Link Nutrition Causal Analysis

Moroto District, Karamoja Region, Uganda

REPORT SUMMARY

Lysette Boucher Castel, NCA Analyst

Table of contents

Table of Contents

Abbreviations and Acronyms

ACF:	Action against Hunger (Action contre la Faim)
ANC:	Ante-natal Care
ARI:	Acute Respiratory Infection
BF:	Breast Feeding
BMI:	Body Mass Index
CCIS:	Child-Caregiver Interaction Scale
CF:	Complementary Feeding
CI:	Confidence Interval
CP:	Care Practices
CSI:	Coping Strategies Index
DFID:	Department for International Development (UK)
DHS:	Demographic and Health Survey
DPT3:	Diphtheria, Pertussis and Tetanus third vaccine
ENA:	Emergency Nutrition Assessment
FANTA:	Food and Nutrition technical Assistance
FAO:	Food and Agriculture Organization
FCG:	Food Consumption Groups
FGD:	Focus Group Discussion
FSL:	Food Security and Livelihoods
FSNA:	Food security and Nutrition Assessment
GAM:	Global Acute Malnutrition
HDDS:	Household Dietary Diversity Score
HEA:	Household economy approach
HFIAS:	Household Food Insecurity Access Scale
HHS:	Household Hunger Scale
IDDS:	Individual Dietary Diversity Score
IYCF:	Infant and Young Child Feeding
LCD:	Liters per Capita per Day
MAHFP:	Months of Adequate Household Food Provisioning
MAM:	Moderate Acute Malnutrition
MDI:	Major Depression Inventory
MOH:	Ministry of Health, Uganda
MUAC:	Mid-Upper Arm Circumference
NCA:	Nutrition Causal Analysis
NGO:	Non-Governmental Organization
SAM:	Severe Acute Malnutrition
SD:	Standard Deviation
SMART:	Specific, Measurable, Attainable, Relevant and Time-bound
SQUAEC:	Semi-Quantitative Evaluation of Access and Coverage
UNICEF:	The United Nations Children's Fund
USAID:	United States Agency for International Development
WASH:	Water, Sanitation and Hygiene
WFP:	World Food Programme
WHO:	World Health Organization
WHO5:	Well-being index in 5 questions developed by the WHO
WHZ:	Weight-for-Height Z-score

About this report

The Nutrition Causal Analysis report presents the findings of an indepth investigation into the immediate, basic and underlying causes of under nutrition in Moroto district in Karamoja region of Uganda. The investigation process took the form of a mixed methods analysis combining qualitative and quantitative research methodologies to develop a comprehensive analysis of both the current and historical factors affecting undernutrition in Moroto district.

The Link NCA survey in Moroto district was recommended following a consultative process with various stakeholders financing nutrition programs in the Karamoja region of Uganda. The overall goal of the survey was to better understand the factors behind the chronic nature of acute malnutrition as well as explain factors underlying the deterioration in the nutrition situation reported by several food security and nutrition assessments conducted in the region during recent years.

This report provides a summary of the findings of this assessment. It details the evolving livelihood context in Karamaoja and in particular in Moroto district over the past 10 years and its impact on food security and nutrition. It then outlines the key factors and causal pathways for undernutrition in two livelihood zones in Moroto district based on the findings of a literature review, a risk factor survey, a qualitative community survey and several multi-stakeholder workshops held in Moroto district during the first half of 2016. It then draws a set of recommendations developed through discussions by the communities involved in the survey and the technical experts in Moroto district to address the multiscetoral causes of undernutrition in the district.

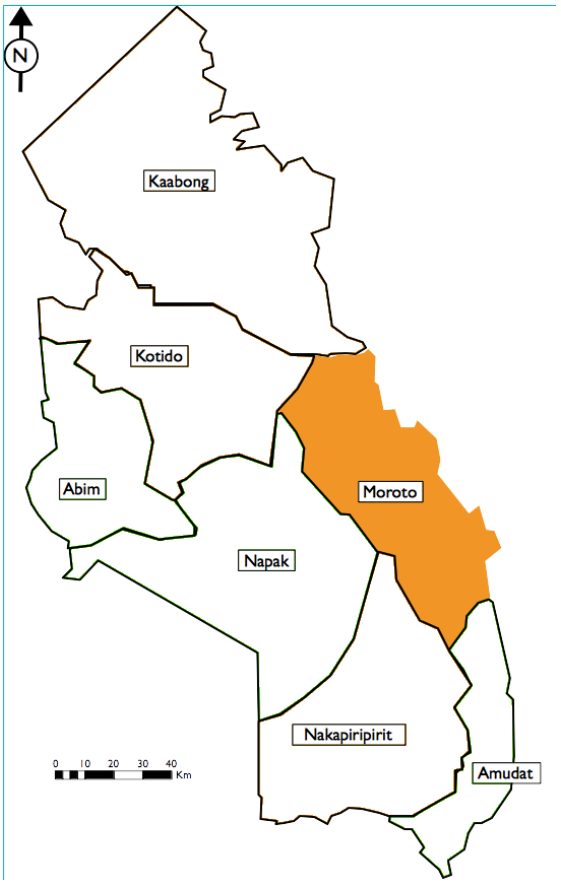
The Link NCA was conducted by an expert Link NCA analyst from Action Against Hunger with technical oversight from the ACF Nutrition and Health technical advisors and the Link NCA unit in Paris. The survey was supported by the United Nations Children's Fund (UNICEF) and the United Nations World Food Program (UN WFP) with funding from the Department for International Development (DfiD).

