulaceae	Sat gullo	Shrub	Cultivated	Leaves, Shoot	Extract, Powder	**Wound healing** (MS/E), Pain killer (BS/E), Blood clotting (CS/E)	Not toxic	21	0.039	0.35	38.64	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 9◆, 10▲, 11◆,12◆, 13◆, 14◆,
53.	*Launaea procumbens* (Roxb.) Ramayya & Rajagopal GY-19 Asteraceae	Bhathar	Herb	Wild	Leaves	Extract, *Kushta* in Mercury, Powder	**Male sexual disorders** (RS/I), Liver disorders (GS/I), Leucorrhea (RS/I), Jaundice (DS/I), GIT worms (DS/I), Blood purifier (CS/I), Urethral ulcer (US/I), Body swellings (MS/E), Skin boils (MS/E), Urine disorders (US/I), Kidney stones (US/I), Eye infections (SO/E)	Not toxic	30	0.057	0.24	22.05	80	1▲, 2▲, 3▲, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 11◆, 12◆, 13◆, 14◆,
54.	*Leptadenia pyrotechnica* (Forssk.) Decne. GY-15 Asclepiadaceae	Kheerkhip	Herb	Wild	Root, Stem, Leaves, Latex	Ash-Salt, Extract, *Kushta* in Arsenic	Skin allergy (MS/I), **Asthma** (RT/I), Sexual tonic (RS/I), wound healing (MS/I), Spines removal from infected part (MS/I), Gum disorders (DS/I), **Ringworm** (MS/I), GIT problems (DS/I), Urine production (US/I)	Not toxic	29	0.055	0.28	38.18	93.1	1▲, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8▲, 9◆, 10▲, 11●, 12◆, 13◆, 14◆,
55.	*Luffa cylindrica* (L.) Roem. GY-36 Cucrbitaceae	Tombrio	Herb	Cultivated	Fruit, Seeds	Powder	Hepatitis A and B (GS/I), Constipation (DS/I), GIT problems (DS/I), Chest problems (RT/I), **Nose allergy** (SO/E)	Not toxic	29	0.055	0.15	23.64	96.55	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7●, 7◆, 8▲, 9◆, 10●, 11◆, 12▲, 13◆, 14◆,
56.	*Momordica balsamina* L. GY-37 Cucrbitaceae	Janglikarelo	Herb	Wild / Cultivated	Fruit, Seeds,	Extract, Powder	Earache (SO/E), Constipation (DS/I), Epilepsy (NS/I), Paralysis (NS/I), Kidney stones (NS/I), Sciatica (MS/I), **Diabetes** (GS/I), Blood purifier (CS/I)	Not toxic	32	0.06	0.48	75.92	100	1◆, 2◆, 3◆, 4▲, 5▲, 6◆, 7◆, 8◆, 9▲, 10◆, 12▲, 13◆, 14◆,
57.	*Moringa concanensis* Nimmo ex Dalz. & Gibs GY-60 Moringaceae	Polo Saringoo	Tree	Wild	Gum	Powder, Paste	Urinary bladder heat (US/I), **Liver heat**(GS/I), Dysentery (DS/I), Sexual disorders (RS/I), Gastric problems (DS/I), Joint pain (MS/I), Body tonic (BS/I), Jaundice (DS/I), Stomach stimulant (DS/I),	Not toxic	32	0.06	0.27	49.77	84.38	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
58.	*Moringa oleifera* Lam. GY-61 Moringaceae	Swangno	Tree	Cultivated	Leaves, Gum	Extract, Decoction	Pain killer (BS/I), **Eye disorders** (SO/I), Digestive tonic (DS/I), Gastric problems (DS/I), Cough (RT/I), Blood purifier (CS/I), Blood pressure (CS/I), Urinary disorders (US/I), Sexual tonic (RS/I), Sexual weakness (RS/I)	Not toxic	26	0.049	0.19	28.64	50	1◆, 2◆, 3◆, 4▲, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 11◆, 12◆, 13◆, 14▲,
59.	*Mukia*	Akhrori	Herb	Wild		Paste, Powder			26	0.049	0.17	30.68	57.69	

