universität wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

"Nutritional knowledge and feeding practices of women with children below 24 months living in the slum area of Katanga in Kampala, Uganda"

verfasst von / submitted by

Magdalena Pernegger, Bsc

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of

Master of Science (MSc)

Wien, 2018

Studienkennzahl lt. Studienblatt / degree programme code as it appears on the student record sheet:	A 066838
Studienrichtung lt. Studienblatt / degree programme as it appears on the student record sheet:	Masterstudium Ernährungswissenschaften
Betreut von / Supervisor:	Dr. Friederike Bellin-Sesay

Acknowledgements

There are many persons I would like to thank for their great help and encouragement in the process of realizing and completing this Master thesis. Without them, this project would not have been possible to accomplish.

Thank you, Dr. Friederike Bellin-Sesay - I greatly appreciate your confidence, your support and your motivation.

I want to thank all the staff members from KCK – especially Samuel Wambayu, for his tremendous inspiration, support and optimism. Thanks for all the organization, for your hospitality and your enthusiasm.
Thanks to Juliet Segujja and Ritah Mugerwa for the great cooperation, for your time and your warmth.

I am very thankful to all the mothers and caregivers who participated in this study. Thank you for spending your time with me, for telling me your stories and sharing your experiences and your knowledge with me.
Thank you to all the children living in Katanga for your limitless smiles and your tremendous optimism. You taught me much more than the content of this thesis.

Thanks to Edith Sanyu for your support in the development of the research instruments.

I am very grateful to my family, especially to Sebastian and my mum, and to my great friends who I can always rely on. Thank you for your endless encouragements, for your inputs and for just being here.

„Children have the right to good quality health care – the best health care possible – to safe drinking water, nutritious food, a clean and safe environment, and information to help them stay healthy. Rich countries should help poorer countries achieve this.“ [UNICEF, 2014]

Statutory Declaration

I declare that I have authored this thesis independently, that I have not used other than the declared sources / resources and that I have explicitly marked all material which has been quoted either literally or by content from the used sources.

……	……..
date	(signature)

Acronyms and Abbreviations

CESCR: Committee on Economic, Social and Cultural Rights

CFSVA: Comprehensive Food Security and Vulnerability Analysis

CHDs: Child Health Days

DDT: Deuterium Dilution Technique

FAO: Food and Agriculture Organization of the United Nations

FG: Food Group

FGD: Focus Group Discussion

HIV: Human Immunodeficiency Virus

HSSP: Health Sector Policy and Strategy Plan

IAEA: International Atomic Energy Agency

ICESCR: International Committee on Economic, Social and Cultural Rights

IYCFP: Infant and Young Child Feeding Practices

KAP: Knowledge, Attitudes and Practices

KCK: Kids Club Kampala

NDP: National Development Plan

NGO: Non Governmental Organization

NWGFF: National Working Group on Food Fortification

TFR: Total Fertility Rate

UDHS: Uganda Demographic and Health Survey

UFNP: Uganda Food and Nutrition Policy

UNAP: Uganda Nutrition Action Plan

UNICEF: United Nations Children's' Emergency Fund

UNHR: United Nations Human Rights

UNHS: Uganda National Household Survey

PEAP: Poverty Eradication Action Plan

SD: Standard Deviation

VAD: Vitamin A Deficiency

VAM: Vulnerability Assessment Map

WFP: World Food Programme

WHO: World Health Organization

Table of Content

1. Introduction 1
1.1 Background 1
1.1.1 Kids Club Kampala 1
1.1.2 Geography 2
1.1.3 Population 2
1.1.4 Childhood mortality in Uganda 3

2 Methodology 4
2.1 Objective of the study 4
2.1.1 Overall objective 4
2.1.2 Special objectives 4
2.2 Significance of the study 4
2.3 Justification of the study 5
2.4 Location of the study 6
2.5 Study design 8
2.6 Research partners and collaborators 8
2.7 Target population 9
2.7.1 Inclusion criteria 9
2.7.2 Exclusion criteria 9
2.8 Sampling techniques and sample size 9
2.9 Survey Design 10
2.10 Data collection methods and tools 10
2.11 Recruitment and training of research assistants 14
2.12 Pre-testing 15
2.13 Validity 15
2.14 Reliability 16
2.15 Ethical consideration 16

3 Nutrition situation in Uganda 17
3.1 Food and Nutrition Security 17
3.1.1 Food Security 18
3.1.2 Nutrition Security 20
3.2 Risk factors and causes of young child malnutrition in Uganda 21
3.3 Window of opportunity 24
3.4 Importance of mother's and caregiver's nutritional knowledge for children's nutrition 24
3.5 Consequences of malnutrition in Uganda 25
3.6 Policies and Programmes 27
3.6.1 The Uganda Food and Nutrition Policy (UFNP) 27
3.6.2 Uganda Nutrition Action Plan (2011-2016) 27
3.6.3 Other policies and programmes 28
3.7 Interventions to improve children's nutritional status in Kampala 29
3.7.1 Child Health Days (CHDs) 29
3.7.2 Programmatic support to improve breastfeeding 29
3.7.3 Integration of nutrition in management of HIV and tuberculosis infection 30
3.7.4 Food fortification 30

4 Results 31
4.1 Findings from the Questionnaire 31
4.1.1 Infant and Young Children Feeding Practises (IYCFP) 37
4.2 Focus Group Discussion Findings 41

5 Discussion **48**
5.1 Discussion on methodological implications **48**
5.2 Socio-demographic and socio-economic characteristics **50**
5.3 Health practices **57**
5.4 Infant and Young Children Feeding Practices (IYCFP) **61**
5.5 Mother's and caregiver's perception of children's nutritional status **67**
5.6 Mother's and caregiver's responsibility and power **69**
5.7 Nutritional knowledge and nutrition education **70**
5.8 Considerations for nutrition education **73**

6 Conclusion **77**

7 Recommendation **79**
7.1 Recommendation for further studies **79**

Abstract **81**

Zusammenfassung **82**

References **84**

Appendices **95**
Appendix 1: Letter of introduction and Consent Seeking
Appendix 2: Questionnaire
Appendix 3: Interview Guide Focus Group Discussion

List of Figures

Figure 1. Determinants of Food Security and Nutrition Security [UNSCN, 2013] 17
Figure 2. Determinants of Food Security [UNSCN, 2013] 18
Figure 3. Young Child Malnutrition. A Conceptual Framework for Uganda [Government of Uganda, 2011] 21
Figure 4. Malnutrition's impact on productivity during the lifecycle and across generations [Government of Uganda, 2011] 25
Figure 5. Theoretical framework from mother's education to child nutrition [Burchi, 2010] 56

List of Tables

Table 1. Household size 31
Table 2. Age of respondents 32
Table 3. Highest achieved education level women and men 33
Table 4. Employment status women and men 34
Table 5. Immunization status 36
Table 6. Number of food groups all children 6-23 months 38
Table 7. Frequency of foods consumed in each food group 41

1. Introduction

As in many parts of the developing world, in the slum area of Katanga in Kampala, Central Uganda, there seems to be a lack of adequate nutrition for children. Reasons for that are manifold – ranging from inadequate health knowledge to a lack of monetary resources, unequal distribution and seasonal changes in harvest yields, heavy workloads of parents, high prevalence of infectious diseases, low food safety and others. In Uganda, child health care is a task mainly assigned to women [Shrimpton et al., 2001]. Yet, men play a pivotal role, as they decide over the distribution of the household budget in most of the households [Brinda et al., 2016]. As shown in other studies, the most effective and long-lasting impacts concerning improvement of children's nutrition status can be achieved, if nutrition interventions address the time between contraception and the second birthday of a child [Shrimpton et al., 2001]. There is broad evidence, that nutrition education can improve children's nutrition status. Even without changes in the availability of foods, positive effects can be achieved [Imdad, 2011].

Thus, a focus on nutrition education not only for mothers and caregivers, but also for fathers, with children under two years can be a powerful strategy to fight malnourishment and all its after-effects.

1.1 Background

1.1.1 Kids Club Kampala

Kids Club Kampala (KCK) is a non-governmental organization operating in 16 different centres all over Uganda. Their aim is to bring hope and love to vulnerable children and to give them the chance to be kids. By empowering the children and their mothers and caregivers, they desire to provide sustainable changes in underprivileged communities.

Among many others, a project called "feeding programme" provides one hot and nutritious meal a day for all the kids living in walking distance to their offices

in the different areas where KCK operates. Furthermore, KCK provides food parcels for families who struggle to feed themselves and their children.
KCK's working strategies are community led and community driven. This means that their aim is to empower local people to be active in their own development and to make a difference in their own community. The ideas for programmes and projects come from the communities themselves. KCK works through asking people about their needs and cooperates with them to find out how they can support and help them best. They give space to the inhabitants of the informal settlements where they operate to come up with creative solutions for their own problems [KCK, n.d.]. During the researcher's internship at KCK in the area of Katanga in Kampala, consultation with the executive manager has shown that there is big interest in nutrition education in the local communities. The programme planning started with a baseline study of the current nutritional knowledge and feeding practices of mothers and caregivers in order to be able to plan further strategies. The survey was undertaken by the researcher with the aim to find out about the necessity and priority needs of nutritional education in the study area.

1.1.2 Geography

Uganda is a land-locked country in East Africa, bordered by Kenya to the east, South Sudan to the north, the Democratic Republic of Congo to the west, Rwanda to the south west and Tanzania to the south.
The total area of Uganda is 241.039 square kilometres, divided into 112 districts. Due to the high altitude, Uganda's climate is favourable with two rain seasons per year. The soils are fertile. Uganda has different climate zones, with tropical rain forests in the south turning to savannah woodlands and semi-arid vegetation in the north. Population density varies across the country with high population density in Central and Western regions and less towards the north [UBOS and ICF Int., 2012].

1.1.3 Population

According to the National Census 2014, Uganda's total population was 34,6 million persons in 2014. This is an increase of 10,4 million persons from 2002

and an average annual population growth of 3,0%. Kampala, which is situated in the Central Region of Uganda, is the capital city with 1,5 million inhabitants in 2014. The urban population of Uganda counts 7,4 million persons altogether, which means that almost 80% of the population of Uganda live in non-urban areas. In 1991, only 1,7 million persons lived in urban areas [UBOS, 2016]. 55% of the Ugandan population are under 18 years and 17,7% are less than 5 years old. The Total Fertility Rate (TFR), defined as "the number of live births a woman would have if she survived the end of her childbearing age (15 – 49 years) and experienced the current observed age specific fertility rates" [UBOS, 2016] declined from 7,1 children per woman in 1991 to 5,8 children per woman in 2014. The provisional estimate of live expectancy is currently 63,3 years [UBOS, 2016].

1.1.4 Childhood mortality in Uganda

The infant mortality rate is defined as the probability of dying in the period from birth to the first birthday. In Uganda, it is currently estimated at 53 deaths of 1000 live births [UBOS, 2016]. According to the WHO, the infant mortality rate is five times higher in the WHO African Region (55 deaths per 1000 live births) than in the WHO European Region (10 deaths per 1000 live births) [WHO, 2016a].

The under-five mortality rate is defined as the probability that a newborn child will die before reaching their fifth birthday. In 2014, it was estimated at 80 deaths per 1000 live births [UBOS, 2016]. According to the WHO, under-five mortality is highest in the WHO African regions (81 deaths per 1000 live births). This is about 7 times higher than in the WHO European regions (11 deaths per 1000 live births) [WHO, 2016b].
In 2015, 75% of all under-five deaths worldwide occurred within the first year of the children's life [WHO, 2016a]. An estimated 60% of these are directly or indirectly associated with malnutrition. Potentiating effects of malnutrition on infectious diseases and other deprived conditions play a crucial role in this matter [MOH, 2009a].

2 Methodology

2.1 Objective of the study

2.1.1 Overall objective

The current study is a baseline study that sought to identify the feeding practices and the nutritional knowledge and practices of women with children aged below 24 months who live in the slum area of Katanga in Kampala, Uganda.

2.1.2 Special objectives

1. To establish the socio-demographic and socio-economic characteristics of the households.
2. To determine the feeding practices and child health care practices of the women.
3. To identify the women's nutritional knowledge and their ideas for improvement.
4. To identify the priority needs in nutrition education.

2.2 Significance of the study

This study aimed at assessing the current feeding practices and the nutritional knowledge and practices of women with children aged below 24 months who live in the slum area of Katanga in Kampala, Uganda. The purpose is to determine factors that influence the nutritional status of the children. Furthermore, this study aimed at identifying the type and importance of current nutrition issues, possible underlying causes and a way to most efficiently provide nutrition education to the target population. The results can help in planning nutrition interventions and determining priority needs in nutrition education. They can be useful for project implementers in the development of nutrition education programmes. They might contribute to the perception of the importance of good nutrition to boost the economical development of the country and they can help in the reduction of childhood morbidity and mortality.

In particular, the findings of the study will contribute to the development of a nutrition education programme organized and carried out by Kids Club Kampala in the slum area of Katanga in Kampala.

2.3 Justification of the study

An adequate dietary intake is crucial for an active and healthy life. Children are among the most vulnerable population groups and especially in developing countries their dietary needs are frequently not met. The period of the first two years of a child's life is of particular importance, as it is the most critical time in their growth and development. Interventions to improve the nutritional status during this period have much greater impacts than at any other point in lifetime. Reduced morbidity and mortality, a lower risk of chronic diseases and the promotion of children's overall growth and development are some of their possible effects [Shrimpton et al., 2001, WHO, 2016d].

Among populations living in informal settlements like the area where this study was conducted, maternal nutritional knowledge is frequently very limited [Oldewage-Theron et al., 2014, Abuya et al., 2012, Oosthuizen et al., 2011]. Low maternal nutritional knowledge can lead to poor nutritional status of children, translating into reduced child survival, declined productivity and increased health problems in adulthood. As reported by the WHO, so called "disability adjusted life years" - "the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability [WHO, 2016e] - are associated with malnutrition especially in developing countries. Education programmes that target maternal nutritional knowledge can lead to healthier and more rewarding lives, to reductions in poverty and the stimulation of the economical productivity of households as well as of the whole country [Valeggia and Ellison, 2003].

In Uganda, nutrition is a task mainly assigned to women. Therefore, maternal nutritional knowledge is a key element in the health and nutritional status of children. Women are responsible for the basic nutritional needs and the general wellbeing of the children. Improved knowledge given to women empowers them to make optimal choices for nutritious and safe foods. With a better

understanding of the way different types of food are influencing body and health [Valeggia and Ellison, 2003], the household's overall dietary intake can be improved [UNG Compact, 2011]. As men usually decide over the allocation of the household budget, their awareness of the importance of child health is crucial to guarantee an adequate distribution of the available money [Brinda et al., 2016]. Better knowledge and improved skills can create more opportunities for women to earn higher incomes and to contribute to the household's food security. Through this, women can become more independent from their husbands and more self confident in decision-making. All these facts, in turn, can have favourable influences on a child's nutritional status [UNG Compact, 2011].

2.4 Location of the study

The study was carried out in the slum area of Katanga in Wandegeya Parish. Wandegeya is one part of Kawempe division, which is one of the five divisions making up Kampala City. The other four divisions are Central, Nakawa, Rubaga and Makindye. Kawempe division consists of two parts – Kawempe south and Kawempe north. Wandegeya Parish, and hence also Katanga, is located in Kawempe south. Katanga is divided in three administrative areas – Busia, Kimwanyi and Soweto. Busia and Kamwanyi are the main residential areas. Soweto zone covers a part of the Makerere University.

This study was carried out in Busia zone, which was selected because the office of KCK, from where the organization is working in this area, is located in this zone. Due to the lack of reasonable roads, bad conditions of the existing roads and lack of transportation and information means, KCK can only operate within walking distance to the KCK office.

The population of Kawempe division has been steadily increasing over the last years [UBOS, 2016]. It is a place with many informal structures. Household lists do exist and are updated periodically, but by the time of the study, the lists have not been up to date. According to the local council of Busia zone, Keloi Kabahweza, roughly 5000 people were living in Busia zone at the time of this study [Interview with the local council of Busia zone, Keloi Kabahweza].

Slums in developing countries are defined as unplanned informal settlements that attract a high density of low-income earners and unemployed people with low levels of literacy. Access to services like safe water, sanitation and other infrastructures is limited or non-existent [MLHUD, 2008]. People's resident status is usually insecure. Houses are mainly of poor structural quality [MLHUD, 2008] and built in a non-permanent manner that is vulnerable to environmental influences [UN-Habitat, n.d.]. Overcrowding is frequent and lands are often environmentally fragile, such as wetlands. Rates or levels of noise, crime, drug abuse, prostitution, alcoholism and HIV/AIDS prevalence are higher than anywhere else in the respective countries [MLHUD, 2008].

The slum area of Katanga is situated close to Mulago hospital and Makerere University between student hostels. The living conditions are, like in other slum areas of Kampala, unsatisfactory. Dwelling units are mostly made out of temporary building material that cannot maintain stability for several years. Most of the slum houses are single rooms that act as bedroom, sitting room and store all at once [MLHUD, 2008] with an average household size of five persons [NSDFU, 2014]. Clusters of shelters are sometimes separated by a corridor or veranda [MLHUD, 2008]. Due to the urban location, the coverage with health care facilities is reasonable in Katanga. Several clinics and pharmacies are situated close by. About half of all the people of school going age in Kampala's slums are actually attending school. Numerous households cannot afford school fees for their children [MLHUD, 2008]. Nearly all of the households in Kampala use charcoal to cook and only a small percentage have access to electricity. Most of Kampala's public water points are privately owned, access to them is paid for. Thus, most slum dwellers rely on boreholes, open wells and protected springs that constitute high-risk sources of contamination [MLHUD, 2008].
As stated Nybo (2010), poor rubbish disposal is a national problem in Uganda [Nybo, 2010]. The majority of households in the study area dump their litter in the corridors and streams. Chocked water drains and - in consequence - blocked channels and inevitable floods due to complicated flow of rainwater are

the outcome. Katanga is located in a low-laying area, which means high levels of ground water table and thus severe and frequent flooding. Defective drainages make the rainwater stay for many days after each rainfall. Hence, the majority of the main water sources ends up contaminated and provides great conditions for disease vectors.

Two-thirds of all people living in slum settlements in Kampala have access to toilet facilities, mainly as latrines. In most of the slum areas, public toilets do exist, but admission fees limit the access to them. The widespread use of pit latrines influences the quality of underground water sources and the distribution of disease pathogenic agents [MLHUD, 2008].

According to Keloi Kabahweza, the local council of Busia zone, the majority of Katanga's residents is self-employed in small-scale businesses, works as salaried worker or is unemployed. The most popular economic activities are the ownership of mini-markets and wholesale and retail businesses [Interview with the local council of Busia zone, Keloi Kabahweza].

The common language in the study area is Luganda. Most of the inhabitants also speak English on different levels.

2.5 Study design

To gain insight into the personal determinants of the study population's dietary and feeding practices and educational needs, a cross-sectional designed was used. Together with two research assistants, the researcher collected the information from the study area over a period of 4 weeks in April and May 2016. Quantitative data was obtained through a survey approach and qualitative data was collected through Focus Group Discussions (FGDs) and observations.

2.6 Research partners and collaborators

The study was carried out in collaboration with and with support from Kids Club Kampala.

2.7 Target population

2.7.1 Inclusion criteria

Women with children less than 24 months of age living in the zone of Busia in the slum area of Katanga in Kampala in walking distance to the KCK office were included in the sample. If two children aged below two years were found in a household, the younger one was included as it is the more vulnerable in case the nutritional needs were not met. The "Guidelines on Nutrition Survey Methodology in Uganda" advise to include all eligible children of a household in the sample [MOH, 2009c]. However, to reduce sampling errors that could arise due to within-household clustering, as Magnani (1997) describes, only the younger child of a household was included [Magnani, 1997].

2.7.2 Exclusion criteria

As women were presumed to be responsible for the nutritional and health related needs in the households, the study limited itself to the female household members. Mothers or caregivers of children older than 24 months of age and women that declined the request to participate in the study were excluded from the sample.

2.8 Sampling techniques and sample size

To select the participants of the study, a purposive sampling method was used. As described in chapter 2.4, the study area was selected because it is one of the major residential areas in Katanga and due to the location of the KCK office in this area.

Because of the absence of a population list, the number of participants was selected by the approximate number of inhabitants reported by the local council, the average household size in Katanga and the assumption that there is usually one mother or caregiver in each household. It was not possible to exactly define the boarders of the study area, as the only available definition was that the KCK's office was reachable by feet. The reachability varies from day to day, according to weather and road conditions.

There is apparently no consensus about the preferable number of participants in FGDs or number of FGDs in literature. In this study, the group size varied

between 9 and 12 participants in each FGD. After the 8th FGD, both the researcher and the research assistants realized that no new relevant information was given. The collection of more data did not appear to have any additional worth. Thus, saturation level was reached. This view is supported by Sandelowski (2008) and Saumure and Given (2008) [Sandelowski, 2008, Saumure and Given, 2008].

2.9 Survey Design

2.10 Data collection methods and tools

For this study, a broad range of quantitative and qualitative data from primary and secondary data sources was collected.

Primary data is defined as data collected by the researcher himself or herself for the purpose of the study. Secondary data has been collected previously for objectives usually other than this particular research but is relevant for this study purpose [IWH, 2015].

Mixed methods were used to collect both quantitative and qualitative data. The data collecting methods used during this study are explained in the following sub-chapters.

Questionnaire

One method of data collection was the direct contact of the researcher and assistants trained by the researcher with the respondents [Ary et al., 2014]. A structured questionnaire with close-ended questions, divided into a part that included socio-demographic and socio-economic characteristics and a part with questions concerning health care practices was used for collecting quantitative data. The questionnaire and the interview guide for the FGDs were developed in collaboration with Edith Sanyu, a nurse of the public health nutrition section of Mulago hospital specialized in counselling of mothers and caregivers of malnourished children. Furthermore, Infant and Young Children Feeding Practices (IYCFP) were assessed. As IYCFP "directly affect the nutritional status of children under two years of age and, ultimately, impact child survival",

the WHO developed the IYCFP guidelines [WHO, 2010a]. They consist of a set of simple, valid and reliable indicators focused on food-related aspects of child feeding, in order to provide an instrument for national and subnational comparisons, for descriptions of trends over time and identification of groups at risk, targeting interventions and resource allocation and to monitor and evaluate interventions [WHO, 2010a]. A slightly adapted questionnaire was used in this study.

After explaining the objectives and requirements of the study, the participants signed an informed consent in case they decided to be part of the study. The questionnaires were administered to the women at their homes at convenient times to avoid interfering with household activities. The questions were in simple English language and did not use unfamiliar or scientific vocabulary. Depending on the level of English the participants were able to speak, the researcher either administered the questionnaire to them herself or the research assistants administered them while also functioning as translators to Luganda language.

Focus group discussions (FGDs)

"Qualitative methods are research methods used to understand and give meaning to a phenomenon, explore a problem or answer a question through people's narratives. As such, qualitative methods go beyond numerical data generated by quantitative methods (such as surveys) and provide a deeper understanding." [Marías et al., 2014]

FGDs are group interviews where the participants talk to each other, comment on each other's statements and ask questions. They can exchange their knowledge and discuss their points of view to a certain topic [Gill et al., 2008]. An interviewer asks questions that are developed previously in a given order [Marías et al., 2014].