Introduction

WHY CONDUCT A LINK NCA IN MOROTO?

Moroto district is one of the 7 districts in the Karamoja region of North Eastern Uganda. The district has a total area of 8,516 km^2 of which 4,900 km^2 is covered by game reserves and 100 km^2 by Mount Moroto. In 2014, the District of Moroto had a total population of 104,539 people (UNHPC, UBOS 2014). The district is bordered by Napak in the west, Kenya in the east, Nakapiripirit and Amudat in the South and Kotido and Kaabong in the North. The main tribal groupings are the Tepeth and Matheriko whose main livelihood is agro-pastoralism practicing both subsistence agriculture and semi nomadic livestock rearing. Approximately 95% of the population lives in rural areas. In 2008, Karamoja represented some 33 per cent of Uganda's rangelands, 16 per cent of its human population and 25 per cent of its livestock (UBOS 2008). In 2015, only 1 in 3 households owned cattle in Karamoja, which was once the main source of livelihood. The livelihood pattern has changed over time due to loss of livestock[1]; power has changed due to increase of poverty among the households[2]. This has led to women going for options in livelihoods like, charcoal burning, firewood and sale of local brew as a substitute to crop agriculture that suffered crop failure for quite a number of years.

Moroto district, Karamoja region, Uganda



THE FOOD SECURITY AND NUTRITION SITUATION IN MOROTO

Moroto district has some of the poorest food security and nutrition indicators in the region. The most recent food security and nutrition assessment conducted prior to the initiation of the Link NCA in August 2015 had found that GAM rates were at 18%, underweight at 31% and stunting at 32%[3]. According to The Integrated Food Security Phase Classification Analysis for Karamoja, the

[1] FAO/GIEWS, Livestock and Market Assessment mission to Karamoja Region, Uganda, April, 2014, http://www.fao.org/3/a-i3674e.pdf
[2] Ibid3
[3] WFP and UNICEF, Food Security and Nutrition Assessment, Karamoja Region Uganda, July – August 2015

GAM rates in the district are consistently above WHO emergency thresholds[4]. Only 0.4% of children in the district receive the minimum dietary diversity and only 19.2 % of children 6 – 23 months receive the acceptable minimum meal frequency. Per capita water consumption is at least 10 litres person per day which is still below the WHO recommended 15 litres per person per day. Majority of the population (88.2%) have no latrines. In 2015, the food security sector, IPC activities showed that in 2015, there were two distinct areas in Moroto District: "*the Central Sorghum and Livestock Zone of Moroto district is a predominantly agro-pastoral zone, prone to floods caused by high rainfall as a result of climate variability. Characteristics are the same as in other districts that have this livelihood zone. Local inhabitants of this zone are exposed to a high risk of food insecurity. The second is the Mountain and Foothills Maize and Cattle Zone. Household food stock deficit is expected in this zone. Household Food stocks ran out only one month after harvest and purchases are then the major source of food until the next harvest in September 2015. Two-thirds (67 %) of the households reported having harvested less food compared to the previous season. The lean season was therefore forecasted to start as early as February 2015. Majority of households have limited access to agricultural land (68%). Forty-three per cent (43%) of households do not own livestock*." Consequently, between 2009 and 2015, an overall deterioration of pastoral and agro-pastoral life affected both agriculture and livestock and then, in parallel, the nutrition situation also deteriorated.

The causes of malnutrition in Moroto district are complex and multi-faceted stemming from the region's harsh climate, remote location, high poverty rates and socio economic inequalities. Surveillance and prevalence studies in the region have attempted to establish a casual relationship between the nutrition indicators and various factors based on the UNICEF conceptual framework of malnutrition, 1990. A meta analysis of surveillance reports conducted by ACF between 2009 – 2012 highlighted the association between the high disease burden and poor hygiene and sanitation practices[5]. Other reports have also highlighted the influence of poor infant and young child feeding practices, gender inequalities, chronic food insecurity and poverty as key causal factors. Data from a recent SQUEAC survey conducted in 2015 indicated basic causes including ; household food insecurity, inadequate care practices, poor water hygiene and sanitation practices and poor access to health services[6]. There are also underlying factors particularly poverty, alcohol abuse and gender inequalities[7].