Table 2 (*continued*)

S. No	Taxon/VSN/Family	Local name	Life form	Habitat	Part used	Methods of preparation	Diseases treated*	Toxicity	FC*	RFC*	UV*	R.I*	FL*%	Comparative studies*
	Maderaspatina (L.) M.J. Roem. GY-38 Cucrbitaceae				Leaves, Fruit, Seeds,		Sexual tonic (RS/I), Heart tonic (CS/I), **Skin allergy** (MS/I), Wounds (MS/E), Skin boils (MS/E)	Not toxic						1◆, 2◆, 3●, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12▲, 13◆, 14◆,
60.	***Neottia listeroides*** Lindl. GY-63 Orchidaceae	Jogeero	Herb	Wild	Flower, Leaves, Whole plant	Powder, *Kushta* in Cinnabar, Mercury and Arsenic	**Eye sight** (SO/E), Eye infection (SO/I), Tuberculosis (RT/I), Jaundice (GS/I), Piles (DS/I), Sexual tonic (RS/I), Extra bone in human (MS/E),	Not toxic	29	0.054	0.47	68.86	89.66	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
61.	*Ocimum americanum* L. GY-48 Lamiaceae	JangliTulsi	Herb	Cultivated	Seeds, Flowers, Leaves	Powder, Extract, Decoction	Sexual disorders (RS/I), **Sexual infertility** (RS/I), Male sexual disorders (RS/I), Hair fall (MS/E), Heart disorders (CS/I), Blood pressure maintenance (CS/I), Nervous disorders (NS/I), Earache (SO/E), Sexual tonic (RS/I), Piles (DS/I), Gum strength (DS/E), Tonic (BS/I), Mouth freshener (DS/I), **Asthma** (RT/I), Body pain (MS/I), Fever (CS/I), Headache (NS/E), Mosquito repellent (E), Leucorrhea (RS/I), Spermatorrhea (RS/I), Epilepsy (NS/I)	Not toxic	34	0.064	0.23	28.64	88.24	1◆, 2◆, 3◆, 4◆, 5◆,6▲,7◆, 8▲, 9◆, 10▲, 11▲, 12▲, 13▲, 14◆,
62.	*Ocimum balsilicum* L. GY-49 Lamiaceae	Niazbo	Herb	Cultivated	Seeds, Leaves, Flower	Extract, Paste, Decoction, Infusion, Oil, Powder	Asthma (RT/I), Joint pain (MS/I), Mouth ulcer (DS/I), Dysentery (DS/I), Stomach tonic (DS/I), Brain tonic (NS/I), GIT ulcer (DS/I), Stop vomiting (DS/I), Old fever (CS/I), Pain killer (NS/I), Bladder heat (US/I), Jaundice (GS/I), **Earache** (SO/E), Cold (RT/I), Flu (RT/I), Sexual weakness (RS/I), Heart tonic (CS/I)	Not toxic	32	0.06	0.28	47.27	96.87	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10▲, 11◆, 12▲, 13▲, 14◆,
63.	*Pedalium murex* L. GY-69 Pedialaceae	Gokhroo	Herb	Wild	Leaves, stem, Seeds	Powder, Extract,	Liver heat (GS/I), Jaundice (GS/I), Urethra inflammation (US/I), Digestive problems (DS/I) **Premature ejaculation**(RS/I), **Spermatorrhea** (RS/I), Sexual tonic (RS/I), Jaundice (GS/I), Urinary bladder heat (US/I), Urethral inflammation (US/I), Kidney and ureter stones (US/I), Urine disorders (US/I)	Not toxic	32	0.06	0.19	26.13	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7▲, 8▲, 9◆, 10▲, 11▲, 12▲, 13◆, 14▲,
64.	*Pennisetum glaucum* (L.) R. Br. GY-72 Poaceae	Bhaajhri	Herb	Cultivated	Seeds	Powder, Paste	**Diabetes** (GS/I), Sexual tonic (RS/I), Nose bleeding (SO/I), Body swellings (MS/I), Influenza (RS/I), Body tonic (BS/I), Joint pain (MS/I), Dysentery (DS/I), Urine production (US/I), Piles (DS/I), Liver tonic (GS/I), Stomach stimulant (DS/I), Gastric problems (DS/I), Brain tonic (NS/I)	Not toxic	29	0.055	0.4	61.82	65.52	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
65.	***Pergularia tomentosa*** L. GY-16 Asclepiadaceae	Haathisondi	Herb	Wild	Leaves, Shoot	Latex, Extract, Powder, *Kushta* in Arsenic, mercury and Cinnabar	Liver heat (GS/I), **Jaundice** (GS/I), **Diabetes** (GS/I), Sexual tonic (RS/I), Sexual disorders (RS/I), Menses problems (RS/I)	Toxic if used in excess	35	0.066	0.4	61.82	97.14	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9●, 10◆, 11◆, 12◆, 13▲, 14◆,
66.	*Perkinsonia aculeate* L. GY-29 Caesalpinaicaeae	Jangli Babar	Shrub	Wild / Cultivated	Leaves, Seeds	Extract	Joint pain (MS/I), Asthma (RT/I), Gastric pain (DS/I), Brain tonic (NS/I), **Male sexual disorders** (RS/I), **Leucorrhea** (RS/I), Blood production (CS/I)	Toxic if used in excess	28	0.053	0.4	57.27	85.71	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
67.	*Physalis minima* Auctt. GY-77 Solanaceae	Popta	Herb	Wild	Seed, Stem	Powder, Extract	**Blood purifier** (CS/I), Influenza (RT/I), Cold (RT/I), Constipation (DS/I), Digestive tonic (DS/I), Mammary glands development in females (GS/I), Body tonic (BS/I), Sexual tonic (RS/I), Bone fracture (MS/I), Pain killer (BS/I)	Not toxic	27	0.051	0.38	59.32	62.96	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
68.	*Portulaca oleracea* L. GY-03 Aizaoaceae	Lonak	Herb	Wild / Cultivated	Leaves, Stem, Seeds	Paste, Extract, Powder, *Kushta* in Cinnabar and copper	Cold (RT/I), **Kidney stones** (US/I), Urinary inflammation (US/I), Liver heat (GS/I), Urine production (US/I), Stomach stimulant (DS/I), Jaundice (GS/I), Constipation (DS/I), Premature ejaculation (RS/I), Sexual tonic (RS/I)	Not toxic	29	0.055	0.25	47.27	72.41	1◆, 2◆, 3◆, 4◆, 5◆, 6▲, 7◆, 8◆, 9◆, 10▲, 11◆, 13▲, 14◆,
69.	*Prosopis juliflora* (Swartz) DC. GY-59 Mimosaceae	Devi	Shrub	Wild	Leaves, Gum	Paste, Extract	Pain killer (MS/I), **Boils opening** (MS/I), Eye inflammation (SO/I), Body tonic (BS/I), Muscular pain (MS/I)	Toxic if used in excess	28	0.047	0.39	52.72	60	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
70.	*Prosopis cineraria* (L.) Druce GY-57	Gujjo	Tree	Wild / Cultivated	Fruit	Paste	**Tonic for body** (BS/I), Leucorrhea (RS/I),	Not toxic	25	0.053	0.28	49.77	82.14	1◆, 2◆, 3◆, 4▲, 5◆, 6◆, 7●, 8●, 9●, 9◆, 10▲,