Thus, qualitative methods can generate a more in-depth understanding of the quantitatively assessed data [Marías et al., 2014]. Qualitative data on maternal nutritional knowledge concerning breastfeeding and feeding practices, knowledge of food groups, hygienic practices and environment, preparation

methods, storing and serving of food, feeding practices during illness and the participants' perception of the child's nutritional status, the importance and priority of nutritional issues as well as ways how nutrition education can be provided most effectively and long-lasting, was collected through FGDs.
To assess the women's knowledge of the three food groups – energy giving, bodybuilding and protective foods - a total of 17 foods were used for the task to arrange them in the correct food groups. The interview guide for the FGDs was also developed in collaboration with Edith Sanyu.

The FGDs were carried out in a small classroom in Busia usually used by KCK. Luganda language was used to make the participants feel more confident and to facilitate the flow of the conversation. Hence, quality and quantity of the collected data could be improved. The research assistants conducted the discussions while the researcher had a neutral role and did not take part of the conversation but observed, took notes and recorded the conversation. Initially, some women engaged in the conversation more than others, but the research assistants were trained to make sure that all participants can express themselves and are part of the conversation.
After each discussion, the researcher reviewed the notes taken during the FGDs and the research assistants translated the record. A meeting was held in order to clarify misunderstandings and to ensure that the transcript still reflects the participants' opinions and ideas.
On each day of field work, 9 to 12 women were administered the questionnaire and following that, on the same day, special arrangements were made with them for a FGD. In total, the questionnaire was administered to 84 women and all of them participated in a FGD.

Field observations

Observation methods were conducted by walks through the community and by informal conversations with residents. Field notes and photographs documented them during the three months of the researcher's internship.

Food availability in local shops and markets, living conditions, hygiene practices and food preparation methods, sanitation facilities and water sources, waste disposal and reachability during dry and rainy season were objectives of the observations.

Document Analysis

Several documents relying on published and unpublished materials were considered as crucial for this study. They were examined carefully, detailed and systematically and then interpreted by the researcher.

Data management and analysis

Quantitative data was entered and analysed using Statistical Package for Social Science (SPSS) Version 22. Data regarding IYCFP was analysed according to the instructions of the WHO [WHO, 2010b]. Qualitative data was translated from the record. After that, the answers were summarized for each question and then classified and categorized as suggested by the FAO in the Guidelines for assessing nutrition-related KAP. The frequency of each answer in the respective category was counted in order to gain a perspective on the popularity of particular kinds of view and experiences. To further illustrate the findings, quotes of a participant's narrative were selected and added to the respective categories [Marías et al., 2014].

Data quality control

To ensure good quality of the collected data, the researcher closely supervised the research assistants and was with them all the time. Through this, any issues could be solved by the time they arose. Moreover, good quality of data was obtained by a pre-test and adequate training of the research assistants before starting fieldwork with the target population. All important observations, problems, ideas and actions taken were documented. The questionnaires were checked for completeness and veracity, omissions or incongruous data after every day of fieldwork and data entry was done every evening [Marías et al., 2014]. Translation of the FGDs was done right after every discussion by the

research assistants and in the regular meeting afterwards proper understanding of the whole team was ensured.

2.11 Recruitment and training of research assistants

The research assistants were recruited through verbal assessment by the executive manager of KCK. The criteria consisted of good conduct and reliability, experiences in quantitative and qualitative data collection, fluency in Luganda and English language, attainment of university education and good communicational skills. Women had an added advantage for they have better preconditions to talk to the female participants about child nutrition and health related topics.

Two research assistants, one teacher and one social worker with speciality in nutrition, were trained during two days on the following areas: study objectives, the application of the survey, interviewing techniques and filling the questionnaire. As suggested in the "Guidelines for assessing nutrition-related knowledge, attitudes and practices" [Marías et al., 2014], the studies background, justification and objectives were clearly explained to the research assistants. The meaning of every single question, the options for answers and why they were included in the survey was explained. The adequacy of the research assistants' nutritional knowledge was assured and the need to guarantee the confidentiality of the respondent's identity and answers was emphasised. They were told that the participants did not have to answer every question and that they could leave the study whenever they wanted, without any consequences. The research assistants were trained to try to interview the respondents privately and not in presence of any other people in order to prevent them from interfering in the responses [Marías et al., 2014]. The training also included behavioural requirements like courtesy, no receiving or making calls during interviews, no faking data and no discussion about information from other households. They were taught not to influence the responses of the participants, not to put them under pressure and to ask the questions in a way that does not push the respondents in one direction. Regular discussions with the whole team were held to clarify any upcoming questions as soon as they

arose to make sure that the whole procedure was comprehensive and clear to everyone in the team.

2.12 Pre-testing

To assess the validity and reliability of the research instruments, a pre-test was conducted with three respondents from Busia. The questions where administered to the respondents by the research assistants. Through this, the research assistants perfected their skills in interviewing and data quality management. The time required to complete the questionnaire was noted by the researcher and particular attention was paid on the understanding of questions, the way they were asked by the research assistants and the sequence of the questions. After the pre-test, a short debriefing was arranged to obtain feedback from the whole team, questions were clarified and the most-cited answers were added to the response options in the questionnaire and in the interview guide for the FGDs. As suggested in "Guidelines for assessing nutrition-related knowledge, attitudes and practices" [Marías et al., 2014], during the debriefing, the researcher focused especially on the readability - the comprehensibility of the questions in terms of vocabulary, sentence length and writing style [Townsend et al., 2003] - the coherence of the order of the questions and the respondents' burden in terms of perceived difficulty, expenditure of time, emotional stress [Patton, 2005] and on the validity, as will be explained in the following chapter. The respondents from the pre-test were excluded from the study.

2.13 Validity

Validity refers to the extent to which the research tools measure what they claim to measure, thus are able to address all the research objectives. The validity and reliability of the IYCFP was guaranteed by the template and two experts evaluated the validity of the additional research tools: The executive manager of KCK, Samuel Wambayo, and Edith Sanyu.

2.14 Reliability

Reliability refers to the extent to which the research tools are able to produce similar results under consistent conditions. The pre-test was used to ensure proper understanding of the questions by the respondents and to ascertain that the questions produce accurate, relevant, complete, consistent and uniform answers. The results from the analysis of the pre-test data were incorporated in the questionnaire and interview guide and the research assistants were well trained before the beginning of the fieldwork.

2.15 Ethical consideration

Permission to carry out this research was sought from KCK. An informed consent was requested from the respondents before administering the questionnaire and after having clearly explained the objectives of the study. The respondents were told that they could withdraw from the study at any time in case they wanted to. Anonymity, privacy and confidentiality of the information obtained from the respondents were safeguarded during data collection, analysis and discussion of results. The results of the study will be available to the respondents and a copy of the report will be submitted to KCK and to Edith Sanyu.

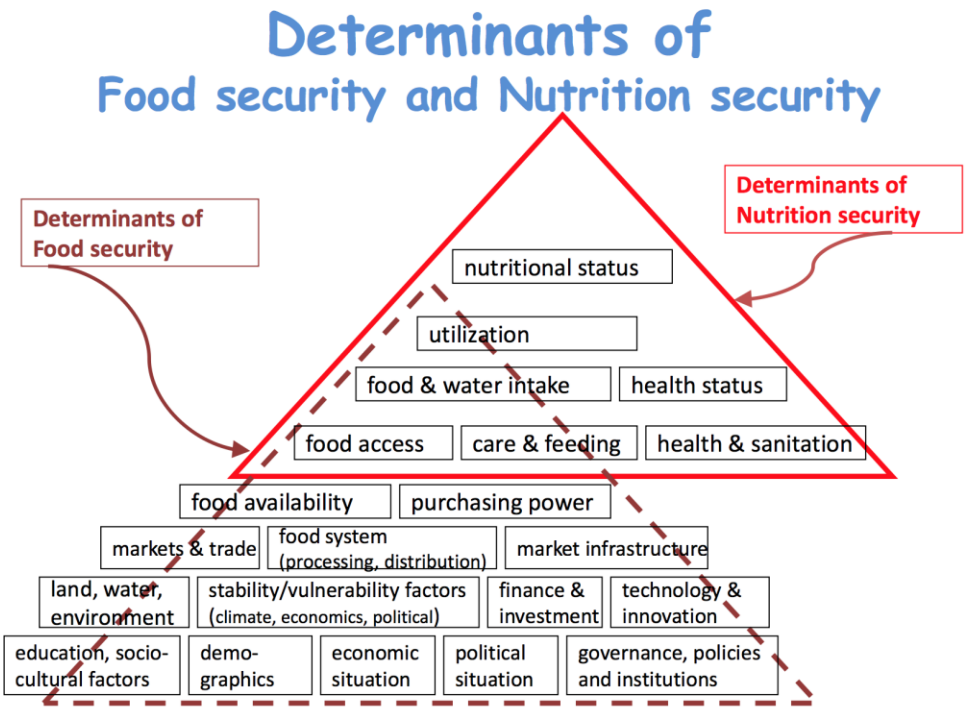
3 Nutrition situation in Uganda

3.1 Food and Nutrition Security

"Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life." [UNSCN, 2013]

Food Security and Nutrition Security are two concepts that are closely linked to each other, although there is a big difference between them [FAO, 2009]. While the term "Food Security" includes food production, food systems and socioeconomic aspects, "Nutrition Security" covers social aspects, a biological approach and sanitation concerns [UNSCN, 2013]. The determinants of each of the two concepts and their linkage can be seen in the following figure.

Figure 1. Determinants of Food Security and Nutrition Security [UNSCN, 2013]



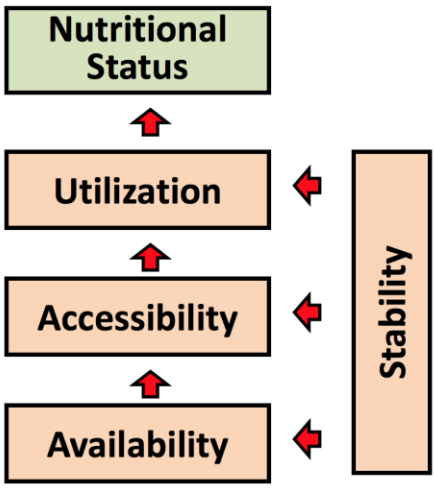
Food and Nutrition Security is a combination of the concept of Food Security and of Nutrition Security that emphasizes to achieve both of them. It facilitates communication, decisions and actions that support the eradication of hunger and malnutrition [UNSCN, 2013].

According to the latest Vulnerability Assessment Mapping (VAM) of the World Food Programme (WFP), in Uganda, the overall proportion of households classified as food and nutrition insecure is 6%. 21% of all households are moderately food and nutrition insecure and at risk if conditions worsen. There are manifold reasons for that. In Central regions, the most serious problems regarding food and nutrition insecurity are insufficient food storage at household levels, low incomes and rising food prices. All over Uganda, chronic illnesses, seasonal changes of income in the agricultural sector, high dependence on agriculture in general and increasing food prices lead to a high proportion of people being food and nutrition insecure [UBOS and WFP, 2013]. This will be examined in the following subchapters.

3.1.1 Food Security

Food security consists of four dimensions:

Figure 2. Determinants of Food Security [UNSCN, 2013]



Food availability and utilization in Uganda

Food must be available in adequate amounts and on a consistent basis. It includes domestic production, import capacity, food stocks and food aid [FAO, 2006]. The indicator "Utilization of food" includes food safety and quality, hygiene and processes during production, harvesting, storage and transportation and the satisfaction of dietary needs in terms of energy, macro- and micronutrients [FAO, 2006].

Uganda produces most of the staples itself [UBOS and WFP, 2013]. However, the high population growth rate and declining food production threaten Uganda's self-sufficiency in food production. Moreover, choices on what crops to grow very much depend on the extent of required labour. Large amounts of plantains - called "matooke" in Uganda - and cassava, which are less laborious but also less nutritious than for example millet or beans, affect people's dietary diversity in a negative way [UBOS, 2014].

Furthermore, the quantity and quality of stored foods is heavily affected by poor food storage conditions and bad storage structures. Insufficient drying leads to the prevalent high post-harvest losses and thus a threat for the national food security [Costa, 2015].

Food access and stability in Uganda

The access to appropriate food depends on the income of a household, the distribution of the income in the household, the food production of a household and the food prices on the market [FAO, 2006]. In Uganda, a proportion of 19,7% of all people is living under the poverty line, hence on less than $1 a day (MoFPED, 2014). Chronically poor households are characterized by a dependence on undiversified income sources, subsistence-agriculture based livelihoods and high dependency ratios (ratio between people not in the labour force and people in the labour force) [UBOS, 2016]. Rising food prices and decreasing incomes affect the food access of many households, especially in urban areas, where income inequalities are higher than in rural areas.

Furthermore, the access to food varies by season in Uganda. The periods from October to March and from May to July are the most difficult ones, when

frequent droughts and poor rains create difficult conditions and thus increased food prices [UBOS and WFP, 2013]. As Uganda is self-sufficient for its major staple production, the global rise of food prices affects Ugandan's food prices only in a limited amount [Benson, Mugarura et al., 2007]. The estimated average proportion of household expenditures spent on food in Uganda varies between 46% and 54%, depending on the consulted survey [UBOS, 2014, UBOS and WFP, 2013].

3.1.2 Nutrition Security

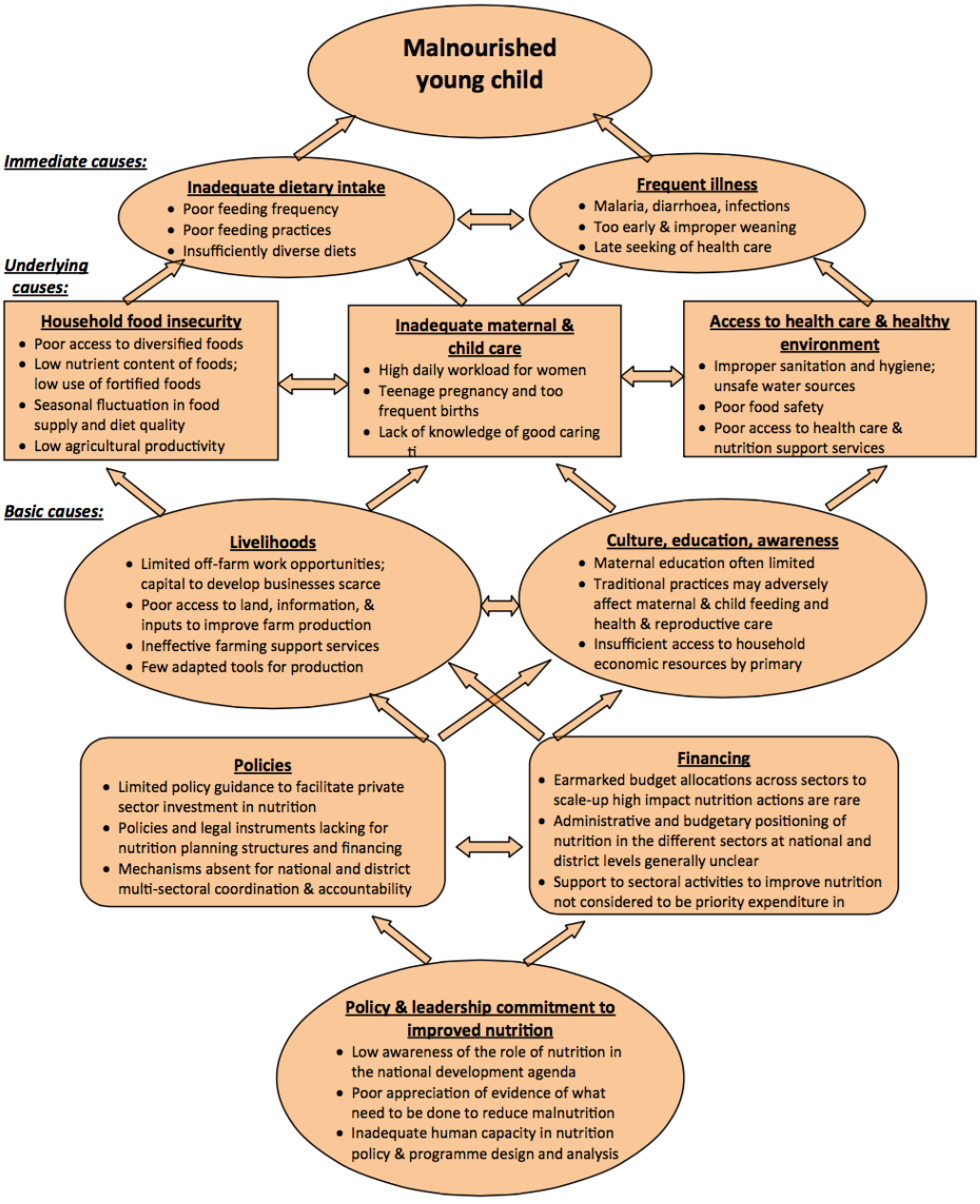
Nutrition Security consists of three dimensions:

1. Access to adequate food: Food must be adequate, hence it must satisfy dietary needs that depend on a person's age, living conditions, health, occupation, sex, etc. Regarding children, a diet is only considered as adequate if it contains sufficient amounts of all necessary nutrients for optimal physical and mental development. Foods must be safe and free from adverse substances such as contaminants from industrial or agricultural processes and they must be culturally acceptable, thus comply with religious and cultural norms and culturally characterized eating habits [OHCHR, 2010].
2. Care and feeding practices, as will be described in chapter 3.2
3. Sanitation and health, as will be described in chapter 3.2. [UNSCN, 2013].

Nutrition Security cannot be achieved without Food Security at household level [FAO, 2009]. In the next chapter, a closer examination of the items that concern especially young Ugandan children will be undertaken.

3.2 Risk factors and causes of young child malnutrition in Uganda

Figure 3. Young Child Malnutrition. A Conceptual Framework for Uganda [Government of Uganda, 2011]



The figure above presents an adapted version of the conceptual framework of causes of malnutrition developed by UNICEF. It explains the multifaceted causal pathway for childhood malnutrition in Uganda from basic to immediate causes. The immediate causes are mainly operating on individual levels. As in

many parts of the developing world, they are two-fold in Uganda [Government of Uganda, 2011]:

- Poor feeding practices with too early and inadequate complementary feeding, lack of proper hygienic measures and little dietary diversification result in inadequate dietary intake of children [Government of Uganda, 2011].
- High disease burden, mainly from malaria, diarrhoeal diseases and acute respiratory infections, causes a loss of appetite, reduced food intake and an increased loss and reduced absorption of nutrients. The recovery of weight gain after acute infections often occurs relatively rapidly. However, due to the high frequency of infections, linear growth hardly gets a chance to catch up. As a result, stunting levels among Ugandan children are high [Vella et al., 1992].
- Health care is frequently sought too late, deteriorating the children's health status both short and long term [Government of Uganda, 2011].

The underlying causes operate on household and community level. They lead to inadequate dietary intake and high disease burden, as will be described in the following part:

- Household food insecurity: Poor access to diversified foods and low nutrient content of foods which are used on the one hand and seasonal fluctuations in food availability and food prices due to seasonal earning patterns on the other hand lead to poor diet quality [Government of Uganda, 2011].
- Inadequate maternal and child care: The daily workload of women in Uganda is heavy, as they are usually primary caregivers of children and other dependent household members, do farming and household chores and might be involved in small business activities. In addition, frequent births make it difficult for women to care for their infants and children while also recovering themselves [Government of Uganda, 2011].
- Poor health care: Access to health care and a healthy environment is not available for many mothers, caregivers and children. Toilets and other

sanitation services, a reliable water supply, safe foods, effective health care facilities and nutrition support services, such as micronutrient supplementation and nutrition education, are essential for a healthy life. However, many of them are frequently not achievable for Ugandan families [Government of Uganda, 2011].

- An additional problem is given by the seasonality in incidences of disease in combination with seasonal changes in the quality of care, both family and healthcare. During the rainy seasons, the prevalence of childhood diseases increases. In this period, also the health care facilities' supplies and stuffing are lowest: Many impassable roads limit transportations, most of the health care workers take their holidays to work on their farms and the mothers' and caregivers' workload with farm activities is highest. The result is little quality of childcare [Government of Uganda, 2011].

The basic causes range from cultural and ideological to ecological, economical and policy levels. In Uganda, they are mainly dependent on the availability and distribution of resources within the country. Livelihood opportunities are frequently limited and undiversified with big dependency on agricultural activities, whereas the access to land, information and support services is low. Knowledge both through cultural, formal and informal education is difficult to receive. Limited policies, political expectations and other priorities in the budget allocation lead to little support for sectorial activities to improve nutritional issues [Government of Uganda, 2011].

The overall awareness of nutrition as an important driver of the country's economic development is still low in Uganda. The political commitment is inadequate. The development of necessary policies and investments in structures for coordinating action that addresses mothers', caregivers' and children's nutrition is limited [Government of Uganda, 2011].

3.3 Window of opportunity

A person's nutritional status results from complex interactions between his or her food consumption, overall health status and health care practices. A child's nutritional status is additionally influenced by numerous socioeconomic and cultural factors. They cause specific intrauterine conditions during pregnancy and specific patterns of feeding a mother practices after birth. The time from contraception to the age of two years – called the "window of opportunity" - is especially important for a child's growth, health and overall development [Shrimpton et al., 2001, UBOS and ICF Int., 2012]. If damages to physical growth or brain development occur within these first 1000 days of life, they are more extensive and largely irreversible: Children are most vulnerable to micronutrient deficiencies that interfere with optimal growth. Childhood illnesses like diarrhoea and acute respiratory illnesses are very common and likely to deteriorate the overall health status of a child throughout his or her life [Shrimpton et al., 2001, UBOS and ICF Int., 2012].

Therefore, interventions to prevent malnutrition should focus on women of reproductive age, as they need to be able to properly nourish their children from the time of conception until those children are weaned. The greatest benefits of nutritional interventions are achieved within these first 1000 days [Shrimpton, et al., 2001].

3.4 Importance of mother's and caregiver's nutritional knowledge for children's nutrition

Nutritional knowledge is the understanding of different types of food and their influences on the body and health [Valeggia and Ellison, 2003].

Hence, a person's nutritional knowledge has major impacts on their food choices and preparation methods. Since the household's nutrition is mainly the women's responsibility in Uganda, knowledge particularly given to women is a powerful weapon against malnutrition [UNG Compact, 2011]. However, as men are usually responsible for the distribution of the household budget, it is crucial to sensitize them to the importance of this topic [Brinda et al., 2016]. For mothers and caregivers, nutritional knowledge concerning their children's diet is

from special importance. It includes the introduction of complementary foods in accordance to the child's age, the adequate types of food, frequency and methods of child feeding, diet during a child's illness and mother's and caregiver's perception of her child's nutritional status [WHO, 2010c].
There is ample scientific evidence that mothers' and caregivers' understanding and knowledge of nutrition and health practices have large impacts on the care they can provide their children with. Increased knowledge and skills enable women not only to better meet their household's nutritional needs, but also to enhance the household's food security and to improve the quality of daily life through better health care practices and higher incomes [UBOS and ICF Int., 2012].