Based on these findings, various interventions have been developed across sectors to address the immediate and underlying causes of undernutrition in the district. Currently there are various UN Agencies, INGOs, CSOs and donors contributing directly to the district objectives to improve the quality of life of people in Moroto. And yet the nutrition indicators in the district are consistently

[4] Report of the Integrated Food Security Phase Classification Analysis for Karamoja, 22 – 26th June, Prepared by Uganda IPC technical working group, August 2015

[5] Nutrition surveillance data analysis, Karamoja Uganda, December 2009 – May 2012, Action Against Hunger (ACF) and Ministry of Health Uganda.

[6] Prentince and Hockenhull, Coverage Assessment using SLEAC and SQUEAC methodology, Karamoja region, January – March 2015 (draft report).

[7] Ibid

above emergency thresholds[8]. A large proportion of households in the district still experience stress in access to food while 70% of households are chronically food insecure. A coverage assessment conducted by ACF in the region found that Moroto district had the lowest coverage for SAM and MAM treatment in the region. Furthermore the latest food security and nutrition survey found that Moroto district had the highest GAM rate (18%) of the 7 districts in the region.

It is against this backgorund that the Link-NCA for Moroto was proposed to respond to an urgent need to understand in a more comprehensively manner the underlying causes of undernutrition in the Moroto district to ensure a specific contextual analysis based on the specific vulnerabilities and needs of the populations within the district. There was a need to better understand the causal pathways related to undernutrition and how they interact and a clear prioritization on the factors which weigh the most heavily on the undernutrition situation. There was also a clear need to come to a common, multi-sectoral understanding of the root causes of malnutrition amongst all key stakeholders and provide clear response analysis in order for stakeholders to work collectively from a common framework in order to increase the impact of interventions on the undernutrition situation.

OBJECTIVES OF THE LINK-NCA IN MOROTO HEALTH DISTRICT, KARAMOJA

Main Study Objective

The main objective of this Link NCA is to identify the main causes of *chronic (stunting) and acute (wasting)* malnutrition, more specifically in the district of Moroto, thus allowing for greater clarity regarding the possible causes of undernutrition of children aged 0-59 months.

Specific Study Objectives for Moroto District

1. To estimate the prevalence of known risk factors for undernutrition among the population and key "nutrition vulnerable groups";
2. To identify the main causes of wasting and stunting in order to inform the technical strategy and programs for the prevention of the same at local level;
3. To determine which causal pathways of malnourishment are likely to explain most undernutrition cases in Moroto district;
4. To synthesize results and build a technical consensus[9]
5. To supply recommendations based on the causal analyst process for improving Nutrition security programming

[8] Report of the Integrated Food Security Phase Classification Analysis for Karamoja, 22 – 26th June, Prepared by Uganda IPC technical working group, August 2015

9 - When the data collection is completed, "*a synthesis of the data will use this evidence to rate the risk factors based on their relative contribution to under-nutrition and to qualitatively describe the dynamic interrelationships among the risk factors and under-nutrition outcomes… During a final workshop, after the presentation of the results, to the technical experts in participatory process are asked to provide confidence notes on each result of the Link NCA which indicate to which consensus has been achieved and document any remaining disagreement*" (Overview Link NCA, p.11)

THE METHODOLOGY

Link NCA approach

Based on the UNICEF causal framework[10], a Link NCA is a structured, **participatory**, holistic study which builds a case for **under nutrition causality** in a local context. The study design utilizes a mixed methods approach, combining both qualitative and quantitative research methods and draws conclusions from a synthesis of results.

The Link NCA in **Moroto district was conducted** over a period of months between **November 2015 and May 2016.** The process started with a preparatory phase during which technical discussions to determine the benefits and feasibility of the assessment were discussed. During this stage it was also determined not to include a SMART survey and only conduct a risk factor survey and utilize the data from the planned December 2015 FSNA for anthropometric data. These recent measures were largely sufficient for us not to undertake three months later the same measurements. Addditionally there were also plenty of historical anthropometric measures to put into perspective a number of risk factors in the four areas studied (Food Security and Livelihoods, Care practices and Mental Health), Health and Water Hygiene and Sanitation) via an NCA investigation.