	Mimosaceae													11◆, 12◆, 13◆, 14◆,
71.	*Prosopis glandulosa* Torr. GY-58 Mimosaceae	Devi	Shrub	Wild	Leaves, Gum	Paste, Extract	Pain killer (BS/I), Boils opening (MS/ I), **Eye inflammation** (SO/I), Body tonic (BS/I), Muscular pain (MS/I)	Toxic if used in excess	28	0.053	0.28	42.73	75	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆,
72.	*Ricinis communis* L. GY-46 Euphorbiaceae	Hairan	Shrub	Wild / Cultivated	Seeds, Leaves	Oil, Paste, Powder, Extract	**Constipation** (DS/I), Start of dysentery (DS/I), Pain killer (BS/ I), GIT problems in children (DS/I), Used in family planning (RS/I), **Contraceptive** (RS/I), Opening of wounds (MS/I), Body pain (BS/I), GIT worms (DS/I), Snake bite (CS/I), Menses problems (RS/I), Testis swellings (RS/I)	Toxic if used in excess	32	0.06	0.4	55.22	96.88	1◆, 2◆, 3◆, 4▲, 5▲, 6◆, 7▲, 8▲, 9▲, 10▲, 11●, 12◆, 13◆, 14◆,
73.	*Salvadora oleoides*Decne. GY-74 Salvadoraceae	MithoJaar	Shrub	Wild	Root, Soft bark, Leaves, Fruit, Seed	Tooth Brush, Ash powder, Extract, Decoction, Ash	**Tooth ache** (DS/E), Hair remover (MS/E), Skin allergy (MS/ E), Constipation (DS/I), Old fever (CS/I), Pain killer (MS/I), GIT worms (DS/I), Mouth freshener (DS/I), Jaundice (GS/I), Paralysis (CS/I)	Not toxic	32	0.06	0.35	47.73	100	1▲, 2◆, 3◆, 4▲, 5▲, 6◆, 7▲, 8▲, 9▲, 10▲, 11▲, 12◆, 13◆, 14◆,
74.	*Salvadora persica* L. GY-75 Salvadoraceae	KharoJaar	Shrub	Wild	Root, Soft bark, leaves, Fruit, Seed	Tooth Brush, Ash, powder, Extract, Decoction, Ash	Tooth ache (DS/E), **Hair remover** (MS/E), Skin allergy (MS/ E), Constipation (DS/I), Old fever (CS/I), Pain killer (MS/I), GIT worms (DS/I), Mouth freshener (DS/I), Jaundice (GS/I), Paralysis (CS/I)	Not toxic	32	0.06	0.32	49.77	100	1▲, 2◆, 3◆, 4▲, 5▲, 6◆, 7▲, 8▲, 9▲, 10▲, 11▲, 12◆, 13◆, 14◆,
75.	*Sesamum indicum* L. GY-68 Pedaliaceae	Tir	Herb	Cultivated	Seed, Flowers, Leaves	Powder, Oil, Poultice,	**Stop bed wetting** (US/I), Constipation (DS/I), Digestive tonic (DS/I), Diabetes (GS/I), Eye sight (SO/I), Urethral ulcer (US/I), **Sexual tonic** (RS/I), Skin disorders (MS/I), Sexual weakness (RS/I), Brain tonic (NS/I), Bladder tonic (US/I), Joint pain (MS/ I), Joint dislocation (MS/I), Massage for pain in body (BS/I), Sexual weakness (RS/I)	Not toxic	32	0.06	0.37	59.32	100	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 10▲, 11◆, 12◆, 13◆, 14◆,
76.	*Solanum incanum* L. GY-78 Solanaceae	WaangniiDhatooro	Herb	Wild	Fruit, Seeds	Powder, *Kushta* in Cinnabar and copper, Extract	Paralysis (NS/I), Blood purifier (CS/I), Sexual tonic (RS/I), Piles (DS/I), Earache (SO/E), Nail diseases (MS/E), Asthma (RT/I), **Respiratory tract problems** (RT/I), Skin boils (MS/E), Blood poisoning (CS/I)	Toxic if used in excess	29	0.055	0.23	35.68	86.21	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