3.5 Consequences of malnutrition in Uganda

Figure 4. Malnutrition's impact on productivity during the lifecycle and across generations [Government of Uganda, 2011]

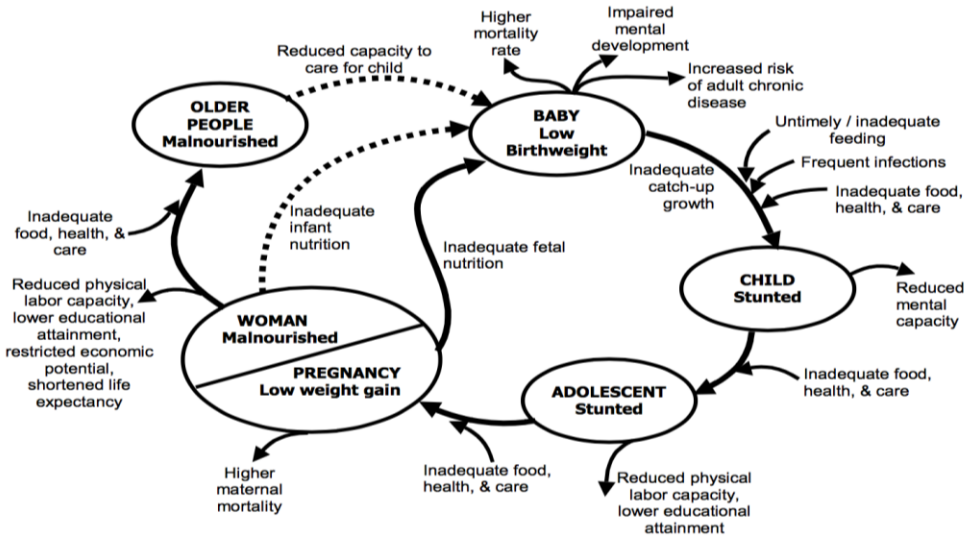


Figure 4 shows the impact of malnutrition on a person's productivity during the lifecycle and across generations. Babies with low birth weight born by malnourished mothers frequently start in their lives with impaired mental and physical development and increased risk of chronic diseases and disabilities. Malnourished children have a significantly increased overall risk of morbidity

and mortality. Thus, their development can be affected in a negative way both in short and long term [Shekar et al., 2006, Mason and Shrimpton, 2010]. The consequences of malnutrition continue with reduced mental capacity and thus poor students, which represents a severe contribution to the high drop out rates of the educational system. Hungry and malnourished students and adults show reduced physical labour capacity and lower education attainment, unable to be fully productive workers or to properly care for their children and more likely to be ill [Government of Uganda, 2011, Mason and Shrimpton, 2010, Shekar, 2006]. Malnourished women often give birth to babies with low birth weight, thereby transferring the broad disadvantages of malnutrition in their own life to the next generation [Government of Uganda, 2011].

Malnutrition affects millions of people around the world in various ways. 795 million people worldwide do not have enough to eat. 98% of them live in developing countries [FAO, 2015]. With one in four people being malnourished, Sub-Saharan Africa is the region with the highest prevalence of hunger [WFP, 2016b]. Not having sufficient food to meet one's dietary requirements is especially devastating to babies, children and women [Government of Uganda, 2011]. As stated earlier, an estimated 60% of deaths among children worldwide are directly or indirectly associated with malnutrition, with the first year of life representing the most critical one [MOH, 2009a]. 29% of all Ugandan children under 5 years are stunted [UBOS and ICF Int., 2016] (below median height for age of reference population [WFP, 2016a, UNICEF, 2013a]), which means that they are chronically malnourished [WHO, 2016c, WFP, 2016a]. 4% of all children under 5 years are wasted [UBOS and ICF Int., 2016] (below median weight for height of reference population [UNICEF, 2013a]) which is a sign of acute malnutrition [WFP, 2016a]. Underweight (below median weight for age of reference population [WFP, 2016a, UNICEF, 2013a]), is a sign of chronic or acute malnutrition or a combination of both [WFP, 2016a]. It affects 11% of all children under 5 years in Uganda [UBOS and ICF Int., 2016].

Malnutrition among Uganda's population leads to significant economic costs both for the malnourished individuals' household and community and for the government [Government of Uganda, 2011].
A reduction of malnutrition in the Ugandan population can reduce the prevalence of poverty through improved productivity of the individuals and their ability to compete. Moreover, it can produce savings to the government and families in treating illnesses related to malnutrition [FANTA-2, 2010].

3.6 Policies and Programmes

3.6.1 The Uganda Food and Nutrition Policy (UFNP)

The UFNP has been formulated in 2003 within the context of the overall national development policy objective to eradicate poverty, as it is one of the main causes of malnutrition. The UFNP aims "to ensure food security and adequate nutrition for all the people in Uganda, for their health as well as their social and economic well-being." [FAO, 2003b]. It calls for the promotion of the nutritional status of the Ugandan people, targeting food security and improvement of nutrition and incomes. Objectives range from assurance of food availability, accessibility and affordability for adequate diets for all people at all times, to improvement in food processing, preservation and storage, from marketing and distribution to nutrition education, information and communication. The policy also addresses food standards and quality control, nutrition adequacy and quality, gender issues in relation to food and nutrition and technologies for people with disabilities. It recognizes nutrition as a "pre-requisite for adequate growth and development, health, learning capacity, work performance and a good overall quality of life" and health as a key in human output [FAO, 2003b].

3.6.2 Uganda Nutrition Action Plan (2011-2016)

The five-year Uganda Nutrition Action Plan (UNAP) has been formulated within the context of the National Development Plan (NDP), whose theme is "Growth, Employment and Socio-Economic Transformation for Prosperity" with the

“National Vision of a transformed Ugandan society from a peasant to a modern and prosperous country within 30 years.” [NPA, 2010]
The UNAP provides a framework for addressing nutritional issues in Uganda. The main goal is to improve the population’s nutrition status and to reduce the magnitude of malnutrition with special target on women in childbearing age, infants and young children [Government of Uganda, 2011].
The UNAP was carried out from 2011-2016. However, until the finalization of the current study, no outcome evaluation seemed to be available.

3.6.3 Other policies and programmes

Uganda has voted for the United Nations Millennium Declaration in 2000 and was part of the World Food Summit commitment to halve the number of people who suffer from hunger by 2015. Even though this goal was narrowly missed, there is movement in the right direction [MoFPED, 2013].
Furthermore, Uganda confirmed the ICESCR in 1987 to ensure the fundamental right to freedom of hunger for everybody and is part of the international commitments to eradicate hunger, to ensure food security and to fight malnourishment [Omara, 2007].
In addition to the policies explained above, Uganda has implemented a Poverty Eradication Action Plan (PEAP) in 2010 with the goal to terminate poverty and all its manifestations, like malnourishment, food insecurity and hunger. A Plan for Modernisation of Agriculture, Health Sector Policy and Strategy Plan (HSSP) and several programmes to boost the national agricultural production were formulated. Uganda has signed the FAO Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in Context of National Food Security [FAO, 2005].

An analysis of policies, guidelines, declarations and covenants that Uganda has implemented and adopted, both on national and international level, results in the conclusion that relevant legislative instruments to reduce hunger and to realize the Human Right to Food are in place. The challenges, however, seem to be similar to those in other developing countries: States hardly pursue the

follow-up steps and programmes to realize these legislative instruments and to sustainably implement changes in the prevalent situation [Sengupta, 2010].

3.7 Interventions to improve children's nutritional status in Kampala

3.7.1 Child Health Days (CHDs)

Child Health Days are a health-promoting strategy introduced by UNICEF with the aim to deliver cost-effective healthcare to the whole population of a country. Even the most under-served areas are reached, also children who cannot attend school are targeted. In Uganda, CHDs have been introduced in 2002. They are conducted twice a year and the activities last from one week to one month, depending on the region.

"As a 'one stop shop', children receive vitamin A supplements to boost immunity and prevent blindness; de-worming tablets to treat parasitic infections and the iron-deficiency anaemia they can cause; routine immunization; monitoring for nutritional status; and insecticide-treated mosquito nets to prevent malaria. Other interventions may be added (often measles vaccination, sometimes hepatitis B). Women of child-bearing age receive tetanus toxoid vaccination." [UNICEF, n.d.]

Furthermore, nutrition and health education is provided to mothers [UNICEF, n.d.]. There is evidence that since the implementation of CHDs, the coverage of vitamin A supplementation, deworming, mosquito net distribution and immunization has largely improved. The nutritional status of children has been enhanced and CHDs have raised the profile of child survival and development [UNICEF, 2008].

3.7.2 Programmatic support to improve breastfeeding

„The Baby Friendly Hospital Initiative", developed by the WHO, is a concept to create a health care environment that supports breastfeeding. The aim is to empower women to make use of their breast milk to feed their children, to make clear that it is the best food for their infants and available for almost every woman, regardless of her circumstances and at no cost. Emphasis is also put on mothers who are not breastfeeding, HIV and infant feeding, mother-friendly

care and monitoring and assessment [Atchan et al., 2016, WHO and UNICEF, 2009].

It was incorporated into the "Ugandan Policy Guideline on Infant and Young Children Feeding Practices" and the training package for health workers in 2009. However, only 17 of all the 102 hospitals and health care centres that provide maternal services in Uganda have ever been certified as "baby friendly" [UBOS and ICF Int., 2012].

3.7.3 Integration of nutrition in management of HIV and tuberculosis infection

HIV and tuberculosis infections can affect both children and adults. They are frequently associated with reduced access to quality food, poor appetite due to the disease and medication, increased energy demands and malabsorption of nutrients. The Uganda Ministry of Health produced the first guidelines of nutrition and HIV in 2005 and compiled a "Strategic Plan regarding Nutrition in context of HIV and Tuberculosis Infection" in 2009. Its goal is an improved understanding of the relationship between HIV disease and tuberculosis infection and nutrition [MOH, 2009b].

3.7.4 Food fortification

The Uganda Ministry of Health established a National Working Group On Food Fortification (NWGFF) in order to put emphasis on the reduction of micronutrient deficiencies in the population. In 2012, 95% of all the vegetable oil used in Uganda was fortified with vitamin A and 40% of maize flour was fortified with iron [GAIN, n.d.].

The fortification of salt is the most common method to prevent iodine deficiencies in the population [Zimmermann et al., 2008]. In Uganda, the quality of salt is high in terms of iodine content. All the popular brands are fortified with iodine [MOH, 2008]. As reported by the UDHS 2011, 99% of all children in Uganda live in households that use iodine fortified salt [UBOS and ICF Int., 2012].

Some small fractions of sugar used in Uganda are fortified with vitamin A. Furthermore, some small amounts of maize flour are fortified with iron, zinc and

vitamin A. There are plans to fortify all maize and wheat flour distributed as food aid by the WFP. However, the major challenge in the fortification of flour is the large number of small-scale grain millers and therefore big difficulties in the achievement of all of them [FANTA-2, 2010].

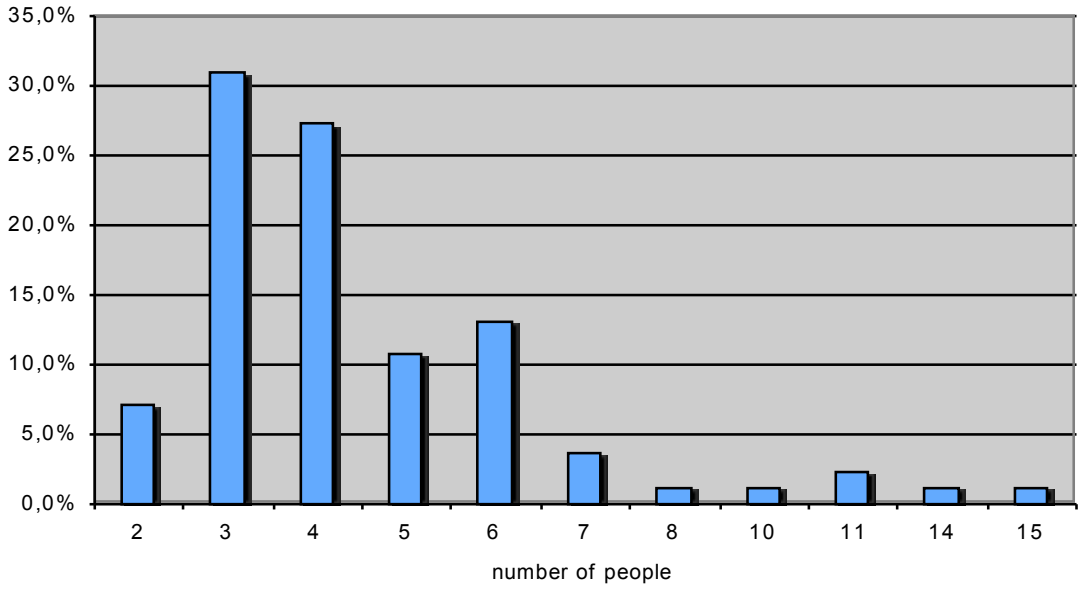
4 Results

4.1 Findings from the Questionnaire

Socio-demographic characteristics of the study population

Women of a total of 84 households were included in the study. The mean household size was 4,56 (SD=2,39) persons. The majority of households had six or less members (89,3%). 10,7% of all households had between 7 and 15 members.

Table 1. Household size



There were more persons below 18 years of age (55,5%) than above 18 years (44,5%) in the households of this study.

The participants in this study were women who were either mothers or caregivers of a child aged less than 24 months. If a woman was mother or caregiver of more than one child below 24 months of age, the youngest was selected, in order to avoid bias as described in 2.7.1. Thus, also 84 children were included in the study. The youngest child's age was 1 month and the oldest one was 23 months old. The mean age of all children was 13,08 months (SD=6,29).

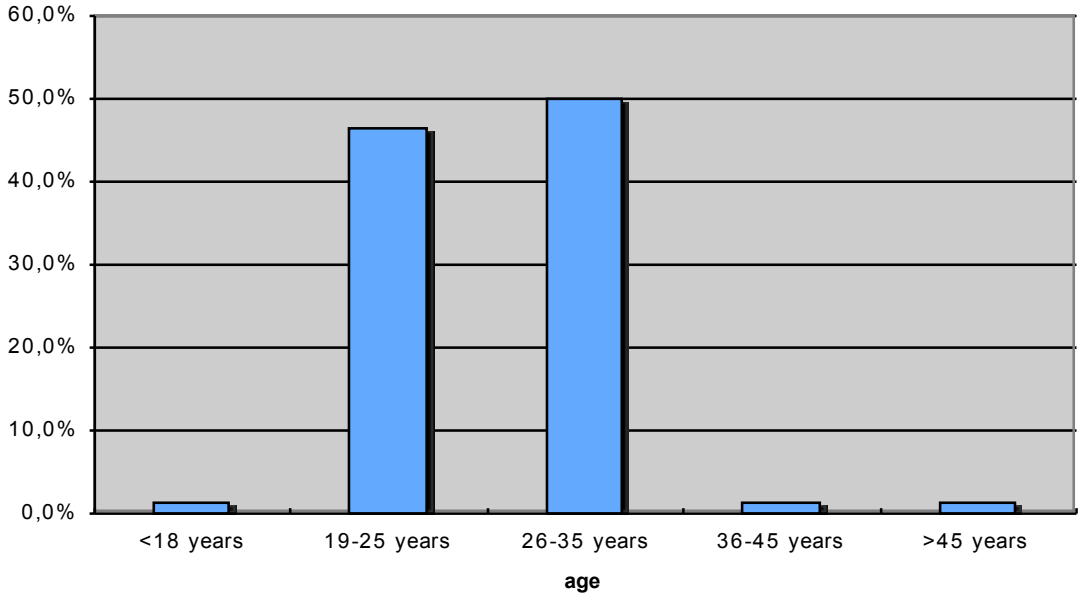
Household head

In a total of 72,6% of all households, the respondent's husband was the head of the household. In 23,8% of the households, the respondent, hence the mother or caregiver of a child below two years of age, was the head and in 3,6% of all the households, the respondent's mother was the head.

Age composition of the respondents

Half of all the respondents were between 26 and 35 years of age (50%) and almost all the other half was between 19 and 25 years old (46,4%). Only 3,6% were either less than 18 years (1,2%) or more than 36 years (2,4%) old.

Table 2. Age of respondents

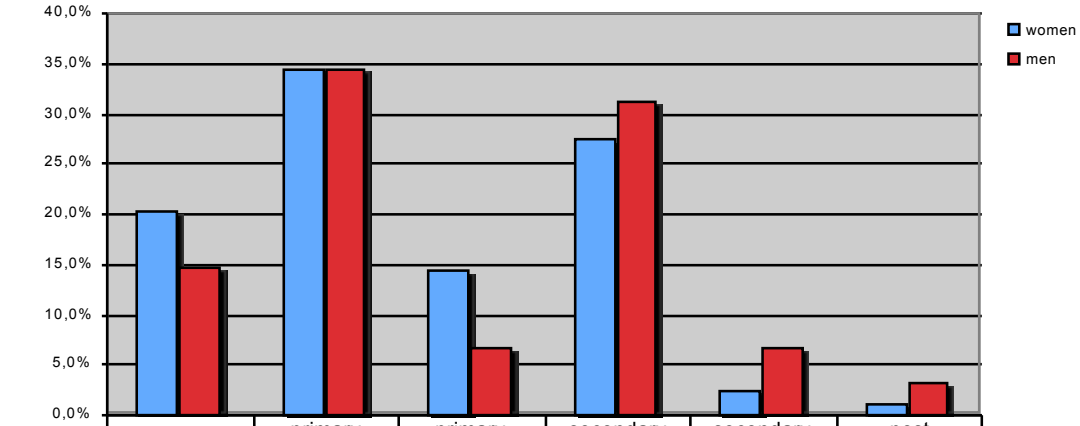


Education achievement

To gain a comprehension of gender disparities in the study population, Table 3 shows the educational achievement of men and women. While more than half (54,7%) of all women did not attain any formal education or did not complete primary school, less than half (49,2%) of men did so. 14,3% of women and 6,6% of men completed primary school. 29,8% of women and 37,7% of men started or completed secondary education and only 1,2% of women and 3,3% of men attained post secondary education.

Overall, the education attainment is higher among men.

Table 3. Highest achieved education level women and men



	no formal education	primary education not completed	primary education completed	secondary education not completed	secondary education completed	post secondary education
women	20,2%	34,5%	14,3%	27,4%	2,4%	1,2%
men	14,8%	34,4%	6,6%	31,1%	6,6%	3,3%

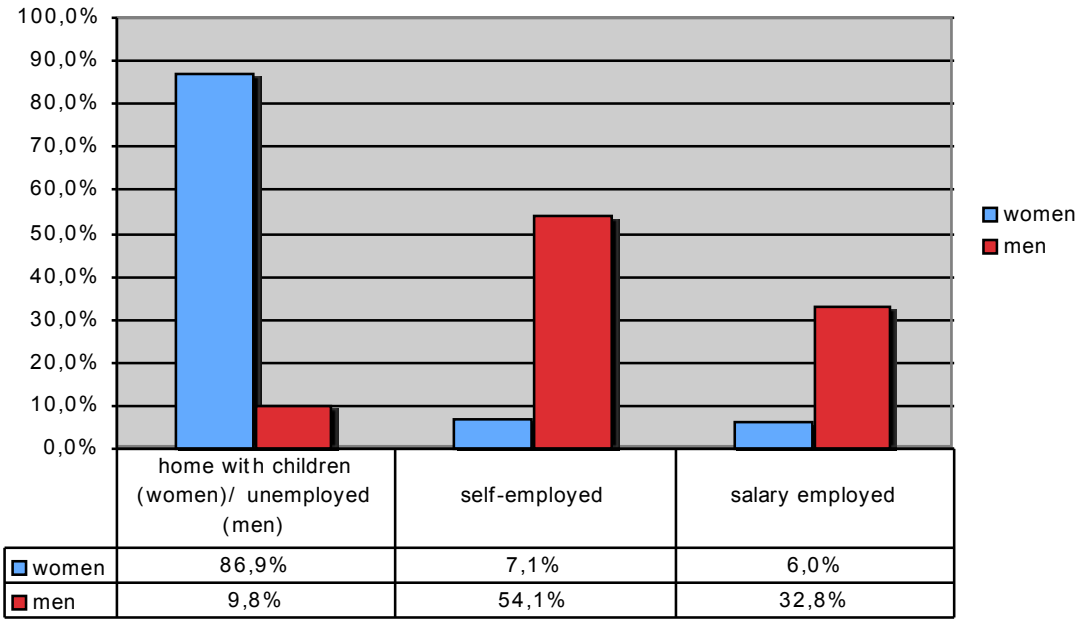
Employment status

The differences between the employment status of male and female household heads are shown in Table 4.

The majority (86,9%) of mothers and caregivers that participated in the study did not earn money but staid at home with their children. Only 7,1% of them were self-employed and 6,0% were salary employed.

54,1% of all men in the study were self-employed, while one third (32,8%) was salary employed. 9,8% did not have a job at the time of the study.

Table 4. Employment status women and men



	home with children (women)/ unemployed (men)	self-employed	salary employed
women	86,9%	7,1%	6,0%
men	9,8%	54,1%	32,8%

Financial support

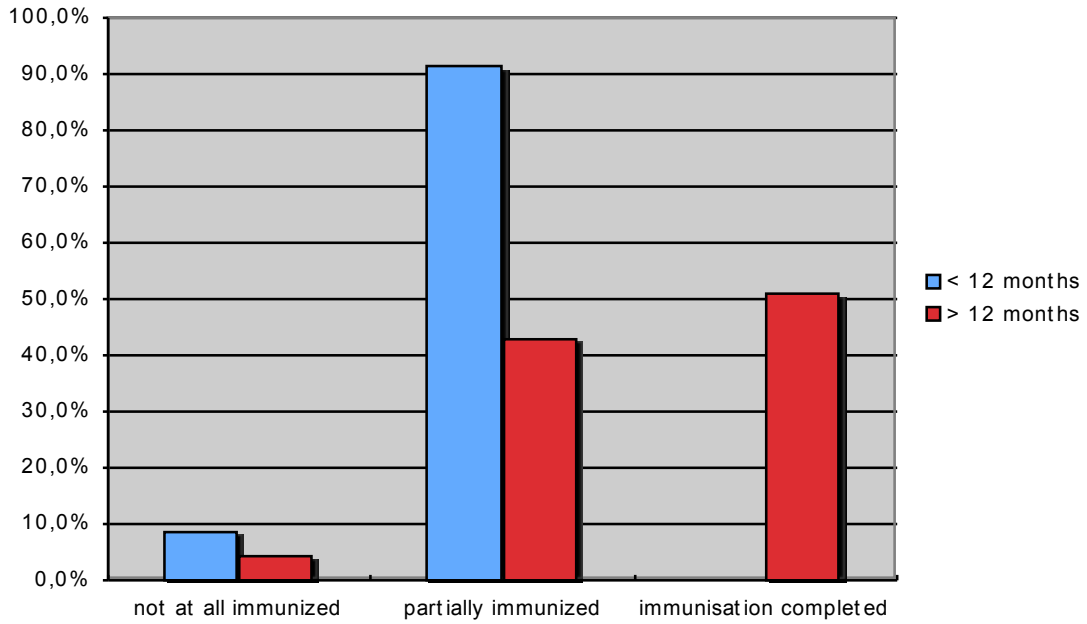
Most of the households (80,9%) did not get any other financial support than the money they earned in their jobs. 14,3% got remittances from their relatives or friends and 4,8% were financially supported by NGOs.