This phase also involved other preparation and planning activities, including developing terms of reference, identifying and securing resources, hiring an NCA Analyst to conduct the study, and determining timelines. Implementation of the Link NCA activities commenced in mid-January and continued until the end of February. In order to conduct the Link NCA survey, a team was formed and the NCA analyst took up her duties in January 2016 for the incorporation of the preparatory phase. On March 7th 2016, the first technical expert workshop was held in Moroto. On March 8th 2016, the ACF team with a program manager started training field investigators (22), finalizing the household questionnaire and sampling the villages selected. The data collection for both qualitative and quantitative data took place from March 11 to April 11 2016. The analysis of quantitative and qualitative data was conducted over the last two weeks of April. The final workshop was held on 16 and 17 of May 2016.

Sampling procedures

The selected sampling method was random cluster sampling. The household sample was drawn taking into account the parameters known on the prevalence rate of the NCA indicators and demographic parameters (number of children under 5 years) relative to the population of Moroto district. The Household (HH) average size was considered as 5 members by household taken from the rural category of the Uganda Demographic Health Survey (UDHS) 2011. The number of children for each age group per HH was deduced from children under 5 years population of 18.8 %, and the number of members/HH is 5. Sample size was calculated for a selection of relevant

10- UNICEF (1990) "Strategy for improved nutrition of children and women in developing countries", A UNICEF Policy Review. New York, USA.

indicators: early initiation of breastfeeding (0-23 months), meal frequency (6-59 months), ARI prevalence 6-59 months, IDDS (6-23 months), Diarrhea (0-59 months). With a design effect equal to 2, and d2 (desired precision) equal to 10%. This gives a number of households 521 for IDDS risk factor (6-23 months). By adding 15% to take into account the errors, the number of households thus obtained is 600 households. With this sample of households was obtained in the field of information for a total of 829 children aged 0-59 months.

Initially, according to available demographic data (population per village, number of villages), there are within the district 151[11] villages (population by sex, number of households). Because this is a NCA type 2, the number of clusters should be between 30 and 35 (villages). In Moroto District, it was estimated that a sample of 30 villages was adequate; we used the ENA software for obtaining these. From this list of villages sampled, always with the ENA software, we randomly pulled 4 clusters that constituted the sample of 4 villages for the qualitative survey. For NCA surveys (quantitative) in the second stage of sampling, the *household* was considered as the basic sampling unit. There were 600 households to be included as part of 30 clusters, i.e. 20 households were interviewed in each of the 30 villages. For villages with a population exceeding 250 households, a geographical segmentation was operated inside the village and one segment was randomly selected (second-stage). If each segment contained approximately the same number of households, one was randomly selected. If each segment contained different numbers of households, then the segment was selected using PPS. The third stage of sampling was to select households. This was done using simple random sampling with random number tables. Households were selected from household maps with each house numbered.

Quantitative survey

Data was collected through household interviews. Considering the indicators (core and optional), the questionnaire (RFS) was built in a series of three versions[12]. The final (fourth) took into account the hypotheses of the initial workshop additions, involving the addition of optional or local indicators and the corrections that were made by the trainers in FSL, WASH and nutrition, and investigators during training days for enumerators and supervisors. For data collection, filling was done directly and answers noted on a paper questionnaire by investigators. The filling of responses was exclusive to two respondents: the head of the family and the mother (main caregiver). For children aged between 0 and 59 months, specific questions about their health status were asked to the mother. The paper questionnaire was written in English and the final day of training was spent on the translation of the RFS questionnaire to Karamojong. At the end of this training period, the questionnaire was tested in a village near Moroto (Bazaar). The pre-test was successful, which allowed teams to move quickly onto the ground.

11- In the census of 2014, 151 villages were listed.

12- The first two versions were reviewed and corrected by the focal point ACF-Uganda, and the focal point NCA ACF USA.

Qualitative inquiry

In Moroto District, the qualitative survey took place during the same period as the data collection of the RFS investigation. Each village was visited during a six-day week. According to Link NCA methodology, respondents of a community fit into 4 groups: community leaders (1) key informants (2), mothers and fathers of children under 5 (3). In each village, we added a focus group with teenagers some of which were parents. To conduct of the survey, a translator and an assistant (for taking notes) were recruited. Throughout the investigation, they accompanied the NCA analyst. The translator and assistant were trained for two days in the techniques of qualitative research and the challenges of data collection. In addition, they also attended the day dedicated to the translation of the questionnaire in order to become familiar with the core questions on the various sectors of the RFS investigation. Regarding interviews with community leaders and key informants, two framework questionnaires were prepared and then tested by the team (Analyst, translator and assistant). In addition, each discussion guide for the thematic (objectives) focus groups (women, men and adolescents) were prepared during the conduct of the inquiry. Five discussion guides were built during the first week. For each village, the guide was reviewed and adapted according to its particular context, e.g. rural or urban. Also, all along the data collection, the team followed a process called "cognitive debriefing." Cognitive debriefing involves asking respondents, after conducting an interview, what their interpretations were of the questions that were posed to them to judge whether respondent understanding corresponds with the intended meaning of the question. These daily sessions lasted for two hours and were gathered in a narrative book of the qualitative survey.