77.	*Solanum surattense* Burm. Bumr. F GY-79 Solanaceae	Kanderi	Herb	Wild	Fruit	Paste	Nail disorders (MS/E), Cough (RT/I), **Asthma** (RT/I), Fever (RT/ I), Sore throat (RT/I), Purification of blood (CS/I)	Toxic if used in excess	26	0.049	0.25	44.77	73.07	1◆, 2▲, 3●, 4▲, 5◆, 6◆, 7▲, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
78.	*Sonchus asper* (L.) Hill GY-20 Asteraceae	Ban gobi	Herb	Wild	Leaves	Extract, *Kushta* in Mercury, Powder	Male sexual disorders (RS/I), **Liver disorders** (GS/I), Leucorrhea (RS/I), Jaundice (DS/I), GIT worms (DS/I), Blood purifier (CS/I), Urethral ulcer (US/I), Body swellings (MS/E), Skin boils (MS/E), Urine disorders (US/I), Kidney stones (US/ I), Eye infections (SO/E)	Not toxic	30	0.057	0.12	19.09	50	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
79.	*Taraxacum officinale* F. H. Wiggers GY-21 Asteraceae	Kandi Ban gobi	Herb	Wild	Leaves	Extract, *Kushta* in Mercury, Powder	Male sexual disorders (RS/I), Liver disorders (GS/I), Leucorrhea (RS/I), **Jaundice** (GS/I), GIT worms (DS/I), Blood purifier (CS/I), Urethral ulcer (US/I), Body swellings (MS/E), Skin boils (MS/E), Urine disorders (US/I), Kidney stones (US/ I), Eye infections (SO/E)	Not toxic	30	0.057	0.09	14.09	53.33	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆,13◆, 14◆,
80.	*Tephrosia uniflora* (Delile) Link GY-66 Papilionaceae	Drebbar	Herb	Wild	Leaves, Seeds	Powder, Decoction, Extract	Ear drop (SO/E); Rheumatic pains (MS/I), Stomach ache (DS/ I), Diarrhea (DS/I), Asthma (RT/I), **Urinary disorders** (US/I), Wounds (MS/E)	Not toxic	24	0.045	0.12	16.59	75	1●, 2●, 3●, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 10●, 11◆, 12●, 13◆, 14◆,
81.	*Trianthema portulacastrum* L. GY-04 Aizaoaceae	Waho	Herb	Wild	Leaves, Seeds, Root	Powder, Extract, *Kushta* in Copper and Arsenic	Urinary disorders (US/I), Kidney stones (US/I), Indigestion (DS/I), Skin allergy (MS/I), Eye sight (SO/I), Ureter stones (US/ I), **Jaundice** (GS/I), Menses problems (RS/I), Abortion (RS/I), Blood purifier (CS/I), Hepatitis (GS/I)	Not toxic	29	0.055	0.43	45.23	93.1	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9▲, 10◆, 11◆, 12◆, 13◆, 14◆,
82.	*Tribulus terrestris* L. GY-87 Zygophylaceae	Tikandi	Herb	Wild	Seed, Stem, Leaves, Fruit	Paste, Powder	Sexual tonic (RS/I), Urine enhancer (US/I), **Kidney-bladder stones** (US/I), Prostate problem (US/I), Gastric problems (DS/ I), Bladder heat (US/I), Liver tonic (GS/I), Sexual weakness (RS/I),	Not toxic	33	0.062	0.14	21.14	93.94	1▲, 2▲, 3▲, 4▲, 5▲, 6▲, 7▲, 8▲, 9▲, 10▲, 11▲, 12▲, 13◆, 14◆,
83.	***Tricholepis furcata*** Candolle GY-22 Asteraceae	Tilkando	Herb	Wild	Stem, Leaves, Flower, Fruit	Extract, Decoction, Powder	**Blood purification** (CS/I), Cancer (CS/I), Malaria (CS/I), Skin allergy (MS/I), Sciatica (MS/I), Brain tonic (NS/I), Old fever (CS/I), Diabetes (GS/I), Influenza (RT/I), **Liver disorders** (GS/I), Eczema (MS/I), Skin boils and infections (MS/I)	Not toxic	32	0.06	0.17	24.09	96.88	1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
84.		DaalMung	Herb	Cultivated	Seeds, Leaves	Paste, Powder			29	0.055	0.15	23.64	65.52	