Health care practices

Availability of child health card: The child health card helps to follow up child health issues, particularly the child's immunization status and nutrition related aspects. Among others, it includes a section for growth monitoring, immunizations, receiving of vitamin A supplementation and deworming tablets. The majority of mothers and caregivers (89,3%) had a health card for their children.

Immunization status: To reduce childhood morbidity and mortality, immunization against the eight vaccine-preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, hepatitis B, haemophilus influenza, polio and measles) is crucial [UBOS and ICF Int., 2016]. WHO guidelines classify a child as fully vaccinated when it has received a vaccination against tuberculosis, three doses each of diphtheria, pertussis, tetanus and polio vaccines and a measles vaccination by the age of 12 months [UBOS and WFP, 2013]. Thus, children below 12 months are assumed to having complied the vaccination schedule according to their age, when their mothers or caregivers indicated that they were "partially immunized" in this study. In total, 91,4% of all children below 12 months were partially immunized and 51,0% of all children above 12 months were completely immunized. Thus, a total of 67,9% of all children in this study have complied the Ugandan vaccination schedule with reference to their age.

Table 5. Immunization status



Only 7,1% of all children in the study have not been vaccinated. The reasons for that were either that the mothers or caregivers had no time to take their child to a health facility where they would get the vaccinations (50%), they were not aware of the importance of immunizations (33,3%) or they had the opinion that vaccinations may harm the child (16,7%).

As explained in chapter 3.7.1, the administration of vitamin A supplementation and deworming medicine is part of the biannual Child Health Days. They are usually held in April and October [UNICEF, 2011a]. Due to the time of data collection, the questionnaire assessed the receipt of both of the medicines in October.
91,7% of all children in the study received vitamin A supplements and deworming medicine and only 6% did not. 2,3% of the respondents did not know if their children received them.

In total, two-third of all children have suffered from some illness in the two weeks before their mothers or caregivers participated in the study.
41% of them were sick once, 14,3% twice, 16,1% three times and 28,6% were sick all the time.

78,6% of mothers and caregivers of children that were sick sought treatment. Of this proportion, almost half (47,7%) went to a public health facility, one-third (34,1%) went to a private clinic or pharmacy, 11,4% treated their child at home with their own medication and 6,8% went to a traditional healer.

4.1.1 Infant and Young Children Feeding Practises (IYCFP)

Early initiation of breastfeeding

This indicator assesses the proportion of children who were put to the breast within the first hour after their birth [WHO, 2010a]. In this study, 52,4% of all mothers put their new born baby to their breast within one hour after they gave birth to them.

Exclusive breastfeeding under six months

The proportion of infants younger than six months who are fed exclusively with breast milk is reflected by this indicator [WHO, 2010c]. In the sample of this study, this is the case for a proportion of 54,5% of all children below six months.

Continued breastfeeding at 1 year

This indicator measures the proportion of children between 12 and 15 months who are fed with breast milk. It does not distinguish between full and partial breastfeeding practices [WHO, 2010a]. In the sample of this study, 71,4% of all children aged between 12 and 15 months were fed with breast milk.

Introduction of solid, semi-solid or soft foods

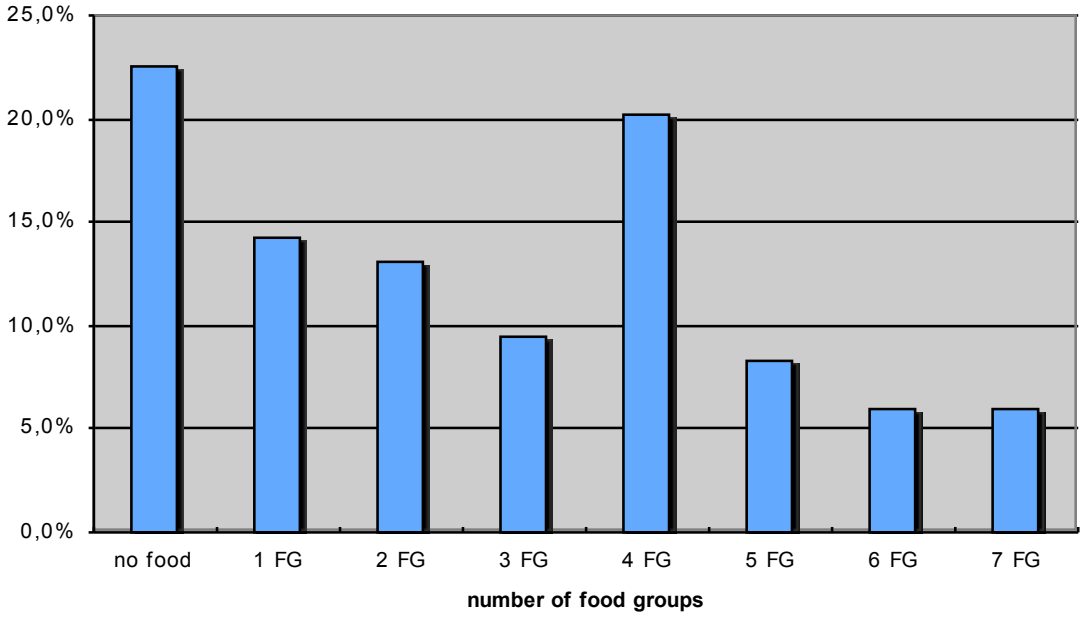
The introduction of complimentary foods is recommended around the age of six months [WHO, 2010c]. In this study, only 2,4% of all children fit into the age criteria of this indicator (6-8 months). All of them received solid, semi-solid or soft foods the day preceding the study.

Minimum dietary diversity

Children of the age of 6-23 months, who receive foods from 4 or more food

groups, are assumed to have a minimum dietary diversity [WHO, 2010c]. In this study, 46,6% received foods from at least four of the food groups and 53,4% did not.

Table 6. Number of food groups all children 6-23 months



Minimum meal frequency

Children 6-23 months of age who receive solid, semi-solid or soft foods the minimum number of times are classified as receiving the minimum meal frequency. For breastfed children, the minimum number of times varies with age. Between 6 and 8 months the minimum meal frequency is two times a day and between 9 and 23 months it is three times. For non-breastfed children, milk feeds, such as animal milk, infant formula and yoghurt, are included in the calculation. The minimum number of times is four, independent of the child's age [WHO, 2010c].

Overall, in this study all of the breastfed children aged 6-8 months received the minimum number of two meals a day and about one-fifth (19,4%) of breastfed children aged 9-23 months received at least three meals a day. More than half of the breastfed children between 9 and 23 months (54,8%) received only two meals and one-quarter (25,8%) ate just one meal.

For non-breastfed children, less than a third (30,6%) of all children between 9 and 23 months of age received four or more portions of milk feeds or foods.

Minimum acceptable diet

This indicator shows the proportion of breastfed children aged 6-23 months who had at least the minimum dietary diversity and the minimum meal frequency and of non-breastfed children of the same age who received at least two milk feedings and had at least the minimum dietary diversity and the minimum meal frequency during the day preceding the survey [WHO, 2010c].
In total, one-fifth (20,2%) of all children in this study received a minimum acceptable diet on the previous day.

Children ever breastfed

The culture of breastfeeding in the study population is reflected by this indicator [WHO, 2010c]. In the study population, a total of 92,2% of all children below two years of age has ever been breastfed.

Age-appropriate breastfeeding

For children below six months, age-appropriate breastfeeding means that they are exclusively breastfed. Children older than six months are counted in this indicator, if they receive foods and/or liquids besides breast milk [WHO, 2010c]. In this study, about half (54,5% below six months and 50,7% above six months) of all children were breastfed age-appropriately.

Predominant breastfeeding under six months

Predominant breastfeeding for children below six months means, that these children receive breast milk and potentially Oral Rehydration Solutions, vitamin and/or mineral supplements, ritual fluids, water and water-based drinks and fruit juice. Children who are fed other liquids, non-human milk and food-based fluids, or solid and semi-solid foods are not counted in this indicator [WHO, 2010c].
54,5% of all children under six months in the study sample were predominantly breastfed.

Bottle-feeding

Due to the high risk of contamination with germs or other disease vectors, mothers and caregivers are discouraged to use bottles with nipples to feed their children [WHO, 2010c]. However, almost half (46,4%) of all children in the study sample are fed with a bottle.

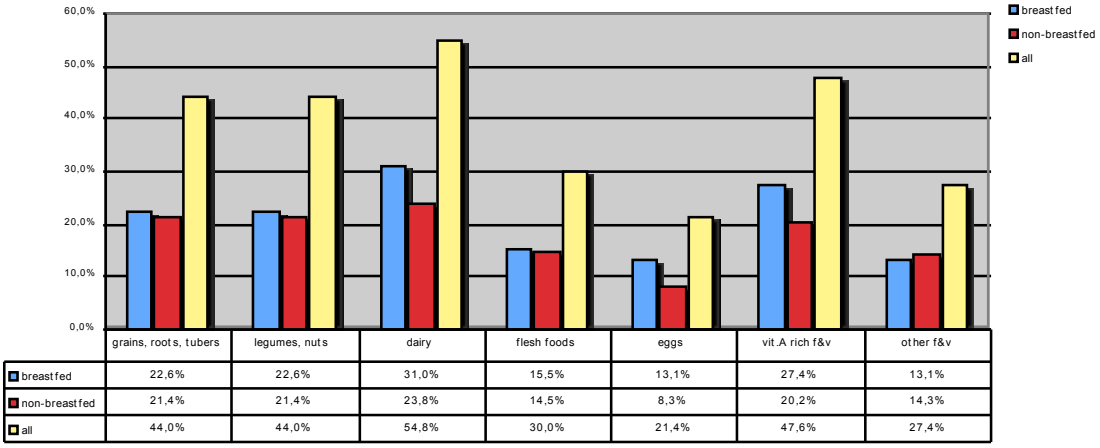
Milk feeding frequency for non-breastfed children

For non-breastfed children, a daily minimum of two milk feedings, such as infant formula, cow milk or other animal milk, is recommended [WHO, 2010a]. About half of all children between 6 and 23 months are not breastfed. Of this proportion, about one-quarter (22,2%) received two or more milk feedings on the previous day.

Frequency of the foods consumed in each food group (FG)

- FG 1: Grains, roots and tubers
- FG 2: Legumes and nuts
- FG 3: Dairy products (milk, yoghurt, cheese)
- FG 4: Flesh foods (meat, fish, poultry and liver/organ meat)
- FG 5: Eggs
- FG 6: Vitamin-A rich fruits and vegetables
- FG 7: Other fruits and vegetables

Table 7. Frequency of foods consumed in each food group



	grains, roots, tubers	legumes, nuts	dairy	flesh foods	eggs	vit.A rich f&v	other f&v
breastfed	22,6%	22,6%	31,0%	15,5%	13,1%	27,4%	13,1%
non-breastfed	21,4%	21,4%	23,8%	14,5%	8,3%	20,2%	14,3%
all	44,0%	44,0%	54,8%	30,0%	21,4%	47,6%	27,4%

FG 3, dairy products (milk, yoghurt, cheese), was consumed by 54,8% of all children. It was followed by FG 6, vitamin A-rich fruits and vegetables and then FG 1, grains, roots and tubers and FG 2, legumes and nuts. 30% consumed FG 4, flesh foods (meat, fish, poultry and liver/organ meats), and slightly less children consumed FG 7, other fruits and vegetables. 21,4% consumed FG 5, eggs.

36,1% of all respondents stated that their children received black tea the day preceding the survey.

4.2 Focus Group Discussion Findings

Mothers' and caregivers' awareness of an adequate diet

The majority of mothers and caregivers understand that food is important for their children to grow and develop well and to avoid diseases. Apart from that, their awareness of the important components of an adequate diet for their children is limited. The arguments mentioned most frequently are that food makes their children feel comfortable and satisfied, that their children are not hungry anymore and that they have a good feeling in their stomach. They believe that food gives them energy and power to live. Their knowledge about food composition or about the content of nutrients of different types of food or

the functions of particular nutrients in the human body is low. The majority of women mentioned that they have never received any nutrition education on how to feed their children. Some of them got some information on how to breastfeed their child at the hospital right after giving birth and some joined a nutrition class organized by KCK on women's day on the 8th of March 2016.

"Right after delivering you get very little information on how to breastfeed, but no real teaching." [Participant of FGD 2]

Breastfeeding practices and knowledge

There are big variations in the knowledge of good breastfeeding practices. Many women breastfeed their infants every time they wake up, whenever they want or whenever they cry. The available time for childcare seems to be a decisive factor for the extent of breastfeeding. Some women have the opinion, that their babies should not be breastfed when they cry because they would learn that they get everything they want if they start crying. They wait until their baby has stopped crying and breastfeed it afterwards. Some women think that infants should drink only plain water in the first week of their life. Others give them just water, milk and fresh diary or cassava flour and state that it is a better way to feed their new born babies than breastfeeding them. The majority of mothers and caregivers agreed that, when they do not have enough breast milk to adequately feed their infant, it is important to breastfeed it many times because in this way, the amount of breast milk increases. Some of them explained that mothers and caregivers should give their baby plain water only if they are not able to produce enough breast milk.

"It depends if you have time. If you have time, you breastfeed your baby and if you don't have time, your baby gets nothing." [Participant of FGD 4]

There are big differences in the women's perception of the recommended duration of exclusive breastfeeding. The answers ranged from three months to

two years without anything else to eat or drink. The most common answer was one year.

"For the first time of an infant's life, the best food is breast milk." [Participant of FGD 1]

Conversely to the statement that exclusive breastfeeding for the first time of an infant's life is best, almost all of the participants mentioned that they give other foods than breast milk to their babies within the first six months of their life. Most of them give plantains (matooke), corn mash (posho), beans, groundnuts, bananas, sweet potatoes, rice and Irish potatoes. Some explained that if they have money, they give them eggs, milk and margarine. To sum up, it can be said that the majority of infants gets most of the normal family meals already before reaching the age of six months.

Most of the mothers and caregivers agreed that it is good for their babies to drink black tea. They give it to them almost every day. Only a few women stated that it is better for their babies to get only breast milk and nothing else in the first six months of their life.

The participants are not well informed about good breastfeeding practices in case they are HIV positive. The answers ranged from no breastfeeding at all over three months up to 1,5 years of exclusive breastfeeding. Many of them did not answer the question at all or said that they did not know.

"First, the recommendation was six months, but now they changed it to 1,5 years." [Participant of FGD 2]

<u>Feeding practices</u>

The participants have good knowledge about the most favourable texture of complementary foods for their children. They know that it should be well cooked, soft and warm because young children do not have teeth. They use to mingle the food after cooking and mix everything together to a mash.

The participants explained that it takes more time to cook baby's food than the normal family meals because it should be softer. Some of them emphasized that it is important not to cook the vegetables too long because they loose their nutrients. However, their knowledge about the kind of nutrients, that would be lost, was limited.

"Children get more energy from the food when it's soft." [Participant of FGD 5]

Regarding the favourable amount of meals a child should get a day, the most common answers were three to four times a day. Some women said that their children should get something to eat whenever they are hungry or every time they want. There is awareness about the fact that children need more food if they are infected with hookworms. The participants emphasized that they cannot afford an adequate amount of food for their children every day.

"When you are poor, your children eat one meal a day. When you are rich, they eat many times." [Participant of FGD 4]

Usually, all of the household members eat together. It is not common among the participants to help the young child to eat first and then eat their own meal. Only one woman indicated to do so:

"First give food to the baby and after the baby is satisfied, leave her with her plate and then eat yours." Participant of FGD 3]

Nutrition during illness

When a child does not want to eat, most mothers and caregivers see it as a sign that their child is sick. There are several strategies they have devised for such cases: Some take their child to a hospital, others give them medicine by themselves and some only breastfeed them and do not give them solid food. While some mothers and caregivers stated that it is important to help the child to eat, to try different kinds of food, to convince or force them to eat, give them

tea, many just leave the child alone in the opinion that they will eat if they are really hungry. There is a widespread consensus that the consumption of small silverfish, called “mukene”, can bring back the child’s appetite.

Hygiene

Almost all the participants are aware of the importance of washing their hands with soap and clear water before they start to cook. They emphasised that it is necessary to wash all the foods and saucepans they are going to use. Furthermore, they know that it is important to wash their hands after they went to the toilet, to use toilet paper, to keep sanitation in the toilet and cover pit latrines to avoid germs and thus diseases. They are aware that germs can cause diseases like vomiting, diarrhoea, cholera and worms. Just a few women admitted that they do not wash their hands before they start to cook, which evoked outrage among the other participants.

Mothers and caregivers use to wash their infant’s cup and plate with warm, hot or boiling water and soap, dry them with a towel and put them either in a bucket they can cover or in a sideboard, separated from the other cups and plates. Some of the women leave the dishes in hot water for a few minutes and use an extra sponge. Many of them use separate cups and plates for their children to avoid infections with diseases the adult household members might have. Some emphasised that it is not hygienic to use a duster to dry the dishes. They are aware that dusters can be contaminated with disease vectors. Moreover, there is knowledge about the transmission of diseases from adults to children and vice versa if they share one plate of food. Another reason why they do not eat from the same plate as their child does, is that the mothers and caregivers would overeat if they ate together and the baby would not get enough to eat. The most common strategy if there are leftovers is to decrease the fire of the charcoal stove and leave the leftovers in a saucepan on the fire all day long. It seems important to them that the food is always kept warm and covered to keep away flies and other disease vectors. Some women stated that they keep some of their leftovers in the fridge or freezer, but most participants of the study do not own a fridge or freezer. Sometimes, they also keep their leftovers warm by

putting them into the sunlight. Regarding food storage in general, they know that it is necessary to cover the containers and keep them in sideboards or high up in the roofs to avoid insects as well as rats. If they do not have a sideboard, they put the food they want to store in a saucepan they can cover. They know that insects have to be kept away because they can cause diseases.
It is a widespread opinion among the mothers and caregivers that it is good and hygienic to use bottles with nipples to feed their children. Reasons for that are that through this, insects and dust can be kept away and germs can be prevented. Only a few of the participants mentioned that bottles with nipples are difficult to handle due to hygienic reasons.

"Sometimes doctors don't allow them because mothers don't know how to use and how to clean them." Participant of FGD 5]

Mother's and caregiver's perception of child's nutritional status

None of the mothers and caregivers thinks that their children get all the foods and nutrients they need. The most frequent reasons for that were that they are living in a difficult situation and they lack the capability to provide sufficient food. They neither have enough money to buy food, nor the necessary information, experience and knowledge. Often, they need their little money for other essential things and end up not having any money left to buy sufficient amounts of food. They mentioned that they go to bed hungry regularly and that they skip meals in order to be able to keep their children satisfied. Many of the mothers and caregivers rely on the "feeding programme" by KCK to provide food for their children.

Mother's and caregiver's responsibility and power

Mothers and caregivers emphasised that it is their responsibility to cook and care for the nutritional needs of the whole household and especially of the children. It is one of their main tasks of everyday life. They decide what to eat and determine the portion sizes. Their decisions on what they cook are mainly dictated by the household's economic resources. On many days, they struggle

to provide sufficient food. They use a lot of time to care for the household's nutritional needs every day, partly because of the lack of money and partly due to the impossibility to come up with enough food. It is not uncommon that mothers and caregivers skip a meal to ensure that their children are satisfied, as they know it is important for their growth and health. They cannot prepare all the foods they would like to prepare but rather cook what they can get. The majority knows that it would be very important for their children's health and development to eat a greater variety of foods, but usually they cannot afford it.

Suggestions

The mothers and caregivers agreed that they would appreciate monthly meetings with experienced teachers. They would like them to show them how they can prepare adequate and nutritious food for their infants the right way with the money that is at their disposal. It is important for them that they are together in groups so they can learn from each other and that the programme is on a regular basis so they do not forget about it. They would be grateful about a magazine or book to take home, providing information about nutrient contents of different types of food and their importance in their children's and their own diet. In addition, the mothers and caregivers indicated that they are in need of food and clothes for their children because they do not have enough money to buy them in adequate amounts. They have big difficulties in providing sufficient means for their children and are frequently not at all able to do so. Some of them complained being pregnant and abandoned by their husband, not knowing how they should be able to care appropriately for their baby.

"We are ready to come and learn! We take anything we can get!" Participant of FGD 2]

5 Discussion

5.1 Discussion on methodological implications

“Formulating and designing targeted programmes and interventions [...] require more than just measuring nutritional status; they require a thorough understanding of what people actually eat and what personal factors underlie people’s dietary habits.” [Marías et al., 2014]

This baseline study has used various methods to assess a number of parameters in order to gain an insight as explained above. The methods used included questionnaires, FGDs, observations and document analysis.

The results, discussion and conclusion of this methodological approach could be affected by various challenges, including biases and errors of various kinds. To consider the trust of the findings of this study, a critical reflection of the methods and challenges is necessary and possible limitations must be explored [Marías et al., 2014].

The sampling of the study population was done purposely due to the lack of updated household lists and the impossibility to exactly determine the boarders of the area where the target population is living. The fact that the sampling was not conducted randomly could introduce some selection bias. Moreover, the sampling size might be too small and therefore lead to distortions.

The way the questions were asked could represent another challenge, as they might have been misunderstood by the respondents. However, by ensuring that all the questions were either directly developed by the WHO [WHO, 2010b] or created in consideration of guidelines by the FAO [Marías et al., 2014], and carefully reviewed by a range of persons with proper expertise, the probability of the introduction of errors was minimized. Moreover, a thorough training of the research assistants was implemented to keep the risk of biases as small as possible.

By including only women in the study, another challenge for the reliability of this study could arise. As the study aimed at assessing the nutritional knowledge

and practices of those who care for the children and this task is mainly dedicated to women in Uganda, this criterion was selected.
There are more foods available in Uganda than those listed in the questionnaire. However, the recommendations given by the WHO, adapted for the study area by the researcher, are seen as inclusive enough by the reviewers of the questionnaire and the research assistants to represent the dietary habits of the study population.
This study is based on self-reported statements and does not involve objective measurement. The answers given by the participants can be influenced by their personal perceptions, judgement, cooperation and memory [McClelland et al., 2001]. Differences between what is said and what is done cannot be excluded completely, however they were minimized by a thorough training of the research assistants' interviewing skills. Influences by environmental factors, such as other persons, were kept as low as possible to minimize their risk of biases.
This baseline study is of a descriptive kind and the questions assess specific pieces of nutrition-related knowledge that are considered as important indicators for a person's nutritional knowledge in terms of children's nutrition. It cannot reflect the culture-specific knowledge of the study population that might exist in addition to the assessed knowledge, as an explorative study might be able to do [Marías et al., 2014].
There is a high likelihood that exclusive breastfeeding may be over reported in this study due to limited understanding of the indicator. This presumption is supported by data from the International Atomic Energy Agency (IAEA) from South Africa. It shows that self-report of women concerning exclusive breastfeeding for the first six months of an infant's life may show large overestimations. Therefore, the Deuterium Dilution Technique (DDT) was introduced. This nuclear non-radioactive technique measures how many babies are in fact breastfed exclusively and when complementary foods are introduced. Rates of exclusive breastfeeding turned out to be much lower when measured in this way, compared to the women's self reports [Henriques, 2015].