Data Management and Analysis

Very special attention was given to the quality of all data required for the analysis of risk factors in order to identify hypotheses covering the causes of malnutrition in Moroto District. First, the preparations for the initial workshop, integrated a TAG[13] team for the preparations for the workshop. Then to obtain quality survey data, a verification procedure of data collection for the household survey and the qualitative survey was also established. Also, we prepared very carefully by analyzing the first results of the joint RFS investigation of the qualitative survey, a preliminary analysis was produced and sent to the participants of the final workshop. Finally for the final workshop, the NCA procedures were established to seek consensus on the causes of malnutrition in the Moroto District.

13- The TAG is selected by the NCA Analyst and comprised of one expert from each technical field relevant to the NCA (i.e., food security, health, care practices, nutrition, and WASH). The NCA Analyst should seek input from country-level staff and partner organisations on which technical experts should be invited to join the TAG. The members of the TAG can be internal or external to the organisation financing the Link NCA and are usually the members of the initial meeting (i.e., Step 1 of Preparatory Phase). The TAG members should be prepared to provide technical input when solicited by the NCA Analyst at any point during the NCA.

Ethical considerations taken during the survey

The ethical considerations undertaken during the survey are summarized in table 1 below. Furthermore particular care especially on the consent form for the household survey and the presentation of the results in the 4 villages of the qualitative survey was undertaken. Of the 4 villages, three were visited. Unfortunately, we were unable to access to the fourth one, where the road was cut off by a river that was not possible to cross because of the rainy season.

Table 1: Ethical considerations for Link NCA in Moroto district

Obtain permission to conduct the survey from appropriate local/national authorities	• District level: DOH • Local level: LC1
Obtain informed consent and respect confidentiality:	• Household • Consent form first section of the household questionnaire
Provide an adequate environment for the community-level qualitative enquiry	• Permission to hold the focus group with the village chief • Isolated place to hold focus groups with women to help them to express themselves (often made the the FCG in a private home..
Present the results of the NCA survey to participating communities	• Three villages visited of 4 • The entire population, men, women and teenagers took part in the final discussion in the 3 villages around 100 people by village

Limitations of the study

An extrapolation of the results obtained in Moroto district to other districts (6) of the Karamoja region is not advisable. Indeed all the results are based on triangulation between the prevalence of risk factors (RFS) and the results of the qualitative survey in villages in Moroto district. One could be tempted to do it, but beyond the disparities observed in other studies on nutrition and food security, the base of the NCA analysis is built on the characteristics of the context of this district.

The findings

The survey identified a set of risk factors for undernutrition among nutritionally vulnerable groups and their respective casusal pathways. They were categorised by four core sectors ; Food Security and Livelihoods, Care practices and Mental Health, Health and Water Hygiene and Sanitation as detailed below;

FOOD SECURITY AND LIVELIHOODS

1.1 Inadequate access to milk and, animal products by children and mothers

Between the years 2011 and 2016, it appears that there was a serious decline in the availability of milkk as a dietary product for children. It is very important to see pastoralist communities faced with rationing the amount of goat milk for children. According to the FSNA investigation, in December 2014, IDDS data show that 30% of children did not have access to milk, while in March 2016, the RFS-NCA survey shows that the prevalence is 70%. Among the participants of the 4 villages, in two villages, mothers identified this risk factor as a major cause of child malnutrition. The mothers explained that they had no milk because there was no more livestock to their villages. The inadequate supply of milk by mothers resulted in utilization of less nutritious products particularly the use of the "residue" of the fermented beer. This is as it were a new food habit, more so a coping mechanism to deal with inadequate food supplies.

1.2 High food access instability

The MAHP indicator is based on the perceptions of households on monthly stability of food security. Here, the number of months is relatively high (6 months on average) among households. In April 2015, the estimated average was at 5 months (*Context Analysis Resilience to food insecurity and malnutrition in Karamoja*, Uganda. April 2015). The period perceived covers essentially the range of the dry season. Moreover, this instability seems to fit in time. In Moroto District, there would have been an annual instability in previous years dating back to the year 2011 explained by a cycle of poor harvests. In August 2015, the Technical Group (IPC— Uganda) notes that the instability in food security characterized by" *declining food security due to depletion of food stocks at household level. Only 31 percent of households own food store, and 20 percent own seed stores* in Moroto District.