Table 2 (*continued*)

S. No	Taxon/VSN/Family	Local name	Life form	Habitat	Part used	Methods of preparation	Diseases treated*	Toxicity	FC*	RFC*	UV*	R.I*	FL*%	Comparative studies*
	Vigna radiate (L.) Wilczek GY-67 Papilionaceae						**Digestive problems** (DS/I), Pain killer (MS/I), Abdominal problems (DS/I), Leucorrhea (RS/I), Stomach stimulant (DS/I), Brain tonic (NS/I), Nervous disorders (NS/I), Headache (NS/E)	Not toxic						1◆, 2◆, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆, 13◆, 14◆,
85.	*Withania sominifera* Dunal GY-80 Solanaceae	Asgand	Herb	Cultivated	Root, Leaves	Powder	Joint pain (MS/I), Sciatica (MS/I), Lung disorders (RT/I), **Menses problems** (RS/I), **Sexual tonic** (RS/I),	Toxic if used in excess	25	0.047	0.13	21.14	84	1◆, 2◆, 3◆, 4▲, 5▲, 6◆, 7●, 8◆, 9◆, 10▲, 11◆, 12◆, 13◆, 14◆,
86.	*Zaleya pentandra* (L.) Jeffrey GY-05 Aizaoaceae	AchoWaho	Herb	Wild	Leaves, Seeds, Root	Powder, Extract, *Kushta* in Copper and Arsenic	Urinary disorders (US/I), Kidney stones (US/I), Indigestion (DS/I), Skin allergy(MS/I), Eye sight (SO/I), Ureter stones (US/I), **Jaundice**(GS/I), Menses problems (RS/I), Abortion (RS/I), Blood purifier (CS/I), **Hepatitis** (GS/I)	Not toxic	29	0.055	0.09	14.09	65.52	1◆, 2●, 3◆, 4◆, 5◆, 6◆, 7◆, 8◆, 9◆, 10◆, 11◆, 12◆,13◆, 14◆,
87.	*Ziziphus nummularia* (Burm. F.) Wight &Arn GY-73 Rhamnaceae	Bair	Shrub	Wild	Bark, Leaves, Fruit, Flowers, Gum, Root	Powder, Decoction, Powder, Tooth brush	Dysentery (DS/I), Heart tonic (CS/I), **Sexual disorders** (RS/I), Body tonic (BS/I), Bladder heat (US/I), GIT worms (DS/I), Urethral ulcer (US/I), Obesity (MS/I), Cholesterol decrease (CS/I), Sexual weakness in males and females (RS/I), Skin boils (MS/I), Tooth ache (DS/I), Sexual tonic (RS/I), Menses problems (RS/I)	Not toxic	34	0.064	0.28	42.73	73.53	1◆, 2◆, 3◆, 4▲, 5▲, 6◆, 7◆, 8◆, 9▲, 10◆, 11▲, 12◆,13◆, 14◆,