Furthermore, the food group of diary products may have been misunderstood by some of the participants. In fact, it does not include breast milk and thus, this food group might be overrepresented in the findings of this study.

An extensive reflection of the methods used in this study leads to the conclusion that the majority of findings could not have been influenced by biases or errors. However, there seems to be a challenge of over reported exclusive breastfeeding and consumption of dairy products.

5.2 Socio-demographic and socio-economic characteristics

This study assessed the household composition, the educational and occupational level of respondents and household heads and the reception of financial support.

The mean household size of 4,56 people indicates a higher than the average household size, which is 3,80 people in urban areas in Uganda [UBOS and ICF Int., 2012]. Other studies have shown that a large household size exerts strain on the supply of sufficient amounts of food. It increases the competition for adequate nutrition, sanitation facilities, shelter and medical treatment. Moreover, a high population density increases the possibility of infectious diseases [Miller and Rodgers, 2009].

The age distribution of the overall household population indicates a heavy burden in the organization of sufficient and adequate food for the whole household and in meeting the household's basic needs in general. Many people of young age groups reflect a high age dependency ratio. This means that the proportion of people who are not in the labour force is higher than the one of those who are working and earning money. A high dependency ratio reflects a great burden on the people who are working [UN, n.d.]. These findings can partly explain the mothers' and caregivers' perception of great difficulties in the provision of adequate food for their children day by day.

The age composition of the mothers and caregivers in this study was high compared to the average age of women with children below two years of age in Uganda [UBOS, 2016]. Due to the sampling criteria of this study, the presence of a selection bias cannot be excluded.

The average age at a woman's first delivery in Uganda is 19.3 years [UBOS, 2016]. In this study, more than 90% of the mothers and caregivers were between 19 and 35 years of age and only one was less than 18 years old.

Most of the household heads in the study population were the respondent's husbands. There are big disparities in terms of employment between men and women in the study population as well as in the whole country. While the majority of men is either self employed or salary employed (86,9%), only a small proportion of mothers and caregivers (13,1%) is self or salary employed and the majority is at home with their children (86,9%), hence does not earn money. A small proportion of households get financial support by relatives, friends or NGOs. Data regarding the employment status of women and men in Kampala and in the lowest wealth quintile of Uganda show comparable patterns. Gender disparities are higher in the study area, though. In Kampala, 64,3% of women and 82,7% of men are currently employed. In the whole country of Uganda, 73,9% of women and 95,1% of men, who belong to the lowest wealth quintile, currently obtain a job [UBOS and ICF Int., 2012].

For a person's education attainment, in Uganda, sex seems to be an important indicator as well. Overall, the male part of the study population has achieved a higher education level than the female part did. While almost half (49,2%) of all men in the study population did not attain any formal education or did not complete primary school, more than the half (54,7%) of women did so.
These findings go along with the overall patterns in Kampala and in the lowest wealth quintile of Uganda. Gender disparities are lower in the population of this study though. Almost one-quarter of all women in Kampala did not attain any education (1,4%) or attended but did not complete primary education (22,5%). A slightly smaller proportion of men in Kampala did not receive any education (0,4%) or did not complete primary school (21,9%). In the lowest wealth quintile of Uganda, the patterns are similar but with much higher proportions of no or low educational attainment. Most of the women attained no (29,5%) or just some primary education (59,9%). A smaller but still very high proportion of men

did not attend any education (11,2%) or just some primary education (58,8%) [UBOS and ICF Int., 2012].

As shown above, the educational and occupational attainment of the mothers and caregivers who participated in this study is low. Many women are dependent on their spouses to provide financial resources for essential basic needs of the household.
Ssewanyana and Kasirye found an association between the sex of a household's head and its likelihood to be food secure in other developing countries. They concluded that, overall, households whose head is female are less likely to be food insecure than male-headed households. Mothers as household heads are more likely to spend a larger proportion of income on food than men do [Ssewanyana and Kasirye, 2010].

To achieve improvements in children's nutritional status, with consideration of the current gender allocation of family roles, it is important to educate and empower women on the one hand and to sensitize men for the importance of good child nutrition on the other hand [Brinda et al., 2016].
As Ugandan women on average spend more time on care and protection of their children than their partners do, they are usually the first to recognise that their child is sick. However, they often do not act until the head of the household notices the problem. Through female education, women can earn more authority and decision-making power in favour of their children's health [Caldwell, 1993].

There is ample scientific evidence for the strong association between mother's education and occupation and children's nutritional status.

The first paragraph focuses on the socio-economic status. There's a strong correlation between the socioeconomic characteristics of the household the children live in and their nutritional status [UBOS and ICF Int., 2016]. It determines, among other factors, the ability of a mother to provide adequate

food and primary care to her children and other family members [UBOS and ICF Int., 2012]. Several indicators of the socioeconomic status – household wealth, maternal education and the working status of the mother – are correlated with the quality of children's diets [Gewa and Leslie, 2015]. A higher socio-economic status also provides better access to informational, financial and material resources, which in turn can enable a better and more diversified diet [Gewa and Leslie, 2015, UBOS and ICF Int., 2012].

The second paragraph concerns education and its influences on a child's nutrition status.

Maternal schooling influences children's nutritional status through its effects on her nutritional knowledge and feeding practices and her allocation of household expenditures [Block, 2007]. An analysis of the UDHS 2006 and 2011 concludes that low literacy skills and lack of formal education of the mother are particular risk factors for poor child feeding practices [Ickes et al., 2015]. Better-educated women have higher chances to get a job and to boost the economic status of a household. An increased overall income means more available economic resources and a consequent and lasting benefit to the household's economic status [Ionescu, 2012, UNICEF, 1990]. Schooling and improvement in mothers' professional skills go along with higher chances to find not only employment, but also employment at a higher wage level [Behrman and Rosenzweig, 2002, Glick and Sahn, 1998], to marry men with higher education and income and to live in better neighbourhoods [Frost et al., 2005, Desai and Alva, 1998, Cleland and Van Ginneken, 1988]. By earning money, women can ease straining in the currently observed struggles. Adequate and sufficient foods, education attainment, decent housing, good sanitation and environmental hygiene and proper health care become affordable and easier accessible [UNICEF, 2013b]. In turn, much better conditions for an improvement of the nutritional status of the whole household and especially the children can be created [Ionescu, 2012, UNICEF, 1990].

Glewwe (1999) emphasizes three links through which the children's nutritional status is influenced by mother's education. The first one is the direct transfer of health knowledge to future mothers through formal education. Secondly, the ability of mothers to recognize illness and seek treatment adequately increases with their literacy and numeracy skills. Medical instructions for treatment are better understood and the application of treatment is more adequate to the different types of childhood illnesses. The third reason Glewwe highlights is the higher receptiveness of mothers to modern medicines with the increasing number of school years. Furthermore, Glewwe states that the inclusion of health knowledge skills in school curricula can improve children's nutritional status substantially. Future mothers are directly enabled to have improved health knowledge and better health care seeking behaviours [Glewwe, 1999].

More general knowledge gained through education may positively influence mother's values, priorities and their future planning capacity and thus their allocation of resources for the benefit of their children's wellbeing. This view is supported by a number of studies undertaken in developing countries [Hoddinott et al., 2013, Glick and Sahn, 1998, Thomas, 1993]. Through formal education, women can acquire skills they need both in their daily lives and at a work place. Literacy skills acquired at school may enhance a mother's understanding of information disseminated by mass media [Bhargava and Fox-Kean, 2003, Blunch, 2004]. In most cases, the improvement of a mother's education goes along with an improvement of the care she provides for her children [Burchi, 2010]. An employed mother, however, may also negatively influence a child's nutritional status as a job can reduce the time spent on childcare [Behrman and Rosenzweig, 2002, Glick and Sahn, 1998].

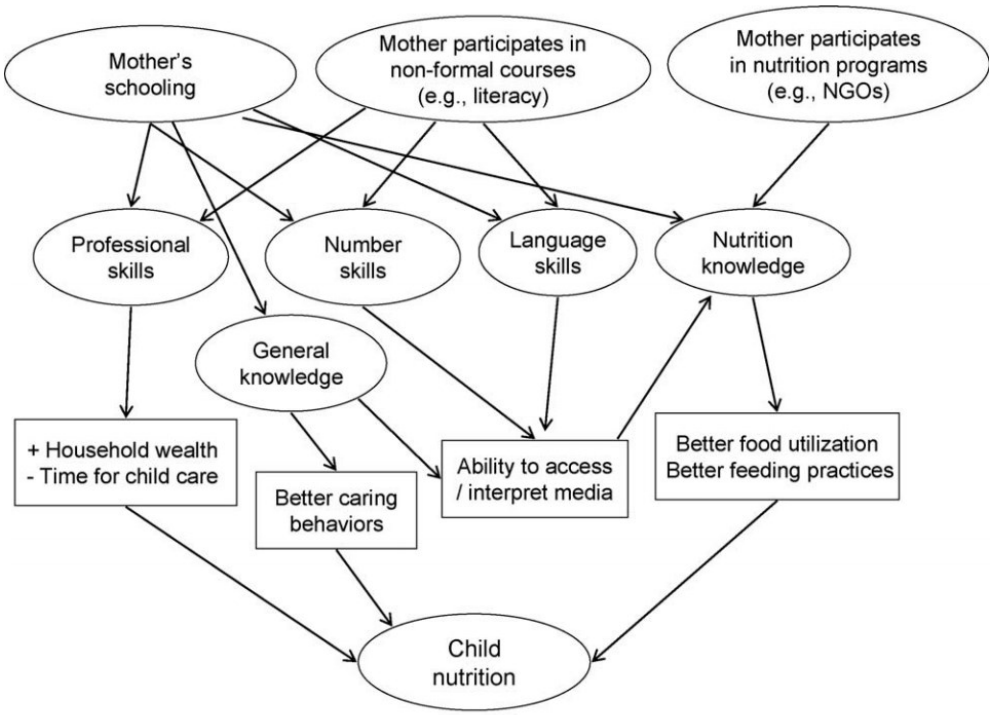
Better nutritional knowledge of men may lead to a prioritization of child health in their distribution of the household budget and enable women to act according to their knowledge [Brinda et al., 2016].

The following studies undertaken in developing countries show that there is a strong correlation between education and the socio-economic status.
A study conducted in Nairobi results in the conclusion that mother's education represents a strong predictor for children's nutritional status in slum settings. Given that malnutrition affects human capital and thus the ability to attain formal education in a negative way and given that education leads to better nutritional and health practices, the researchers state that emphasis on girl's education may contribute to breaking the poverty circle in urban poor settings [Abuya, et al., 2012].
A study conducted in Cambodia shows that girls' and women's acquisition of knowledge and skills contribute to greater empowerment of girls and women. Higher education attainment implicates numerous benefits in terms of autonomy, rights, labour market outcomes and social status. A mother who is earning money can contribute to a greater household income, which in turn directly raises the ability to purchase nutritious foods in sufficient amounts. Furthermore, better educated girls have functional benefits for the next generation. Their socio-economic status strongly determines the actions and choices they make during pregnancy and child rearing. Those in turn have great effects on children's nutritional status, their overall health, wellbeing and survival [Miller and Rodgers, 2009, Webb and Block, 2004, Frongillo et al., 1997, Pelletier et al., 1995].

The third paragraph focuses on non-formal education.
A study undertaken in Mozambique by Burchi (2010) demonstrated that "mothers with higher nutritional and health knowledge choose more nutritious food and a more diversified diet for their children than do others, thus improve their nutritional status, given the same amount of food." According to Burchi, nutritional knowledge is primarily acquired outside of school. Primary education was identified as a key to enhance mother's general knowledge, thus the ability to allocate resources more effectively in regard to their child's wellbeing and health care. Secondary education influences children's diet only indirectly by expanding a household's economical opportunities. Participation in non-formal

courses and nutrition programs by various organisations were identified as more influential on a child's nutrition status than formal education. Burchi provides a conceptual model on the influence of mother's schooling and non-formal education on a child's nutrition, as shown below. [Burchi, 2010]

Figure 5. Theoretical framework from mother's education to child nutrition [Burchi, 2010]



A general understanding of nutrition enables women to provide their children with a more balanced diet, higher nutritional quality – also without an increase of money at their disposal - and improvement of health and hygiene in their environment. Thus, an improvement in mother's nutritional knowledge may cause a qualitative improvement in children's nutritional status even when the quantity of food they can provide does not change. To acquire knowledge and understanding in nutrition- and health-related issues, also according to Bhargava and Fox-Kean and to Blunch, schooling is not necessarily the most important way [Bhargava and Fox-Kean, 2003, Blunch, 2004]. Non-formal educational activities or specific nutrition-related programmes are likely to positively impact on the nutritional knowledge and understanding of the

participants and thus positively affect their children's diet and nutritional status [Burchi, 2010, Faruque et al., 2008].

Not only the cited studies, but also the current study, lead to the conclusion that the lack of appropriate female educational attainment, either formal or non-formal education, has to be addressed, in order to improve the nutritional status of children.

5.3 Health practices

Immunisation averts an estimated 2,5 million child deaths per year. Despite the success, almost 20% of all children in developing countries do not get the complete immunization schedule for their first year of life [Maurice and Davey, 2009].
According to the UDHS 2016, half of all Ugandan children (55%) aged 12-23 months are fully vaccinated and 37% received all age-appropriate vaccinations. 1% of all children in the same age group have not received any vaccination [UBOS and ICF Int., 2012]. There is a positive correlation between the poverty of the household and the unlikeliness of being vaccinated fully [UBOS and WFP, 2013]. The immunization coverage of the children in the study (67,9%) was higher than the average rate in Uganda and also higher than the average rate in urban regions of Uganda [UBOS and ICF Int., 2012].

Moreover, the possession of a health card, as explained in chapter 4.1., was higher than average in the study population, with almost 90% compared to 59% in average Ugandan households [UBOS and ICF Int., 2012].

Vitamin A plays an important role in a child's development. Vitamin A Deficiency (VAD) contributes to increased morbidity and mortality risks and can cause eye damage and blindness. Moreover, VAD can increase the severity of infections and slow the recovery from illnesses [WHO, 2016f]. Main sources of Vitamin A for children in Uganda in foods are breast milk and other milks, liver, eggs, fish, butter, red palm oil, papaya, mangoes, carrots, pumpkins and dark green leafy vegetables [FAO, 2010].

According to the UDHS 2011, 49% of all children less than 5 years have deficiencies in vitamin A [UBOS and ICF Int., 2012]. Due to the ability of the human liver to store vitamin A for four to six months, periodic giving of vitamin A supplements to children every six months is a common method to prevent children from VAD [UNICEF, 2007] and prescribed by a Ugandan government policy. However, according to the UDHS, only 57% of all children between 6 and 59 months received a high dose of vitamin A in the six months preceding the survey [UBOS and ICF Int., 2012]. Different data about Vitamin A supplementation coverage was obtained by the CFSVA. It found that 7 of 10 children below two years took a vitamin A capsule in the six months preceding the survey [UBOS and WFP, 2013].

Hookworm infestations are highly associated with anaemia and other nutritional deficiencies. According to the UDHS 2011, half (50%) of all children between 6 and 59 months received deworming medication in the six months preceding the survey [UBOS and ICF Int., 2012].

Results from the present study show that an above average proportion of children (91,7%) received vitamin A supplements and deworming tablets during the last CHDs. These high rates might reflect the success of the implementation of CHDs in the study area, as there is evidence of large improvement of vaccination coverage, distribution of vitamin A supplementation, deworming medicine and mosquito nets and a general improvement of children's nutritional status, survival rates and development through CHDs [UNICEF, 2008].

Two-thirds of all children below two years whose mothers or caregivers took part in the study were sick at least one time during the two weeks preceding the survey. This is a very high proportion and can be the product of various factors, as will be described in the following section.

Fever is characteristic for a malaria infection. As shown in the CFSVA, half of all children under two years had fever in the two weeks preceding the survey, which may reflect the high prevalence of malaria among Uganda's children [UBOS and WFP, 2013].

Moreover, hygiene and sanitation are seen as great challenges in slum settings and are frequently determined as strong predictors of the population's health and nutritional status, especially of children. An unhygienic environment exposes them to infectious pathogens and diarrhoea triggers and challenges their immune system. As a child's immune system is lower than an adult's immune system, children are most vulnerable to any kind of contamination. Poor sanitation conditions may create a situation in which food safety can be severely compromised [Ruel et al., 1998]
Even if the participants of the study seem to be aware of the importance of some hygienic practices and sanitation regarding the treatment of their children's cups and plates, the significance of food storage, toilet facilities and practices like hand-washing, the given conditions in the study area make it difficult, even impossible, for the inhabitants to create a safe and hygienic environment for their children.

Observations by the researcher and conversations with slum dwellers revealed that water is physically available to most of the people in the study area. The main problem concerning water, however, is its sufficiency, accessibility and safety. General Comment No. 15 on the Right to Water by the UN Committee on Economic, Social and Cultural Rights (CESCR) is supposed to ensure "sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use" for everyone and "an adequate amount of safe water […] to prevent from dehydration and reduce the risk of water related diseases and provide for consumption, cooking, personal and domestic hygiene requirements [CESCR, 2003]. However, it is apparent, that water is not accessible in sufficient amounts and hygienic conditions to all of the households in the study area.

Another problem in terms of hygiene in the study area are toilet facilities. A lot of households share a flushed toilet. They are charged every time they use it and the person who collects the money keeps them clean. At night, they are locked. Several pit latrines do exist, they are accessible freely all around the clock.

However, no one is responsible to keep them clean. Thus, it is not possible to use a clean toilet beyond a certain point of time at night or without paying money. This might be one explanation for the poor sanitary situation in the study area. As people use drainage channels or bushes, water sources can get contaminated and in turn can cause diarrhoea and worm infections.
Poor garbage disposal is another crucial factor that provides good conditions for disease vectors. There is a central point for garbage collection in the study area, but there is no regular service to take away the garbage. Hence, people just put their garbage in plastic bags and place them in the pathways and drainage systems. The garbage is washed away by rainfalls and frequently blocks drainage systems, or decomposes and deteriorates the hygienic conditions. Due to the lack of other places to play and the interesting things to find at the garbage collecting point, children frequently use it as a playground. Thus, they are exposed to considerable amounts of pathogens.
As observed by Rue et al. (1998), the use of insufficient amounts of water for hygienic purposes, the ingestion of contaminated water as well as inadequate waste and faeces disposal are typical for slum areas. These factors seem to be the most common routes of transmission for vectors of infectious diseases [Ruel and Garrett, 1999].
Infectious diseases play an important role as determinants of children's malnutrition, as they are associated with loss of appetite, decreased food intake, malabsorption of nutrients, catabolism and anorexia. Additionally, they affect children's immune system [FANTA-2, 2010, Black et al., 2008].

Difficulties concerning the availability and accessibility of adequate health services may furthermore contribute to the high prevalence of childhood illnesses in the study area. Observations by the researcher and a conversation with the local council of the study area showed that health facilities were available in the study area. The use of health care facilities may depend on various factors besides the sole existence of health care facilities, though. The cost of transport, the accessibility regarding road conditions, especially during rain seasons, overcrowding and unsanitary conditions and the opportunity cost

at time for travelling and waiting to be treated, clearly influence the decision of using a health clinic [Ruel and Garrett, 1999]. Low health literacy and poor knowledge and awareness of the importance and benefits of health services due to low education levels make slum dwellers less likely to use adequate treatment [Bakeera et al., 2009, Ruel and Garrett, 1999].

5.4 Infant and Young Children Feeding Practices (IYCFP)

There is ample scientific evidence that strategies to promote the essential role of breastfeeding and complementary feeding and thus to improve IYCFP are key components in the enhancement of child survival, growth and development [UNICEF, 2011b].

WHO and UNICEF recommend mothers to put their baby to the breast right after birth. Breast milk is uncontaminated and contains all the nutrients a child needs in the first months of its life [Kramer and Kakuma, 2002]. The child is provided with immunity to diseases by the mother's antibodies [Klaus, 1998]. Breastfeeding children within the first hour after birth reduces the risk of infections and mortality [Edmond et al., 2007, Edmond et al., 2006]. Furthermore, benefits concerning emotional bonding [Klaus, 1998] and the duration of exclusive breastfeeding [Perez-Escamilla et al., 1994] can be achieved and the production of breast milk is stimulated [WHO, 2010c]. Exclusive breastfeeding for six months has a strong protective effect against gastrointestinal infections for the infant [Kramer and Kakuma, 2002] and thus can reduce the risk of mortality compared to partially or non breastfed children [Anonymous, 2000]. Breast milk has long-term benefits for cardiovascular health [Bahl et al., 2007] and mother's fertility can be delayed through exclusive breastfeeding [Anonymous, 1999]. For HIV positive children, breast milk reduces the risk of morbidity, growth faltering and mortality [WHO, 2010d].

In this study, more than half (52,4%) of all children have been put to their mother's breast within the first hour after their birth. This rate is similar to the overall patterns in Kampala and in Uganda. In Kampala, 57,5% of all new born babies have been put to the breast within the first hour after birth. All over Uganda, the proportion is somewhat lower (40%) [UBOS and ICF Int., 2012].

It is recommended to continue breastfeeding exclusively for the first six months of an infant's life even if the breast milk is not produced regularly yet [WHO, 2016g]. In this study, more than half of all mothers and caregivers stated that they fed their infants exclusively with breast milk for the first six months of their life. This finding shows a slightly lower proportion than in the whole country of Uganda, where two-thirds of all infants (66%) below six months are assumed to be exclusively breastfed [UBOS, 2016].
However, it is conceivable that this result reflects overestimations of exclusive breastfeeding due to misunderstandings of this indicator, as explained in chapter 5.1.

Breastfeeding in general is widely practised in Uganda. 98% of all children are breastfed for some period of time. In Kampala, 98.3% of all children have ever been breastfed [UBOS and ICF Int., 2012]. In this study, 92,9% of all children have ever been put to the breast. This proportion is slightly lower than average.

At the age of around six months, a child needs more energy and nutrients than breast milk can provide to grow appropriately and it is ready for complementary food in terms of development [Kramer and Kakuma, 2002]. Therefore, WHO and UNICEF recommend introducing solid or semi-solid complementary foods in addition to breast milk after six months of exclusive breastfeeding until the child is fully weaned. Breast milk still provides essential energy and nutrients at this age. For children 6-12 months of age, it can be the source of one half or more of energy needs and for children 12-24 months of one third of energy needs [Dewey, 2003].

For several reasons, mothers and caregivers are discouraged to give complementary foods earlier than six months after birth. First of all, complementary foods increase the risk of infections due to an increased amount of possible pathogens. Due to poor hygiene and feeding practices, the prevalence of infections increases significantly during the transition period from breast milk to the family diet (6-24 months). The younger the child, the less

developed their immune system and their resistance to pathogens. Complementary food decreases the infant's suckling and all its benefits and moreover there is a high possibility that complementary food is nutritionally inferior compared to breast milk, especially in low-resource-settings [Collins et al., 2004].
For HIV positive mothers, mixed feeding methods can increase the risk of HIV transmission to her child [WHO, 2010d] as liquids and foods given additionally to the breast milk can increase permeability of the infant's gut wall and ease transmission of the virus [UNICEF, 2005]. Therefore, a fast transition from exclusive breastfeeding to complementary food is recommended at the age of around six months [WHO, 2010c].