1.3 Low purchasing power

This risk factor was identified dring the focus groups with mothers as *the main cause of child malnutrition in the four villages*. This factor is automatically activated when mothers regularly frequent the food market during the dry season. Two realities led them to this conclusion. Firstly, they do not manage to properly sell the contents of income-generating activities (charcoal), they are prisoners of captive markets. Secondly, commodity prices often fluctuate during this period, so that revenues appear insufficient for food survival of a family. In the men focus groups, men

explained that they made themselves available for the production of charcoal or days at breaking stones but they refuse to go and sell the quantities produced on the markets located in town. Men consider that the round trip between the village and the town is not a male activity. For men adopting a more urban lifestyle, employment from day to day is gradually introduced in the daily organization. However, for most men away from the reality of the urban labor market, resistance remains strong. Women take into account that resistance and decide that they have to do what is necessary to ensure the survival of the family. The study found that for mothers, the cost to pay to hold alone the food security of the family is high, and that there other risk factors relating to health and hygiene will impact more strongly on child malnutrition.

1.4 Low Household Livestock ownership

All analyses show that this factor has a negative impact on the prevalence of malnutrition, and even more on household resilience in the face of recurrent shocks. Participating mothers and fathers in the three villages (mountains and plains) insisted on this. What is stunning in their speeches relates to their determination to increase the number of animals in future years. How do they hope to go about doing it? Participants responded that they rely on good harvest years to sell the produced quantity of cereals on the markets. Thus, they were prepared to live again in food insecurity over the next dry season in order to increase the number of animals.

1.5 Poor agriculture products

Farming is also a pillar of economic stability in Moroto District households. It is therefore possible to increase agricultural production. However, what remains fragile is the uncertainty about the climate that has been fickle for several years. Mothers and fathers, anticipate increasing their livestock with their crops. One interesting fact that appeared during meetings with the men in the villages was the enhancement of this activity by men. Formerly in Karamajong pastoralist communities, men do not feel invested in the agrarian operations. It is at least what many authors show (Kagan, S. 2009 and Knighton, B. 2006) regarding the traditional role of men in this environment. The men in three villages (mountains and plains), mentioned the importance of their role with the introduction of primary techniques such as hitching of animals for plowing. This is indeed an important change that alters the organization of life during the rainy season. Although men hope to sell their agricultural products to restore their livestock, the fact remains that a transition to a sedentarization of the rural population is underway which also changes the consideration of the agricultural holding as a capital which determines the economic status of households.

CPMH: CARE PRACTICES AND MENTAL HEALTH

Care practices and mental health is the second-largest sector affected by child malnutrition. If the food security sector provides insights on the well-being of households, the CPMH sector is instructive on the nutritional status of children (0–59 months), and that of mothers, as well as

interactions between children and mothers. Nutrition experts are particularly interested in the prevalence rates in this sector, including the development of best practices that allow children from birth to grow well in their environment where the mother is the primary referent. Consequently, the conditions surrounding the welfare of the mother throughout the growth of children must also be taken into account and the risk factors related to it directly impact on the increase or reduction of prevalence rates child malnutrition.

2.1 Poor practices of breastfeeding initiation and exclusive breastfeeding

Concerning the initiation of breastfeeding, the RFS survey obtained a prevalence rate of 34.8% (March 2016), while in June 2015, the FSNA survey shows a very low prevalence rate (8%). However, in May 2013, the FSNA survey obtained a rate of 65%. We are faced with very different prevalence rates recorded by FSNA annual surveys (2013–2015). Unfortunately, the authors do not mention what are the reasons for this difference in prevalence over the years. The qualitative survey can help us understand this difference. When mothers talk about this practice they differentiate their discourse according to the place of delivery. In fact, mothers who give birth in a health center, they are required by the care protocol to initiate breastfeeding, while for a home birth, they only begin breastfeeding after choosing the name of the newborn. At home, the delay is more than one hour and can go up to 36 hours. In recent years, health centers are attempting to address this cultural demand and mothers are being asked to provide a name before giving birth so that more and more newborns benefit from the practice of breastfeeding initiation. Thus, according to the findings of the RFS survey (March 2016), the prevalence of mothers who gave birth in a health facility (68%), is a probable explanation for the prevalence of this risk factor at more than 8% (FSNA 2015). However, there may be a number of primaparous women that do not have the time to choose a name before their arrival at the health center, which in this case would explain why the prevalence rate cannot exceed 68%, but is close to the prevalence obtained by RFS survey; the confidence interval is between 30 and 40%.