*FC = Frequency of citation (Frequency of Citation of Plants) *RFC = Relative frequency of citation *UV = Use Value

*R.I = Relative Importance, *FL = Fidelity level DS= Digestive System, RT = Respiratory Tract, MS= Musculo-skeletal System, US= Urinary System, RS= Reproductive System, GS= Glandular System, CS= Circulatory System, SO= Sense organs, NS=Nervous System, I= Internal use, E= External use

*◆ = Plants not reported in mentioned study *▲= Plant with similar uses in mentioned study *● = Plant with dissimilar uses

**Bold Plant Names = Plants which are more valuable to local People.

**Bold Ailments treated = Main use of Plant (I_U) on which FL% is based.

*1. Bhatti et al., 2001, 2. Qureshi and Raza Bhatti, 2008, 3. Qureshi et al., 2010; 4. Shaheen et al., 2012; 5. Qureshi et al., 2011; 6.Sharma and Khandelwal, 2010; 7. Katewa et al., 2004; 8. Praveen et al., 2007; 9. Jain et al., 2009; 10. Upadhyay et al., 2010; 11. Lakshmanan et al., 2003; 12. Jain et al., 2005; 13. Kapoor and Kumar, 2013; 14. Kapoor and Lakhera, 2013.

Source: (Yaseen et al. 2015, 47-53).