Overall in Uganda, the introduction of complementary foods takes place earlier than the recommendations suggest. While being breastfed, 35% of all Ugandan infants under six months were given foods or liquids others than breast milk [UBOS, 2012].
The majority of mothers and caregivers who were part of this study explained in the FGDs that they give foods and liquids other than breast milk to their children far before their reach the age of six months. As explained earlier, this finding is inconsistent with the result of the questionnaire's indicator of exclusive breastfeeding under six months, where more than half of all mothers and caregivers indicated to exclusively breastfeed their children for the first six months and supports the researcher's presumption that this indicator might have been misunderstood and thus over reported by the participants of this study. This presumption is supported by observations by the IAEA [Henriques, 2015].
The findings of this study show that 52,6% of all children received age-appropriate breastfeeding, which means exclusive breastfeeding from 0-5 months and breast milk with complementary foods from 6 to 23 months. Compared to the average proportion in Uganda (67%), the result of this study is slightly lower [UBOS, 2012]. Again, there is a probability that these results may

be influenced by misunderstandings and over reporting of the indicator of exclusive breastfeeding.
The consumption of all groups of liquids and solid or semi-solid foods in Uganda is more common among non-breastfed children than among those who are breastfed [UDHS, 2011]. This is consistent with the findings of this study.

Mothers and caregivers are discouraged to use bottles with nipples to feed their children at any age. Due to the association with higher rates of diarrhoeal morbidity, feeding a child with a bottle in unhygienic conditions increases the risk of illnesses and consequently mortality immensely. Bottles with nipples are vulnerable to many kinds of contamination and difficult to be kept clean. Furthermore, accurate learning of breast attachment is impeded and the average duration of breastfeeding is abbreviated [Collins, et al., 2004].
In the present study, almost half (46,4%) of all respondents stated to regularly feed their children with a bottle with nipple. This proportion is far higher than the average pattern in Uganda, where bottles with nipples are used to feed 20,8% of all children less than two years of age [UBOS and ICF Int., 2012].

Minimum Acceptable Diet

The Minimum Acceptable Diet is an indicator that combines the multidimensional factors of appropriate feeding of children aged 6-23 months. It enables comparison, tracking of progress and improvement in the key quality and quantity dimensions of children's diets. It is defined as "the proportion of children of 6-23 months of age who receive at least a Minimum Dietary Diversity and a Minimum Meal Frequency". The calculation is carried out separately for the breastfed and the non-breastfed children [WHO, 2010c].

Minimum Dietary Diversity

The Minimum Dietary Diversity is an indicator to measure the micronutrient-density of complementary foods. Studies have shown that it is likely that a child has consumed at least one animal-source food and at least one fruit or vegetable besides a staple food if it received food from at least four of the seven food groups on one day [Working Group on Infant and Young Child

Feeding Indicators, 2007]. Earlier studies have shown that an increased variation of food groups is related to an increased nutritional adequacy of the diet [FANTA-2, 2010, Kennedy et al., 2011].
The classification of foods in the seven food groups is explained in chapter 4.1.1.

Minimum Meal Frequency

Physical energy requirements according to age and body composition of a child, breastfeeding status, the portion size a child can consume at one meal and the energy density of food determines the amount of meals a child needs per day, as explained in chapter 4.1.1. [Dewey, 2003].
Non breastfed children need 1-2 cups of milk and 1-2 meals a day from 6-23 months of age [WHO, 2005].

Minimum Acceptable Diet

In this study, 20,2% of all children received a Minimum Acceptable Diet. Almost half of them (46,6%) had a Minimum Dietary Diversity of at least four different food groups and 19,3% received a Minimum Meal Frequency. This proportion is higher than the average in the country: In Uganda, a proportion of only 14% of all children 6-23 months old receive a Minimum Acceptable Diet [UBOS and ICF Int., 2016].
It cannot be ruled out that the proportion of children who received a Minimum Dietary Diversity might show an overrepresentation in this study caused by a misunderstanding that might have led to their erroneous attribution of breast milk to the food group of diary products.
Furthermore, the current season of mango harvest in and around Kampala during the time of data collection might have contributed to the high proportion of children who received a Minimum Dietary Diversity. These vitamin A-rich fruits could easily be harvested for free from the trees along the roads and were cheap and affordable on the markets.

Food groups

As all over Uganda, infant formula supplementation is uncommon in the study population. None of the mothers and caregivers stated that her child receives breast milk supplementation in the form of infant formula.

On average, Ugandan households consume staples daily - with matooke, roots and tubers (above all cassava and sweet potatoes) representing the most common ones. Usually, they are served with little amounts of vegetables and fruits or with meat and fish on special occasions [FANTA-2, 2010]. While bean consumption is widespread, vegetables are consumed only an average of three times a week, fruits less than twice a week and meat and eggs less than once a week [UBOS and WFP, 2013].

According to the UDHS 2011, among children between 6 and 23 months, foods made from grains and foods made from roots and tubers were consumed more often than foods from any other food group. These groups were followed by fruits and vegetables rich in vitamin A, meat, fish and poultry, and eggs. Cheese, yogurt, or other dairy products were last in the row.

In the present study, dairy products were the most popular food group, followed by fruits and vegetables rich in vitamin A, followed by grains, roots, tubers, legumes and nuts. The top end of the ranking of this study is incongruent with the average Ugandan data. As explained above, this might be due to the over reported consumption of diary products and the season of mango harvest during data collection. The back end is consistent with the UDHS 2011 findings – meat, fish, poultry and eggs are consumed only by a little proportion of children in this study.

Further analysis of the most consumed food groups shows that the consumption of eggs and meat, which are essential for a balanced physical and mental development due to their bodybuilding substances [UBOS and ICF Int., 2012] was rather low. This may reflect the high costs of animal products. Poor people, as the people in the study area are, often buy cheap calorie foods [Drewnowski and Specter, 2004]. Those foods do contain remarkable amounts of important nutrients, the important dietary diversity seems not to be given in the study population though.

A high proportion (36,1%) of the participants in this study stated that their children below two years receive black tea. Conversations and observations of the researcher showed that this might be due to the reason that boiling water has to be used for the preparation, which seems safer than untreated water. Furthermore, it may be associated with a certain extent of luxury not to drink sole water and might be assumed to taste better than plane water. There is a high likelihood that mothers and caregivers do not know about the caffeine content of black tea and its effects on the human body. Frequently, black tea is served with small amounts of sugar and milk, which might provide some additional nutrients for the children.

Even if the results of this study in terms of Minimum Dietary Diversity and Minimal Acceptable Diet are more satisfactory than the average results for Ugandan children, there is still a high proportion of children who does not receive sufficient amounts of energy and nutrients every day.

5.5 Mother's and caregiver's perception of children's nutritional status

The right to adequate food is defined as the constant access to adequate food for every person [OHCHR, 2001]. This is obviously not the case in the study area. None of the mothers and caregivers thinks that their children get an adequate diet and sufficient nutrients every day. The assessment of the children's Minimum Acceptable Diet shows that there is a higher proportion of children in the study population than overall in Uganda that receives a Minimum Dietary Diversity and a minimum amount of meals. However, the proportion of children who do not receive a Minimum Acceptable Diet is still unsatisfactorily high. The researcher identified several reasons for the insufficient satisfaction of children's dietary requirements. The lack of education and economic resources has been discussed above. Additionally, the availability and accessibility of adequate food seem to be relevant causes for the mothers' and caregivers' perception.

Availability and accessibility of adequate food

Even if a majority of crops is produced self-sufficiently in Uganda, the availability and accessibility is highly dependent on seasonal changes in the amount of harvest and its impacts on food prices. Mothers' and caregivers' food security status follows those seasonal fluctuations as well as the caloric and nutrient intake of the whole household. Other studies disclosed that a high proportion of Ugandans is food insecure if measured in calories, thus consumes a fewer amount than recommended [UBOS and ICF Int., 2012, Nakabo-Ssewanyana, 2009]. The mean calorie intake of Ugandans is 1970 kcal/capita/day, whereas the minimum calorie requirement according to the FAO is 2200 kcal/capita/day [FAO, 2012, Ssewanyana and Kasirye, 2010]. Unlike the people living in rural areas, who produce most of their food by themselves, the urban population mainly has to purchase food. As Kent shows, especially in urban areas, many people may not have access to sufficient food without money, even when it is available. The predominant reason for people suffering from hunger is hence not caused by insufficient production of foods – for example in agricultural productions – but by a failure of purchasing power [Kent, 2005]. As observed in the Uganda Nutrition Situation Analysis (2010), the availability of a variety of food choices on the markets does not seem to be a problem in the study area. However, mothers and caregivers frequently cannot afford to choose a diversity of foods due to their limited financial resources and due to their limited knowledge of nutrient contents and importance of those [FANTA-2, 2010].

It has been observed earlier, that, even though some food groups, e.g. fruits and vegetables, cause a lower intake of energy, the high consumption rate of foods such as plantains, that have a high energy but low nutrient content, might explain the high stunting levels observed among Ugandan children [FANTA-2, 2010]. The high levels of perceived insufficient nutrient intake in the study area may be partly explained by a limited affordability of a variety of foods and by low knowledge about the nutrient content of different foods.

In case of insufficient food supply, studies from Uganda and other developing countries report similar coping and compensating strategies, as many of the mothers and caregivers in the study area have adopted. They frequently restrict themselves to one meal a day and they do not prepare meals for their partners, if they do not contribute to the household budget spent on food. This is typical for households living in poverty [Ssewanyana and Kasirye, 2010, UBOS, 2014]. Some mothers and caregivers in the study area get foods from relatives or friends, and a high proportion of children gains benefits through the "feeding programme" provided by KCK where children can consume one warm meal every day.

5.6 Mother's and caregiver's responsibility and power

In Uganda, one of the mothers' and caregivers' main responsibilities is to care for their children and to act in a way that ensures the best possible environment to achieve their optimal growth and development. However, mothers and caregivers in the study area have great difficulties to afford a living. They frequently lack the economic resources for public services such as health, schools or nutrition as they need to spend the little money they have on the household's essential daily needs. Only those who have a steady income can afford school fees for their children. According to the UNHS 2012/13, the average household income in Uganda is 453 000 Ugandan Shillings per month (US$ 133/month) [UBOS, 2014]. The national food expenditure is estimated at either 54% [FANTA-2, 2010] or 46% [UBOS, 2014] of the total household income.

Although the national economy and the poverty reduction could record progress in the last few years, the income inequality between the lowest and the highest wealth quintile in Uganda's urban settings has increased. The Gini coefficient is one of the measures for this inequality. It shows an increase to 0,395 in 2012/13 from 0,36 in 1992 [UBOS, 2014].

As wealth inequalities are commonly highest in urban areas and as mothers frequently do not earn money [UBOS, 2014], mothers living in urban slum areas, whose partners do not contribute to the household budget for everyday needs, are affected severely by this grievance.

The researcher's observations and conversations with the inhabitants show, that, despite the difficult economic situation, women in the study area are creative in finding solutions and capable of finding ways to manage their situation. They try hard to earn money by using their handcraft skills to produce sewing works and other handcrafted objects. Social networks support the ability of mothers and caregivers to fulfil their task as caregiver to a large extent. Advices, emotional assistance and exchange of information are often more important than monetary support.

Especially in an environment like the study area, where a lack of financial resources is daily fare, mothers and caregivers have to have high levels of confidence and self-esteem. They need to plan and bargain, have high levels of resilience and the ability to make the best of whatever is accounted.

Knowledge, skills, experiences and the exchange with others are of great importance. Reduced purchasing powers combined with a lack of knowledge on feeding practices, meal patterns and strategies when a child is sick can have dire consequences.

For mothers and caregivers in the study area, the priority needs in terms of nutritional education seems to be not only the acquirement of new information, but also skills to process this information and thus gain new knowledge. Furthermore, men need to become aware of the importance of child health care, as they are responsible for the distribution of monetary resources in most of the households. A better ability to use their new knowledge and, in turn, the ability to cope easier with their current living situation, enables mothers and caregivers to take actions that implement benefits for their children.

5.7 Nutritional knowledge and nutrition education

As women are identified as the primary caregivers in most of the households of the target population, knowledge particularly given to women is a very influential resource against malnutrition. With increased knowledge and skills, women can make optimal choices for nutritious and safe food, improve the quality of care they give to their children and enhance their household's food security [Ongosi, 2010]. These actions require men's awareness of the importance of child

health, as they usually distribute the household budget [Brinda et al., 2016].

The results of this study show that the nutritional knowledge of the participants is very limited. They are neither aware of food compositions and nutrient contents, nor of their functions in the human body.

As explained earlier, there is evidence, that children's nutrition status can be improved through mothers' and caregivers' nutrition education without changes in the quantity of foods [Imdad, 2011, Blunch, 2004, Bhargava and Fox-Kean, 2003]. Access to sufficient, safe and good quality food is important, but does not automatically lead to well-nourished people [Hawkes and Ruel, 2008]. Likewise, Ecker et al. (2012) state that an improvement of a country's economic development has very little impact on children's nutritional status without educational components that focus on child feeding and breast feeding practices, diversified diets, adequate hygiene and prevention of diseases [Ecker et al., 2012].
The Sixth Report on the World Nutrition Situation articulates that "for all populations, [nutrition] education and social marketing are crucial components of national, municipal and community efforts for sustained improvements in food and nutrition security. These activities are often essential to realizing the potential for nutrition improvement of many agricultural development projects and programmes." [Manson and Shrimpton, 2010]

The importance of maternal nutritional knowledge as a target in nutritional interventions to improve children's nutritional status has frequently been confirmed [Williams et al., 2012]. Studies regarding this topic will be presented in the following part. Christian et al. (1988) showed that adequate nutritional knowledge of mothers, regardless of their formal educational level, can improve their children's nutritional status [Christian et al., 1988].
A systematic review by Imdad et al. (2011) about the impact of maternal nutritional education on child feeding practices and child growth in developing countries shows that appropriate complimentary food, nutrition education and

maternal nutritional counselling lead to significant improvements in both weight and height of children aged 6-24 months [Imdad et al., 2011].
In Zimbabwe, nutrition counselling led to improvement in the children's dietary diversity [Paul et al., 2012] and in Malawi, the amounts of complementary foods and the intakes of energy and nutrients of children aged 6-23 months and their mother's knowledge of preparation methods was greater after a nutrition education intervention [Hotz and Gibson, 2005]. In several studies carried out in various developing countries, nutrition education resulted in increased complimentary dietary diversity and more frequent feeding [Kilaru, 2005, Roy et al., 2005, Santos et al., 2001].
A project carried out in Uganda in 2015 provided nutrition education and agricultural training to caregivers in order to increase their children's vitamin A-intake by the promotion of orange-fleshed sweet potatoes. The researchers found out that nutrition education resulted in more children receiving early evening meals regularly, better knowledge in the preparation of complementary foods and less untrue information. A regular provision of nutrition education with adequate monitoring was considered as crucial for the sustainability of the effects of the nutrition education programme [Nabugoomu et al., 2015].
A systematic review by Bhutta et al. (2008) provided a broad range of scientific evidence that nutrition education, aiming at improving breast feeding and complementary feeding practices, can have positive impacts on children's nutrition, on the prevention of nutrition-related diseases, on childhood mortality and on the reduction of disability-adjusted life-years [Bhutta et al., 2008].
As shown above, through regular nutrition education and adequate monitoring, enhancement of knowledge, attitudes and practices of child feeding is definitely possible.
In Uganda, maternal nutrition education is recommended as a public health strategy against high malnutrition rates [Nabugoomu et al., 2015].

5.8 Considerations for nutrition education

To change a person's habits and to incorporate new and improved practices into the daily life, an increase of the person's knowledge is not enough [Launiala, 2009, Contento, 2008, Moorman and Matulich, 1993, UFS, n.d.].
To explain the pathway from acquisition of knowledge to the final application of improved practices, many factors have to be taken into account. These factors concern a person's environment in terms of the physical, sociocultural, economic and informative nature. The available and built environment is as important as a person's family and social networks and structures, cultural practices and policies, economic resources, prices, time, advertisements and mass media [Marías et al., 2014].
Furthermore, it is crucial for the effectiveness of nutrition interventions that the target population understands the importance of the programme's issues and acts out of their own motivation. The "Self-Determination Theory" by Ryan and Deci (2000) says that there are three innate psychological needs which every person has and which when satisfied yield enhanced self-motivation. In terms of health care and education, these needs are of special significance. Their consideration can greatly boost the effectiveness of relevant projects and programmes. These needs are defined as the desire to know how things will turn out and what one's action's results will be, as relatedness - the desire to achieve a feeling of belonging through one's actions that preferentially involve other people - and as autonomy - the desire to have a sense of free will when doing something or the desire to acting out of one's own interests and values. Nutrition education projects are more likely to yield positive outcomes, if these needs are fulfilled [Ryan and Deci, 2000].

The need for effective nutrition education to positively influence IYCFP is emphasised in McNulty's review of project evaluations. A sole improvement of food security, in contrast, does not necessarily yield positive changes. McNulty concludes that there are several factors that a successful nutrition intervention must contain. "Nutrition education alone or integrated into another sector must be well-planned, based on behavioural change theory, formative research, and

specific needs of the target population. The approaches and methods selected must fit the local context and take into account the capacity and time available of the staff who will implement the activities. Monitoring and evaluation should be built in from the design phase, preferably using available standardized indicators developed collaboratively by WHO, UNICEF, IFPRI, FANTA and others." [McNulty, 2013]

The effectiveness of nutrition education programmes can be increased through using a mix of communication channels and repeated reinforcement. A programme carried out in New Delhi provided individual counselling, street plays and songs and food preparation demonstrations to caregivers of children. Improvement in dietary diversity, feeding frequency, increased supervised feeding and active feeding practices, more caregivers boiling water and washing their own and their children's hands before and after feeding were some of the observed results. In addition, the psychosocial environment was detected as crucial for behavioural changes. The role of community members as social change agents seems to be very valuable. Caregivers were more likely to adopt changes in their feeding practices if they were shown by a community member [Sethi et al., 2003].
In South Africa, new mothers were trained as breastfeeding counsellors. Rates of exclusive breastfeeding showed large improvements, as the women could exchange experiences among each other [Henrique, 2015].

In her book "Learning to Listen, Learning to Teach: The Power of Dialogue in Educating Adults", Jane Vella focuses on the importance of a learner-centred approach as a path of effective learning. Adult learning principles are different from those of children [Vella, 1994], many nutrition education interventions do not pay attention on this fact though [McNulty, 2013]. Vella emphasises that adult learners "bring a lifetime of experiences to the learning-session". She describes educational approaches that include dialogues, active learning, problem-solving in small groups, practical application, engagement of the

learner's intellect and emotions and affirmations as most likely to yield positive and sustainable results [Vella, 1994].
Building on the experiences of the learners [Vella, 1994] visual and audio support, participatory methods such as group discussions, role plays, hands-on activities, games and other group activities as well as other forms of culturally appropriate methods, e.g. story telling, songs or humour, can increase the participant's comprehension and memory performance. Instead of passive provision of informational material, mothers' perception of young children's vulnerability to malnutrition, their understanding of the risks and consequences that malnutrition can have in health, social and economic regards and knowledge about the benefits of a diversified diet are important targets of nutritional interventions. Not less importantly, mothers' skills by themselves and their confidence in their skills to prepare adequate foods for their children and to adequately adopt hygiene practices are crucial to yield sustainable improvements in children's nutritional status. Special importance in programme planning has to be paid on the size of groups (not more than 10 people), on an environment that enables people to express their ideas and concerns and to hear and see well and on the right layout of visual aids in terms of size and colours. The identification of reliable mass media sources has to be addressed in order to enable the learners to separate facts and fiction and not to become a victim of large producers' commercial interests [McNulty, 2013].

In Uganda, oral communication and picture communication are the means of communication most mothers rely on. The messages have to be written at a level easily understood and available and accessible for them. Group teaching and picture information to take home are the preferred means of information acquisition of the mothers and caregivers who participated in the study.
Through group teaching, the exchange of proven ways of coping and confirmation in understanding the given information from other mothers and caregivers in similar living situations can be supported and encouraged.
To be able to process and finally incorporate and use the provided information is a long-term and on-going process. By using a variety of educational

strategies at different levels, food and nutrition messages can be consolidated more profoundly than by the sole provision of information. To achieve long-lasting improvements, education programmes should not only advise people, but they should empower them to proactively change their health care practices. They should take into consideration the people's needs and factors that influence their current dietary habits, they should focus on participatory and realistic activities to achieve small, immediate, visible, liveable and do-able changes. Moreover, they should involve all relevant sectors, engage all people who can influence dietary patterns, strengthen their capacities and promote the implication of policies that improve dietary habits and food environments to enable healthy choices [FAO, n.d.].

To address the impact of gender inequality on nutrition, it is important to not only educate women, but to also raise men's awareness of the importance of child health. In the majority of households, men are the head and thus decide on the allocation of the household budget and the actions to take. As long as men do not know about the value of good nutrition and women do not have any money at their disposal, they are not able to take actions according to their acquired knowledge [Brinda et al., 2016].

6 Conclusion

Mothers and caregivers do possess a certain amount of knowledge about good nutrition for their children, but it is low. They comprehend that their children do not get sufficient amounts of energy and nutrients on many days. The majority of children in this study do not receive a Minimum Acceptable Diet.

A number of factors seem to lead to this situation. Big households and a high population density affect the guarantee of food safety, of food security and of a healthy environment. Great gender disparities manifest themselves in low female educational attainment and a high proportion of women who do not earn money and are dependent on their husbands. A low socio-economic status with little household income that has to be spent on essential basic needs and high medical expenses due to high childhood morbidity rates compromise the ability to provide sufficient food. Low awareness of the importance of child nutrition among men makes the allocation of the available household budget to this topic more difficult.

Food is available on the markets and in the shops in the study area in sufficient quantity. The variety seems to be enough to ensure an adequate diet for the inhabitants. However, as all participants need to purchase food and do not produce themselves, it is assumed that enough food is not accessible for them due to their lack of money and their lack of knowledge of the integral components of a diversified diet.

Mothers and caregivers are aware of basic hygiene practices and have knowledge about ways of disease transmission caused by bad hygiene practices. However, poor implementations due to false or superficial knowledge and the difficult living circumstances are common. Bad sanitation conditions cause a high prevalence of childhood diseases, compromise food safety and increase the mothers' and caregivers' workload and expenses.

There is great need and interest among the mothers and caregivers to receive nutrition education. They would like to be taught in groups on a regular basis and they would like to have easily understandable written nutrition information to take home.

As it is most likely to achieve long-lasting and sustainable changes and improvements if the interests of the concerned people are taken into account, a learner-centred and participatory approach is recommended. To ensure good quality of the programme, adequate monitoring and evaluation is necessary. Even though child health care is a task mainly assigned to women in Uganda, men need to be included, as they usually decide over the distribution of the household budget. An extensive nutritional education programme cannot only decrease the current levels of childhood morbidity and mortality, but also boost the country's economic and social development.

A mix of quantitative and qualitative data collection methods is ideal for this kind of study. Qualitative data collection methods, such as FGDs, can get to the depths of the data collected quantitatively. Through this, ways for seeking towards other directions and stimulations for new discussions and debates can be provided. It is necessary to increase the number of participants and to improve the sampling method to enrich the data information and to ensure a higher substantiality and significance of the findings.