Regarding exclusive breastfeeding, the RFS survey (March 2016) obtains a prevalence rate of 43% while the FSNA survey shows a higher prevalence, 75.2% in 2015, and slightly lower in 2012 - 70%. The measures related to exclusive breastfeeding may be different depending on the choice of questionnaire. The RFS questionnaire asked mothers to indicate if in the last 24 hours the child ate or drunk; that does not mean that the child is not breastfed by the mother. In addition, many mothers reported during the discussion sessions that they did not practice exclusive breastfeeding. They introduced early enough semi-solids before the age of six months, explaining that often the child wants more of other foods. This practice of introducing an early stage food was also confirmed in interviews with nurses in health centers. The prevalence on early introduction of foods is 53% would explain why the prevalence obtained by the RFS investigation is much lower than the one obtained in the FSNA survey.

2.2 Inadequate complementary feeding practices

Three main indicators build this hypothesis. These are the introduction to complementary foods, food diet (IDDS) by including the number of daily meals, and the indicator on response feeding.

- *Introduction to complementary food:* The practices are divided into two groups, the first group, 46% (RFS, March 2016) of children, mothers properly introduce foods to the recommended age of 6 to 8 months (FSNA: 54%, June 2015). For the second group, there would be 35% of children (FSNA, June 2015) who eat foods prematurely, and 10% (FSNA June 2015) of mothers introduce later complementary foods. According to the FSNA survey, compared to other districts in Karamoja "*Early introduction of complementary food was particularly prevalent in Moroto*" *(June 2015, p .36).*

- *IDDS* : If we look at the evolution of IDDS for Moroto District between 2012 and 2016, little change is observed between the prevalence obtained in March 2016 27% (RFS) and that of September 2012, which was 26.2% (ACF) for the proportion of children who received a minimum ((≥4) food. Regarding the number of daily meals, in March 2016, only 17.8% (RFS) of children were fed four times a day. In December 2015, they were very slightly higher in proportion i.e. 18.6% (FSNA). Moreover, in 2010, very few children had 4 meals (1%), 52% of children eat an average of two meals a day, and 20% of them three meals a day. The FSNA survey gives in 2013 for children aged 9-23 months, an average of 2.8 daily meals. Since 2013, the FSNA survey uses a composite indicator, the MAD[14]. In Uganda, the national average was 5.7% in 2015, while for the Karamoja Region, the rate was 2.7% in December 2015, but very different in June 2015 at 14%[15]. For the year 2015, it also applies for Moroto District in December 2015; the rate was 1.6% in December and 11% in June 2015. Finally, we should add that according to the FSNA survey the MAD indicator "had a weak negative correlation with stunting "(Dec. 2015).

- *Response feeding*: the RFS survey also provides a good score; mothers are good caregivers for their children when they give food to children aged between 9 and 23 months (79%). They are far less so with older children (24-59 months), only 26% of children are helped by the mothers.

.

The question of food practices were addressed by two components during the group sessions with mothers. The first focused on the nutritional status of children, and the second was on the number of daily meals prepared by mothers.

Regarding food diet, mothers explained that the children had an undiversified food diet because of their poor financial means. But this is only the beginning of a long narrative about the significance of the poor quality of the food diet of children. Mothers introduce daily diet in food

14- Minimum Acceptable Diet (MAD): the combination of children who had minimum/ acceptable diet diversity and those who had minimum meal frequency was computed as well.

15 - This percentage difference between two months of a year is important (11%). One might think that during the rainy season of 2015, at least in June, children were able to receive better food diet. But this is probably an exception given the results for the month of June the previous years.

children via a preparation of fermented cereals, the "residue", which they get in exchange for firewood. During the dry season, they give that systematically to children from the age of 6 months. However, this diet appears more frequent in the two villages of the plains (Nadunget-Rupa sub-counties, Moroto District). Mothers living in the mountains do not practice the production of firewood, so that the residue appears in the diets of children at the time when they will make local beer themselves. As for children living in the city, the residue is not included in their diets. Mothers being in proximity to the food market, manage to find cereals, and thus avoid the residue for children. Sometimes it even happens that urban mothers produce local beer and make exchanges with mothers from surrounding villages offering the residue part against firewood.

Regarding the number of daily meals, mothers reported that they prepared one meal a day, and throughout the dry season. They said they did not have enough food to make a meal in the morning, and that's after a day in the bush or after having returned from the city with their purchases, that they cook the only meal of the day. An explanation could be due to the annual changes (December and June) and to the composite indicator MAD. In June, children eat more often than in December due to the reduction in time spent by mothers in the bush during the rainy season.
Finally, with regard to the early introduction of semi-solid food for children under 6 months, mothers have listed the reasons that motivate them to do regularly: not enough breast milk, pregnant again and often when the child cries, and when pressed by work outside the village.