This study may be small and not very influential, but it might have relevance in poverty reduction. It can function as a communication tool between mothers and caregivers and decision makers that captures the needs and perceptions of the target population and as a base for the planning of projects to improve the nutritional status of children.

7 Recommendation

There is need to educate women as well as men on adequate feeding and health care practices for their children. A special target has to be the awareness of the importance of allocation of time and income to health care practices such as nutrition to improve child survival, health and development as well as the country's productivity and economy. Opportunities to include men in the task of daily child health care and to sensitize them to its importance need to be found in order to empower women, to enable them to implement their newly gained knowledge and to ease the current allocation of gender roles and all its adverse impacts.

It is recommended for KCK to implement a nutrition education programme not only for the mothers and caregivers, but also for the fathers in the study area based on the findings of the study and in collaboration with the public health nutrition section of Mulago hospital. There seems to be available good knowledge about nutrition education for parents and caregivers living in similar living conditions like the people in the study area.

The Ugandan school system needs to be revised and general regulations in the school curriculum have to be developed. Special focus has to be paid on the provision of adult education, as a high proportion of people, especially in poor areas, have not attained primary school. These people have to be equipped with skills and tools to enable a brighter future.

Policy makers and decision makers in the communities should involve the target population from the planning phase on and ensure that they participate and apply their interests. Monitoring and evaluation programmes have to be developed to ensure that the implementation and follow-up actions are adequately addressed and taken.

7.1 Recommendation for further studies

Studies based on the results of this study need to be carried out to enable adequate monitoring and evaluation of a prospectively implemented nutrition education programme:

Studies that assess the children's height, weight and nutrient supply need to be carried out to be able to apply methods of growth monitoring in order to evaluate the effectiveness of the programme.

Studies that assess the current situation of mothers in terms of their status within society and their economic resources need to be carried out in order to find ways to empower women.

Studies with larger study samples need to be carried out in order to determine whether this programme can be expanded to areas with similar living conditions as soon as it is implemented and evaluated.

Studies on the distribution of foods in Uganda need to be carried out to be able to explain the high rates of malnourishment parallel with sufficient food production in the country.

Abstract

Good nutrition is indispensable for a healthy life, as well as for a country's economic and social development. Children are among the most vulnerable groups and especially in developing countries their dietary needs are often not met.

The aim of this study was to assess the nutritional knowledge and feeding practices of mothers and caregivers with children aged below 24 months in the slum area of Katanga in Kampala, Uganda. The focus was on factors that influence children's nutrition status and a way to most effectively and sustainably provide nutrition education to the target population.

A cross-sectional study was carried out with 84 mothers and caregivers. A structured questionnaire was used to collect quantitative data and focus groups discussions were held in order to obtain qualitative data. In addition, field observations and document analysis contributed to this study.

Results showed that the mothers' and caregivers' nutritional knowledge was very limited and that they perceived their children's nutrient intake as insufficient for optimal growth and development. The majority of children did not receive a Minimum Acceptable Diet. Education attainment was low and most of the mothers and caregivers were economically dependent on their husbands. Low nutritional knowledge and limited economical resources seem to be serious reasons for the high rates of malnourishment, as well as the sanitation and hygienic conditions and the heavy workload of mothers and caregivers.

This study concludes that there is great need for nutrition education. It cannot only lead to decreased childhood morbidity and mortality, but also boost the economical and social development of the country for better lives and a brighter future.

For the implementation of a nutrition education programme, it is important to focus on a learner-centred, participatory approach on a regular basis with adequate monitoring and regular evaluations. To gain long lasting success, men need to be included, as they usually decide over the distribution of the household budget.

Zusammenfassung

Gute Ernährung ist für ein gutes Leben genau so unverzichtbar wie für die ökonomische und soziale Entwicklung eines Landes. Kinder gehören zu den am meisten gefährdeten Gruppen und vor allem in Entwicklungsländern wird ihr Nährstoffbedarf oft nicht ausreichend gedeckt.

Das Ziel dieser Studie war es, das Ernährungswissen und die Kinderernährungsgewohnheiten von Müttern und Betreuungspersonen mit Kindern unter 24 Monaten im Slumgebiet Katanga in Kampala, Uganda, zu erheben. Der Schwerpunkt lag einerseits auf Faktoren, die den Ernährungsstatus der Kinder beeinflussen. Andererseits wurden die entscheidenden Komponenten zur Entwicklung eines effektiven und nachhaltigen Ernährungsbildungsprogramm für die Zielgruppe untersucht.

Die vorliegende Querschnittstudie umfasste 84 Teilnehmerinnen. Zur Erhebung der quantitativen Daten wurde ein Fragebogen verwendet. Qualitative Daten wurden mittels Gruppendiskussionen erhoben. Beobachtungen und die Analyse von einschlägiger Literatur trugen ebenfalls zu dieser Studie bei.

Die Ergebnisse zeigen, dass das Ernährungswissen der Teilnehmerinnen niedrig war. Es war ihnen jedoch bewusst, dass optimales Wachstum und Entwicklung ihrer Kinder durch die täglich aufgenommenen Nährstoffe nicht gesichert sind.

Der Großteil der Kinder bekam keine „Minimum Acceptable Diet“. Das Bildungsniveau war niedrig und die meisten Teilnehmerinnen waren finanziell abhängig von ihren Partnern. Geringes Ernährungswissen und begrenzte finanzielle Ressourcen schienen schwerwiegende Gründe für die hohen Unterernährungsraten zu sein. Hygienische Mängel und hohe Arbeitsbelastungen der Teilnehmerinnen trugen ebenfalls dazu bei.

Die Schlussfolgerung dieser Studie ist, dass großer Bedarf an Ernährungsbildung besteht. Diese kann nicht nur die Morbidität und Mortalität von Kindern reduzieren, sondern auch das ökonomische und soziale Wachstum fördern und zu einer höheren Lebensqualität beitragen.

In der Entwicklung eines Ernährungsbildungsprogrammes ist auf einen partizipativen Ansatz, auf Regelmäßigkeit, sowie adäquate Kontrolle und regelmäßigen Evaluierungen zu achten. Um einen nachhaltigen Erfolg zu erzielen, müssen auch Männer miteinbezogen werden, da diese meist über die Verteilung der finanziellen Ressourcen innerhalb des Haushaltes entscheiden.

References

Abuya BA, Ciera J, Kimani-Murage E. 2012. Effect of mother's education on child's nutritional status in the slums of Nairobi. BMC pediatrics 2012;12:80. doi: 10.1186/1471-2431-12-80.

Adeladza A. 2009. The influence of socio-economic and nutritional characteristics on child growth in Kwale District of Kenya. African Journal of Food, Agriculture, Nutrition and Development, 9(7).

Andrien M. 1994. Social communication in nutrition: a methodology for intervention. Food & Agriculture Org.

Anonymous. 2000. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. Lancet 2000;355(9202):451-5.

Anonymous. 1999. The World Health Organization multinational study of breast-feeding and lactational amenorrhea. III. Pregnancy during breast-feeding. World Health Organization Task Force on Methods for the Natural Regulation of Fertility. Fertil Steril 1999;72(3):431-40.

Ary D, Ary JSW, Sorensen CK, Walker DA. 2016. Introduction to research in education. Cengage Learning.

Atchan M, Davis D, Foureur M. 2016. An historical document analysis of the introduction of the Baby Friendly Hospital Initiative into the Australian setting. Women Birth 2016. doi: 10.1016/j.wombi.2016.07.004.

Bakeera SK, Wamala SP, Galea S, State A, Peterson S, Pariyo GW. 2009. Community perceptions and factors influencing utilization of health services in Uganda. Int J Equity Health 2009;8:25. doi: 10.1186/1475-9276-8-25.

Behrman JR, Rosenzweig, MR. 2002. Does Increasing Women 's Schooling Raise the Schooling of the Next Generation? Penn IUR Publications Penn Institute for Urban Research.

Benson T, Mugarura S, Wanda K. 2008. Impacts in Uganda of rising global food prices: the role of diversified staples and limited price transmission. Agricultural Economics 2008; 39: 513-24. doi: 10.1111/j.1574-0862.2008.00356.x

Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, Haider BA, Kirkwood B, Morris SS, Sachdev HP et al. 2008. What works? Interventions for maternal and child undernutrition and survival. Lancet 2008;371(9610):417-40. doi: 10.1016/S0140-6736(07)61693-6.

Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, Rivera J. 2008. Maternal, Child Undernutrition Study G. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet 2008;371(9608):243-60. doi: 10.1016/S0140-6736(07)61690-0.

Block SA. 2007. Maternal nutrition knowledge versus schooling as determinants of child micronutrient status. Oxford Economic Papers, 59(2), 330-353.

Blunch, NH. 2004. Maternal Literacy and Numeracy Skills and Child Health in Ghana. Preliminary results. Department of Economics The George Washington University Washington, D.C., USA.

Brinda EM, Rajkumar AP, Enemark U. 2015. Association between gender inequality index and child mortality rates: a cross-national study of 138 countries. BMC public health, 15(1), 97.

Burchi F. 2010. Child nutrition in Mozambique in 2003: the role of mother's schooling and nutrition knowledge. Economics and human biology 2010;8(3):331-45. doi: 10.1016/j.ehb.2010.05.010.

Caldwell JC. 1979. Education as a factor in mortality decline an examination of Nigerian data. Population studies, 395-413.

Caldwell JC. 1993. Health transition: the cultural, social and behavioural determinants of health in the Third World. Social science & medicine 1993;36(2):125-35.

Chen Y, Li H. 2009. Mother's education and child health: is there a nurturing effect? J Health Econ 2009;28(2):413-26. doi: 10.1016/j.jhealeco.2008.10.005.

Christian P, Abbi R, Gujral S, Gopaldas T.1988. The role of maternal literacy and nutrition knowledge in determining children's nutritional status. Food Nutr Bull, 10(4), 35-40.

Cleland JG, Van Ginneken JK. 1988. Maternal education and child survival in developing countries: the search for pathways of influence. Social science & medicine 1988;27(12):1357-68.

Collins CT, Ryan P, Crowther CA, McPhee AJ, Paterson S, Hiller JE. 2004. Effect of bottles, cups, and dummies on breast feeding in preterm infants: a randomised controlled trial. Bmj 2004;329(7459):193-8. doi: 10.1136/bmj.38131.675914.55.

Contento IR. 2008. Nutrition education: linking research, theory, and practice. Asia Pac J Clin Nutr 2008;17 Suppl 1:176-9.

Costa SJ. 2015. Taking it to scale: Post-Harvest Loss Eradication in Uganda 2014 – 2015. Project Implementation Report.

Desai S, Alva S. 1998. Maternal education and child health: is there a strong causal relationship? Demography 1998;35(1):71-81.

Dewey K. 2003. Guiding principles for complementary feeding of the breastfed child.

Drewnowski A, Specter SE. 2004. Poverty and obesity: the role of energy density and energy costs. The American journal of clinical nutrition 2004;79(1):6-16.

Ecker O, Breisinger C, Pauw K, Fan S, Pandya-Lorch R. 2012. Growth is good, but is not enough to improve nutrition. In Leveraging Agriculture for Improving Nutrition and Health. Proceedings of the IFPRI International Conference, New Delhi, India, 10-12 February 2011. (pp. 47-54). International Food Policy Research Institute.

Edmond KM, Kirkwood BR, Amenga-Etego S, Owusu-Agyei S, Hurt LS. 2007. Effect of early infant feeding practices on infection-specific neonatal mortality: an investigation of the causal links with observational data from rural Ghana. The American journal of clinical nutrition 2007;86(4):1126-31.

Edmond KM, Zandoh C, Quigley MA, Amenga-Etego S, Owusu-Agyei S, Kirkwood BR. 2006. Delayed breastfeeding initiation increases risk of neonatal mortality. Pediatrics 2006;117(3):e380-6. doi: 10.1542/peds.2005-1496.
FANTA-2. 2010. "The Analysis of the Nutrition Situation in Uganda. Food and Nutrition Technical Assistance II Project (FANTA-2)."
Faruque AS, Ahmed AM, Ahmed T, Islam MM, Hossain MI, Roy SK, Alam N, Kabir I, Sack DA. 2008. Nutrition: basis for healthy children and mothers in Bangladesh. J Health Popul Nutr 2008;26(3):325-39.
Food and Agriculture Organization of the United Nations (FAO). 2005. Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in Context of National Food Security.
Food and Agriculture Organization of the United Nations (FAO). 2009. Summary of the FSN forum discussion No.34. Food and Nutrition Security – What is the problem what is the difference.
Food and Agriculture Organization of the United Nations (FAO). 2010. Nutrition Country Profile. The Republic of Uganda. Food and Agriculture Organization of the United Nations (FAO). 2015. The state of food insecurity in the world. Meeting the 2015 international hunger targets: Taking stock of uneven progress.
Frenzen PD, Hogan DP. 1982. The impact of class, education, and health care on infant mortality in a developing society: the case of rural Thailand. Demography 1982;19(3):391-408.
Frongillo EA, Jr., de Onis M, Hanson KM. 1997. Socioeconomic and demographic factors are associated with worldwide patterns of stunting and wasting of children. The Journal of nutrition 1997;127(12):2302-9.
Frost MB, Forste R, Haas DW. 2005. Maternal education and child nutritional status in Bolivia: finding the links. Social science & medicine 2005;60(2):395-407. doi: 10.1016/j.socscimed.2004.05.010.
Gewa CA, Leslie TF. 2015. Distribution and determinants of young child feeding practices in the East African region: demographic health survey data analysis from 2008-2011. Journal of Health, Population and Nutrition, 34(1), 6.
Gill P, Stewart K, Treasure E, Chadwick B. 2008. Methods of data collection in qualitative research: interviews and focus groups. Br Dent J 2008;204(6):291-5. doi: 10.1038/bdj.2008.192.
Glewwe P. 1999. Why does mother's schooling raise child health in developing countries? Evidence from Morocco. Journal of human resources, 124-159.
Glick P, Sahn DE. 1998. Maternal labour supply and child nutrition in West Africa. Oxf Bull Econ Stat 1998;60(3):325-55.
Government of Uganda. 2011. Uganda Nutrition Action Plan 2011-2016. Kampala: National Planning Authority, Government of Uganda.
Hawkes C. 2013. Promoting healthy diets through nutrition education and changes in the food environment: an international review of actions and their effectiveness.
Hawkes C, Ruel MT. 2008. From agriculture to nutrition: Pathways, synergies and outcomes (No. 9511). The World Bank.

Hoddinott J, Alderman H, Behrman JR, Haddad L, Horton S. 2013. The economic rationale for investing in stunting reduction. Matern Child Nutr 2013;9 Suppl 2:69-82. doi: 10.1111/mcn.12080.
Horta BL, Bahl R, Martines JC, Victora CG. 2007. Evidence on the long-term effects of breastfeeding.
Hotz C, Gibson RS. 2005. Participatory nutrition education and adoption of new feeding practices are associated with improved adequacy of complementary diets among rural Malawian children: a pilot study. European journal of clinical nutrition, 59(2), 226-237.
Ickes SB, Hurst TE, Flax VL. 2015. Maternal Literacy, Facility Birth, and Education Are Positively Associated with Better Infant and Young Child Feeding Practices and Nutritional Status among Ugandan Children. The Journal of nutrition 2015;145(11):2578-86. doi: 10.3945/jn.115.214346.
Ionescu AM. 2012. How does education affect labour market outcomes?. Review of Applied Socio-Economic Research, 4(2), 130.
Imdad A, Yakoob MY, Bhutta ZA. 2011. Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries. BMC public health 2011;11 Suppl 3:S25. doi: 10.1186/1471-2458-11-S3-S25.
Kent G. 2005. Freedom from want. The human right to adequate food. Washington, D.C.
Kennedy, G., Ballard, T., & Dop, M. C. 2011. Guidelines for measuring household and individual dietary diversity. Food and Agriculture Organization of the United Nations.
Kilaru A, Griffiths PL, Ganapathy S, Shanti G. 2005. Community-based nutrition education for improving infant growth in rural Karnataka. Indian pediatrics, 42(5), 425.
Klaus M. 1998. Mother and infant: early emotional ties. Pediatrics 1998;102(5 Suppl E):1244-6.
Kramer MS, Kakuma R. 2002. The Optimal Duration of Exclusive Breastfeeding. In Protecting Infants through Human Milk (pp. 63-77). Springer US.
Kuate Defo B. 1997. Effects of socioeconomic disadvantage and women's status on women's health in Cameroon. Social science & medicine 1997;44(7):1023-42.
Launiala A. 2009. How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from medical anthropology research on malaria in pregnancy in Malawi. Anthropology Matters, 11(1).
Unite For Sight (UFS). Survey Methodologies.
Leerlooijer JN, Bos AE, Ruiter RA, van Reeuwijk MA, Rijsdijk LE, Nshakira N, Kok G. 2013. Qualitative evaluation of the Teenage Mothers Project in Uganda: a community-based empowerment intervention for unmarried teenage mothers. BMC public health 2013;13:816. doi: 10.1186/1471-2458-13-816.
McClelland JW, Keenan DP, Lewis J, Foerster S, Sugerman S, Mara P, Wu S, Lee S, Keller K, Hersey J et al. 2001. Review of evaluation tools used to assess the impact of nutrition education on dietary intake and quality,

weight management practices, and physical activity of low-income audiences. J Nutr Educ 2001;33 Suppl 1:S35-48.
McNulty J. 2013. Challenges and issues in nutrition education.
Magnani R. 1997. Sampling Guide: Food and Nutrition Technical Assistance Project (FANTA). Academy for Educational Development, Washington, DC, 46.
Marías YF, Glasauer P, Macias YF. 2014. Guidelines for assessing nutrition-related knowledge, attitudes and practices. Food and Agriculture Organization of the United Nations (FAO). United States Department of Agriculture (USDA). Expanded Food and Nutrition Education Program (EFNEP).
Mason JB, Shrimpton, R. 2010. 6th Report on the World Nutrition Situation.
Maurice JM, Davey S. 2009. State of the world's vaccines and immunization. World Health Organization.
Miller JE, Rodgers YV. 2009. Mother's education and children's nutritional status: new evidence from Cambodia. Asian Development Review, 26(1), 131.
Ministry of Finance, Planning and Economic Development (MoFPED). 2013. Millennium Development Goals Report for Uganda 2013.
Ministry of Finance, Planning and Economic Development (MoFPED). 2014. Poverty Status Report. 2014.
Ministry of Health of Uganda (MOH). 2008. Food Fortification Program National Monitoring Report. Quality of Fortified Foods in Uganda.
Ministry of Health of Uganda (MOH). 2009a. National Child Survival Strategy. Briefing Paper for Policy Makers and Planners.
Ministry of Health of Uganda (MOH). 2009b. Nutrition in the Context of HIV and Tuberculosis Infection. Strategic Plan 2009 – 2014.
Ministry of Health of Uganda (MOH). 2009c. Guidelines on Nutrition Survey Methodology in Uganda.
Moorman C, Matulich E. 1993. A model of consumers' preventive health behaviors: The role of health motivation and health ability. Journal of Consumer Research, 20(2), 208-228.
Nabugoomu J, Namutebi A, Kaaya AN, Nasinyama G. 2015. Nutrition Education Influences Child Feeding Knowledge Attitudes and Practices of Caregivers in Uganda. American Journal of Health Research. Vol. 3, No. 2, 2015, pp. 82-90.
doi: 10.11648/j.ajhr.20150302.15
Nakabo-Ssewanyana, S. 2009. Governing health service delivery in Uganda: a tracking study of drug delivery mechanisms: research report.
Oldewage-Theron WH, Kruger R, Egal AA. 2014. Socio-Economic Variables and Nutrient Adequacy of Women in the Vaal Region of South Africa. Ecology of Food and Nutrition, 53(5): 514-527, DOI: 10.1080/03670244.2013.873423
Omara AJM. 2007. Promoting a human rights-based approach to food and nutrition security in Uganda. In W. B. Eide & U. Kracht (Eds.), Food and Human Rights in Development: Evolving issues and emerging applications (Vol. II, pp. 161-180). Belgium. Intersentia.

Ongosi AN. 2010. Nutrient Intake and Nutrition Knowledge of Lactating Women (0-6 months postpartum) in a Low Socio-Economic Area in Nairobi, Kenya (Doctoral dissertation, University of Pretoria).

Oosthuizen D, Oldewage-Theron WH, Napier C. 2011. Impact of a nutrition education programme on the nutrition knowledge of primary school children. African Journal for Physical Activity and Health Sciences. 17(1).

Patton MQ. 2005. Qualitative research & evaluation methods. Michael Quinn Patton. Sage Publ., Thousand Oaks, Calif. u.a.

Paul KH, Muti M, Chasekwa B, Mbuya MN, Madzima RC, Humphrey JH, Stoltzfus RJ. 2012. Complementary feeding messages that target cultural barriers enhance both the use of lipid- based nutrient supplements and underlying feeding practices to improve infant diets in rural Zimbabwe. Maternal & child nutrition, 8(2), 225-238

Pelletier DL, Frongillo EA, Jr., Schroeder DG, Habicht JP. 1995. The effects of malnutrition on child mortality in developing countries. Bulletin of the World Health Organization 1995;73(4):443-8.

Perez-Escamilla R, Pollitt E, Lonnerdal B, Dewey KG. 1994. Infant feeding policies in maternity wards and their effect on breast-feeding success: an analytical overview. American journal of public health 1994;84(1):89-97.

Roy SK, Fuchs GJ, Mahmud Z, Ara G, Islam S, Shafique S, Chakraborty B. 2005. Intensive nutrition education with or without supplementary feeding improves the nutritional status of moderately-malnourished children in Bangladesh. Journal of Health, Population and Nutrition, 320-330.

Ruel MT, Garrett JL. 1999. Overview. World Development, 27(11). International Food Policy Research Institute, Washington, DC.

Ruel MT, Garrett JL, Morris SS, Maxwell D, Oshaung A, Engle P, Menon P, Slack A, Haddan L. 1998. FCND Discussion Paper No. 51. Urban Challenges to Food and Nutrition Security: A Review of Food Security, Health, and Caregiving in the Cities. Washington, DC: IFPRI.

Ryan RM, Deci EL. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. Am Psychol 2000;55(1):68-78.

Sandelowski, MJ. 2008. Justifying Qualitative Research. Research in Nursing & Health 31(3), 193-195.

Santos I, Victora CG, Martines J, Goncalves H, Gigante DP, Valle NJ, Pelto G. 2001. Nutrition counseling increases weight gain among Brazilian children. The Journal of nutrition 2001;131(11):2866-73.

Saumure K, Given LM. 2008. “Data saturation.” In The Sage Encyclopedia of Qualitative Research Methods, 1, edited by Lisa M. Given, 195-196. Thousand Oaks, CA: Sage Publications.

Sengupta A. 2010. The human right to development. In B A. Andreassen and S.P. Marks (2010) (eds). Development as a human right. Legal political and economic dimensions. 2nd edition. Belgium. Intersentia.

Sethi V, Kashyap S, Seth V. 2003. Effect of nutrition education of mothers on infant feeding practices. Indian J Pediatr 2003;70(6):463-6.

Shekar M, Heaver R, Lee YK. 2006. Repositioning nutrition as central to development: A strategy for large scale action. World Bank Publications.

Shi L, Zhang J. 2011. Recent evidence of the effectiveness of educational interventions for improving complementary feeding practices in developing countries. J Trop Pediatr 2011;57(2):91-8. doi: 10.1093/tropej/fmq053.
Shrimpton R, Victora CG, de Onis M, Lima RC, Blossner M, Clugston G. 2001. Worldwide timing of growth faltering: implications for nutritional interventions. Pediatrics 2001;107(5):E75.
Ssewanyana SN, Kasirye I. 2010. Food security in Uganda: a dilemma to achieving the millennium development goal (No. 113614).
Thomas D. 1993. The distribution of income and expenditure within the household. Annales d'Economie et de Statistique, 109-135.
Townsend MS, Kaiser LL, Allen LH, Joy AB, Murphy SP. 2003. Selecting items for a food behavior checklist for a limited-resource audience. Journal of nutrition education and behavior 2003;35(2):69-77.
Udipi SA, Hooshmand S. 2013. Dietary diversity and nutritional status of urban primary school children from Iran and India. Journal of Nutritional Disorders & Therapy, 2013.
Uganda Bureau of Statistics (UBOS) and ICF International (Int.) Inc. 2012. Uganda Demographic and Health Survey 2011. Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc.
Uganda Bureau of Statistics (UBOS) and World Food Programme (WFP). 2013. Comprehensive Food Security and Vulnerability Analysis (CSFVA) Uganda. Rome, Italy: United Nations World Food Programme.
Uganda Bureau of Statistics (UBOS). 2014. Uganda National Household Survey 2012/2013. Kampala Uganda; UBOS.
Uganda Bureau of Statistics (UBOS). 2016. The National Population and Housing Census 2014 – Main Report. Kampala, Uganda.
UN Global (UNG) Compact. 2011. "Women's Empowerment Principles: Equality Means Business."
UNICEF. 1990. A UNICEF policy review: Strategy for improved nutrition of children and women in developing countries. New York. Policy review paper, E/CEF/1990/1.6
UNICEF. 2007. Vitamin A Supplementation: A decade of progress. UNICEF Nutrition Section, New York.
Valeggia CR, Ellison PT. 2003. Impact of breastfeeding on anthropometric changes in peri-urban Toba women (Argentina). Am J Hum Biol 2003;15(5):717-24. doi: 10.1002/ajhb.10202.
Vella J. 1994. Learning To Listen, Learning To Teach. The Power of Dialogue in Educating Adults. Jossey-Bass Higher Adult Education Series. Jossey-Bass, 350 Sansome Street, San Francisco, CA 94104-1310
Vella V, Tomkins A, Borghesi A, Migliori GB, Adriko BC, Crevatin E. 1992. Determinants of child nutrition and mortality in north-west Uganda. Bulletin of the World Health Organization 1992;70(5):637-43.
Webb P, Block S. 2004. Nutrition information and formal schooling as inputs to child nutrition. Economic Development and cultural change, 52(4), 801-820.
Working Group on Infant and Young Child Feeding Indicators. 2006. Developing and Validating Simple Indicators of Dietary Quality and

Energy Intake of Infants and Young Children in Developing Countries: Summary of findings from analysis of 10 data sets. Food and Nutrition Technical Assistance Project (FANTA), FHI 360, Washington, D.C.
Working Group on Infant and Young Child Feeding Indicators. 2007. Developing and Validating Simple Indicators of Dietary Quality of Infants and Young Children in Developing Countries: Additional analysis of 10 data sets. Report submitted to the Food and Nutrition Technical Assistance Project (FANTA), FHI 360, Washington, D.C.
World Health Organization (WHO). 1986. Ottawa charter for health promotion.
World Health Organization (WHO). 2005. "Guiding principles for feeding non-breastfed children 6-24 months of age."
World Health Organization (WHO). 2008. School policy framework: implementation of the WHO global strategy on diet, physical activity and health.
World Health Organization (WHO). 2009. "Acceptable medical reasons for use of breast-milk substitutes."
World Health Organization. 2010a. Indicators for assessing infant and young child feeding practices. Part 1: Definitions. WHO Geneva 2010
World Health Organization. 2010b. Indicators for assessing infant and young child feeding practices. Part 2: Measurements. Geneva WHO 2010
World Health Organization. 2010c. Indicators for assessing infant and young child feeding practices. Part 3: Country Profile. Geneva WHO 2010
World Health Organization. 2010d. Guidelines on HIV and infant feeding. Principles and recommendations for infant feeding in the context of HIV and a summary of evidence.
World Health Organization (WHO) and UNICEF. 2003. Global strategy for infant and young child feeding. World Health Organization.
World Health Organization (WHO) and UNICEF. 2009. Baby-friendly hospital initiative: revised, updated and expanded for integrated care.
Williams L, Campbell K, Abbott G, Crawford D, Ball K. 2012. Is maternal nutrition knowledge more strongly associated with the diets of mothers or their school-aged children? Public health nutrition 2012;15(8):1396-401. doi: 10.1017/S1368980011003430.
Zimmermann MB, Jooste PL, Pandav CS. 2008. Iodine-deficiency disorders. Lancet 2008;372(9645):1251-62. doi: 10.1016/S0140-6736(08)61005-3.

Internet:

du Monde M. 2011. Data Collection>> Quantitative Methodes–The KAP Survey Model (Knowledge, Attitude & Practices). (accessed: 17.3.2018)

Food and Agriculture Organization of the United Nations. FOOD and NUTRITION EDUCATION for Healthy Diets. Internet: http://www.fao.org/3/a-c0064e.pdf (accessed: 17.3.2018)

Food and Agriculture Organization of the United Nations (FAO). 2003a. Trade Reforms and Food Security. Conceptualizing the linkages. Rome, 2003. Internet: ftp://ftp.fao.org/docrep/fao/005/y4671e/y4671e00.pdf (accessed: 17.3.2018)

Food and Agriculture Organization of the United Nations (FAO). 2003b. Uganda Food and Nutrition Policy. Internet: http://faolex.fao.org/docs/pdf/uga145392.pdf (accessed: 17.3.2018)

Food and Agriculture Organization of the United Nations (FAO). 2006. Policy Brief. Food Security. Internet: http://www.fao.org/forestry/13128-0e6f36f27e0091055bec28ebe830f46b3.pdf (accessed: 17.3.2018)

Henriques S. 2015. International Atomic Energy Agency (IAEA). IAEA Office of Public Information and Communication. IAEA Impact: South Africa improves exclusive breastfeeding monitoring using nuclear techniques. Internet: https://www.iaea.org/newscenter/news/iaea-impact-south-africa-improves-exclusive-breastfeeding-monitoring-using-nuclear-techniques-0 (accessed: 17.3.2018)

Institut for Work and Health (IWH). 2015. What researchers mean by … primary data and secondary data. At Work, Issue 82, Fall 2015. Internet: http://www.iwh.on.ca/wrmb/primary-data-and-secondary-data (accessed: 17.3.2018)

Kids Club Kampala. Internet: http://www.kidsclubkampala.org/ (accessed: 17.3.2018)

National Planning Authority (NPA). 2010. National Development Plan 2 (NDP2). Internet: http://npa.ug/wp-content/themes/npatheme/documents/NDP2.pdf (accessed: 17.3.2018)

National Slum Dwellers Federation of Uganda (NSDFU). 2014. Kampala Slum Profiles 2014. Internet: http://knowyourcity.info/wp-content/uploads/2015/04/KAMPALA_MAPS_BOOK_small_file.pdf (accessed: 17.3.2017)

Nybo T. UNICEF and partners work to change attitudes about dangers of cholera in Uganda. 2010. Internet: http://www.unicef.org/health/uganda_53862.html (accessed: 17.3.2018)

Office of the United Nations High Commissioner for Human Rights (OHCHR). 1993. The Committee on Economic, Social and Cultural Rights, Fact Sheet No.16 (Rev.1). Internet: http://www.ohchr.org/Documents/Publications/FactSheet16rev.1en.pdf (accessed: 17.3.2018)

Office of the United Nations High Commissioner for Human Rights (OHCHR). 2001. Special Rapporteur on the right to food. Internet: http://www.ohchr.org/EN/Issues/Food/Pages/FoodIndex.aspx (accessed: 17.3.2018)

Office of the United Nations High Commissioner for Human Rights (OHCHR). 2010. The Right to Adequate Food. Fact Sheet No.34. Internet: http://www.ohchr.org/Documents/Publications/FactSheet34en.pdf (accessed: 17.3.2018)

The Global Alliance for Improved Nutrition (GAIN). Fortification of Wheat Flour, Maize Meal and Vegetable Oil in Uganda. Internet: http://www.gainhealth.org/knowledge-centre/project/fortification-wheat-flour-maize-meal-vegetable-oil-uganda/ (accessed: 17.3.2018)

Ugandan Ministry of Lands, Housing and Urban Development (MLHUD). 2008. National slum upgrading strategy and action plan. Internet: http://ssauganda.org/uploads/NATIONAL%20SLUM%20UPGRADING%20STRATEGY%20UG%20(2).pdf (accessed: 17.3.2018)

UN Committee on Economic, Social and Cultural Rights (CESCR). 1999. General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant). Internet: http://www.refworld.org/docid/4538838c11.html (accessed: 17.3.2018)

UN. Methodology Sheets: Demography: Dependency Ratio. Internet: http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/dependency_ratio.pdf (accessed: 17.3.2018)

UN Committee on Economic, Social and Cultural Rights (CESCR). 2003. General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant). E/C.12/2002/11. Internet: http://www.refworld.org/docid/4538838d11.html (accessed: 17.3.2018)

World Health Organization (WHO). 2016a. Global Health Observatory (GHO) data. Infant mortality. Internet: http://www.who.int/gho/child_health/mortality/neonatal_infant_text/en/ (accessed: 17.3.2018)

UN-Habitat. Slums: Some Definitions. Internet: http://mirror.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%205.pdf (accessed: 17.3.2018)

UNICEF. 2014. FACT SHEET: A summary of the rights under the Convention on the Rights of the Child. Internet: http://www.unicef.org/crc/files/Rights_overview.pdf (accessed: 17.3.2018)

UNICEF. 2005. HIV and Infant Feeding. Internet: https://www.unicef.org/nutrition/index_24827.html (accessed: 17.3.2018)

UNICEF. 2013a. Nutrition. Internet: http://www.unicef.org/infobycountry/stats_popup2.html (accessed: 17.3.2018)

UNICEF. 2013b. Improving Child Nutrition. The achievable imperative for global progress. New York: UNICEF. (accessed: 17.3.2018)

UNICEF. Child Health Days. Internet: http://www.unicef.org/esaro/5479_child_health_days.html (accessed: 17.3.2018)

UNICEF. 2011b. Programming Guide. Infant and Young Child Feeding. Internet: http://www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf (accessed: 17.3.2018)

UNICEF. 2011a. Child Days Plus – April 2011. Internet: http://www.unicef.org/uganda/Child_days_ad.pdf (accessed: 17.3.2018)
UNICEF. 2008. Multi-country evaluation of Child Health Days in Eastern and Southern Africa. Internet: http://www.mrc.ac.za/healthsystems/UNICEFReport2008.pdf (accessed: 17.3.2018)
UNSCN, 2013. Food and Nutrition Security. UNSCN Meeting of the Minds Nutrition impact of food systems. 2013. Internet: http://www.unscn.org/files/Annual_Sessions/UNSCN_Meetings_2013/Wustefeld_Final_MoM_FNS_concept.pdf (accessed: 17.3.2018)
World Food Programme (WFP). 2016a. Hunger Glossary. Internet: https://www.wfp.org/hunger/glossary / (accessed: 17.3.2018)
World Food Programme (WFP). 2016b. Hunger Statistics. Internet: https://www.wfp.org/hunger/stats (accessed: 17.3.2018)
World Health Organization (WHO). 2016b. Global Health Observatory (GHO) data. Under-five mortality. Internet: http://www.who.int/gho/child_health/mortality/mortality_under_five_text/en/ (accessed: 17.3.2018)
World Health Organization (WHO). 2016c. Global Health Observatory (GHO) data. Chronic malnutrition in children. 2016c. Internet: http://www.who.int/gho/urban_health/outcomes/children_malnutrition/en/ (accessed: 17.3.2018)
World Health Organization (WHO). 2016d. Factsheet 342. Infant and Young Child Feeding. Internet: http://who.int/mediacentre/factsheets/fs342/en/ (accessed: 17.3.2018)
World Health Organization (WHO). 2016e. Mental Health. Internet: http://www.who.int/mental_health/management/depression/daly/en/ (accessed: 17.3.2018)
World Health Organization (WHO). 2016f. Nutrition. Micronutrient Deficiencies. Vitamin A deficiency. Internet: http://www.who.int/nutrition/topics/vad/en/ (accessed: 17.3.2018)
World Health Organization (WHO). 2016g. Factsheet: Infant and Young Child Feeding. Internet: http://who.int/mediacentre/factsheets/fs342/en/ (accessed: 17.3.2018)

Appendices

LETTER OF INTRODUCTION AND CONSENT SEEKING

Hello. My name is Magdalena Pernegger and I am a student at the University of Vienna in Austria, Europe.

We are planning a nutrition education program in this area to improve the nutrition of children living here. First, we would like to do research on the nutrition of children **aged 0-24 months** and the nutritional knowledge of their mothers and caretakers.

As you are a mother or caretaker of a child aged 0-24 months, you have a lot of experiences that are very interesting and important for us. You could help us a lot with all the knowledge and information you have to make this program the best possible.

So I invite you to take part in this study. My research assistants and I will ask you questions about your household and about your child's nutrition. The interview will take about 30 minutes. After that, we will discuss with 5-8 other women of this local community for about an hour about nutritional knowledge and how you would this new nutrition education program to be like. While we are doing so, we will have some refreshments.

I would like to learn from you and listen to you and your experiences.

Risks: There are no serious risks involved. You do not have to answer a question, if you do not want to. You can leave the study at any time, if you want to. You can ask any question you have before, during and after the study.

Benefits: You can learn from the other women that participate in this interview/discussion and you can improve the nutrition education program by telling us your ideas on how it should be like. Later, you and your child can be part of this program.

The information you give us will be kept strictly confidentially and your name will not reflect in the report.

Please answer the questions as correctly as possible.

I agree to take part in this study.

Name of respondent:

_____

Signature/ thumb print of respondent:

_____Date_____

Questionnaire

The questionnaire has to be administered to women who are the mother or caregiver of at least one child aged less than 24 months.

1. Please tell me one of your names:

_____

2. How old are you?

1.1 ☐less than 18 years
1.2 ☐19 – 25 years
1.3 ☐26 – 35 years
1.4 ☐36 – 45 years
1.5 ☐45 years and above

3. How many people live in your house and how old are they?

Age group	How many	Age group	How many
0-6 months		26-35 years	
6-24 months		36-45 years	
2-18 years		46 years and above	
19-25 years			

4. Who is the head of your household?

4.1 ☐your husband
4.2 ☐you → *go to Q6*
4.8 ☐others (specify):_____

5. What is the highest education level the head of the household achieved?

5.1 ☐no formal education
5.2 ☐primary education not completed
5.3 ☐primary education completed
5.4 ☐secondary education not completed
5.5 ☐secondary education completed
5.6 ☐post secondary education
5.7 ☐university education

6. What is the occupation of the household head?

6.1 ☐unemployed
6.2 ☐self employed
6.3 ☐salary employed
6.4 ☐student
6.8 ☐others (specify): _____

7. What is the highest education level you achieved?

7.1 ☐no formal education
7.2 ☐primary education not completed
7.3 ☐primary education completed
7.4 ☐secondary education not completed
7.5 ☐secondary education completed
7.6 ☐post secondary education
7.7 ☐university education

8. What is your occupation?

8.1 ☐unemployed
8.2 ☐home with children
8.3 ☐self employed
8.4 ☐salary employed
8.5 ☐student
8.8 ☐others (specify): _____

9. How else do you get financial support?

9.1 ☐NGO
9.2 ☐relatives
9.3 ☐no other financial support
9.8 ☐others (specify): _____

We are going to talk about your child aged less than two years now. If there are more children aged less than two years, please choose the youngest one.

10. Name of child:
_____

11. How old is ***name of child*** in months? _____ months

12. Are you the mother or caregiver of ***name of child***?

12.1 ☐mother
12.2 ☐caregiver

13. If you are caregiver, what is your relationship to ***name of child***?

_____

14. Does ***name of child*** have a health/vaccination card?

14.1 ☐yes
14.2 ☐no
14.9 ☐don't know

15. What is the immunization status of ***name of child***?

15.1 ☐not at all immunized
15.2 ☐partially immunized
15.3 ☐immunization completed
15.9 ☐don't know

16. Did ***name of child*** get vitamins and deworming tablets in October?

16.1 ☐yes
16.2 ☐no
16.9 ☐don't know

17. If ***name of child*** is not vaccinated and/or supplemented, the reason is:

17.1 ☐health facility too far
17.2 ☐not aware of importance
17.3 ☐may harm child
17.4 ☐had no time to take child
17.8 ☐others (specify):_____

18. Has ***name of child*** been sick in the last two weeks?

18.1 ☐yes
18.2 ☐no
. 18.9 ☐don't know

19. If yes, how many times? _____ times

20. Did you seek treatment when ***name of child*** was sick?

20.1 ☐yes
20.2 ☐no

21. Where did you seek treatment?

21.1 ☐own medication
21.2 ☐public health facility
21.3 ☐traditional healer
21.4 ☐private clinic/ pharmacy
21.8 ☐others (specify):_____

22. Did you ever breastfeed ***name of child***?

22.1 ☐yes
22.2 ☐no

23. How long after birth did you first put ***name of child*** to the breast?

23.1 ☐immediately
23.2 ☐less than an hour after birth
23.3 ☐less than 24 hours after birth → *record number of completed hours:* _____hours
23.4 ☐more than 24 hours after birth → *record number of complete days:* _____days

24. Was ***name of child*** breastfed yesterday during the day or at night?

24.1 ☐yes
24.2 ☐no
24.9 ☐don't know

25. Was ***name of child*** given any vitamin drops or other medicines as drops yesterday during the day or at night?

25.1 ☐yes
25.2 ☐no
25.9 ☐don't know

26. Now I would like to ask you about some liquids that ***name of child*** may have had yesterday during the day or at night.
If yes, circle "1" and record the number of times the child had this liquid, if "no", circle "2".

Did ***name of child*** have any

	Yes	No	How many times yesterday during the day or at night did the child consume any .....?
Plain water?	1	2	
Infant formula	1	2	
Milk, such as tinned, powdered or fresh animal milk?	1	2	
Juice or juice drinks?	1	2	
Clear broth?	1	2	
Yoghurt?	1	2	
Thin porridge?	1	2	
Sodas?	1	2	
Any other liquids? Specify: _____	1	2	

27. Please describe everything that ***name of child*** ate yesterday during the day and at night, whether at home or outside the home.

i) Think about when the child first woke up. Did the child eat anything at that time? Please tell me everything the child ate at that time.
Anything else? *Until respondent says nothing else.*

ii) What did the child do after that? Did the child eat anything at that time? Please tell me everything the child ate at that time.
Anything else? *Repeat until the respondent says that the child went to sleep until the next day.*
If respondent mentions mixed dishes like a porridge, sauce or stew, ask:

iii) What ingredients were in that ***mixed dish***?
Anything else? *Until the respondent says nothing else.*

As the respondent recalls foods, underline the corresponding food group and circle "1" in the column next to the food group.
If the food is not listed in any of the food groups below, write the food in the box labeled "other foods".
If foods are used in small amounts for seasoning or as a condiment, include them under the condiment food group.

OTHER FOODS:

		Yes	No	Don't know
A	Porridge, bread, rice, noodles, or other foods made from grains	1	2	8
B	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	1	2	8
C	White potatoes, white yams, cassava, or any other foods made from roots	1	2	8
D	any dark green leafy vegetables like dodo, nakati, buga	1	2	8
E	ripe mangoes, ripe papayas, jackfruit	1	2	8
F	any other fruits or vegetables	1	2	8
G	liver, kidney, heart, or other organ meats	1	2	8
H	any meat, such as beef, pork, lamb, goat, chicken, or duck	1	2	8
I	eggs	1	2	8
J	fresh or dried fish, silverfish, or seafood	1	2	8
K	any foods made from beans, peas, lentils, nuts, or seeds, groundnuts	1	2	8
L	milk, cheese, yogurt, or other milk products	1	2	8

M	any oil, fats, or butter, or foods made with any of these	1	2	8
N	any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	1	2	8
O	condiments for flavor, such as chilies, spices, herbs, or fish powder	1	2	8
P	grasshoppers, white ants or other insects	1	2	8
Q	foods made with red palm oil, red palm nut, or red palm nut pulp sauce	1	2	8

Once the respondent finished recalling foods eaten, read each food group where "1" was not circled, ask the following question and circle "1", if respondent says "yes", "2", if "no" and "8" if "don't know".

28. Yesterday during the day or night, did ***name of child*** drink/eat any ***food group items?***

29. Did ***name of child*** eat any solid, semi-solid, or soft foods yesterday during the day or at night?

29.1 ☐yes
29.2 ☐no

If "yes", ask: What kind of solid, semi-solid, or soft foods did ***name of child*** eat?

-> go back to Q27 and record the foods eaten.

30. How many times did ***name of child*** eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?

number of times: _____ times ☐don't know

31. Did ***name of child*** drink anything from a bottle with a nipple yesterday during the day or night?

31.1 ☐yes
31.2 ☐no
31.9 ☐don't know

Thank you for participating in this study!

Focus group discussion

Introduction

1. Did you ever receive any nutrition education about good nutrition for children or how to breastfeed?

Where did you get it from? (for example: when you took your child for immunization, from health workers, from mother/ mother-in-law, nutritionists, …)

Breastfeeding:

2. How do you feed your baby within the first two days after birth?

3. Do you give the baby other foods than breast milk in the first six months?

4. For how long is a woman expected to breastfeed a child exclusively?

5. How long should mothers, who are HIV positive, continue breastfeeding?

Foods:

6. 3 food groups: proteins, carbohydrates, protective food place in the three food groups: meat, milk, egg, fish, beans, groundnuts, matooke, sweet potato, rice, cassava, mango, watermelon, greens, cabbage, carrot, tomato, eggplant

7. Why are meat, fish, milk and eggs important for your child?

8. What are the most important things for you when you decide what you cook for your child?

Preparation:

9. What happens if you cook greens and fresh fish too long?

10. What should the food for your child under two years look like when it is ready to eat?

11. Is there a type of salt you should prefer?

Hygiene:

12. What's the most important thing to do before you start to prepare food regarding hygiene?

13. Can your child eat from the same plates, cups and spoons like the other household members?

If no, why not?

14. How should you treat your child's plates, cups and spoons?

15. Do you use bottles/cups with tops or nipples?

Why/ Why not?

Environment:

16. How do you store foods? How the liquids? How the solids?

17. What is important regarding your toilet and waste disposal?

Serving:

18. Do you serve your child together with the rest of the household members or not?

19. If the child refuses to eat for some time, what do you do?

Time:

20. How many times a day/how often do you give food to your child?

21. How do you determine how much food your child needs?

Nutrition information:

22. Do you think you have enough information about good nutrition for children?

23. If not, would you like to get more information about good nutrition for children?

24. How would you like to get this information?

Thank you for helping me with my research!