2.3 Role of education

For 10 years, there was a percentage increase in the number of educated mothers. According to the data of the FSNA survey in 2012, 18.3% of mothers in the Moroto District had a minimum level of education (primary level), in 2015 (June) that proportion rose to 24%. Finally, in 2016, the RFS survey gets a proportion slightly higher than in June 2015 at 25.2% (March), the average level is 7.73 years. Obviously, the mothers of Moroto district are still very far from the national average, but now more likely to be minimally educated, which could possibly imply that their children could be better protected from malnutrition. Moreover, since 2012, the FSNA survey maintains that there is a significant link between chronic malnutrition and the education level of parents' "*education is a factor that correlates highly with stunting status* "(May 2013), and recently, "*Any level of mothers' education status was advantageous to their children's nutrition status* "Dec. 2015). As part of the qualitative survey, we were in a poor district of Moroto. Most of the mothers present in collective sessions had attended a school curriculum but did not go beyond primary level. Moreover, they called themselves girls who dropped school and chose to start a family. In their discourse of educated women, for example, there was a constant concern to retain risk factors relating to health and hygiene in order to explain the causes of child malnutrition. Also, they presented the situation of malnourished children, not as a fatality, but through a critical approach. For example, they emphasized the irresponsibility of some parents as a cause of malnutrition. They did not base that judgment on a comparison between rural and urban mothers but on their own urban environment.

As for their proper educational background, they reported using them as a very positive asset in enabling them to go with confidence in the Moroto hospital when their children were sick. For these women, education played a positive role, allowing them to have a more fluid communication with health workers or people that may support their specific needs such as medical care. On the contrary, mothers in rural areas with no education were more reserved about the type of communication they might have with the health workers. Also, they presented their lack of education as an obstacle that sometimes prevented them from going to health services, at least services provided in the city, preferring to consult traditional healers.
With male participants, it is in rural areas that the men discussed the importance of the role of education with regard to malnutrition. In one village, all the men were asked to put their names and sign a petition requesting further sessions or meetings on the causes of child malnutrition and the techniques they had to learn to mitigate the risk of malnutrition.

2.4 Low maternal nutritional status during pregnancy

In December 2012, the proportion of pregnant women in the Moroto District was 10%, it was 11.9% in May 2013 and 14.4% in December 2015 (FSNA). In March, 2016 (RFS), the percentage was similar to that of December 2015 at 13.9%. We can observe a gradual rise in the number of pregnant women since 2012. This increase is, however, in line with the fact that almost half of the population of the region is under 20 years old. Note also that 67% of mothers are breastfeeding. In the RFS survey (2016), more than half (59%) of pregnant women eat less than usual. In 2012, FSNA obtained a prevalence of 11% (pregnant and lactating women) who are malnourished. In group discussion sessions, women chose that as one of the first causes of malnutrition not only for pregnant women but of all mothers, even those who are not breastfeeding or pregnant. For example, the FSNA survey (December 2014) shows that the risk of having malnourished children is important for undernourished women who are not pregnant "*Status of mothers (BMI) was significantly associated with stunting and underweight GAM. Mothers' who were wasted were more likely to have wasted children*", (p. 61), in the Karamoja Region. It is therefore not surprising in a district where nearly 70% of women are pregnant or lactating mothers in the 4 villages also believe that the problem is also experienced by these two categories. Mothers explained the reasons for them to keep this risk factor as a cause of malnutrition. Despite the fact that food is easily accessible, due to the low purchasing power of households in the dry season, pregnant women eat less. To feed, they also substitute local beer for a proper diet food. Finally, as they are busy in the bush or breaking stones, they do not have time to eat properly during the day.

2.5 Poor status of reproductive health (birth spacing and family planning)

The WHO recommends two to three years between pregnancies to reduce infant and child mortality and also benefit maternal health (Marston, 2005). 30% prevalence is obtained (RFS, 2016) of children described in an interval of 24 months in the household of Moroto District. In 2011, the proportion of Ugandan children for the same period was relatively lower, 25%. At the same time, the proportion was 35.7% for the Karamoja Districts (DHS). If we refer to the DHS (2011), there are 27.3% of currently married women of ages 15–49 who want no more children (by

the number of living children) in the Karamoja Region, while the national average was 42.5%. This necessarily leads us to address access and use of family planning. If one compares DHS data of 2011, 7.4% of mothers were using a contraceptive method (modern and traditional) in the Karamoja Region, while in 2016, the RFS survey obtained a larger proportion, 20% (modern contraceptive methods) in Moroto District. That means that over the last four years, more women in the district use contraception. Likely, this could be explained by increased access to this service. For others (80%), we need to know if these women do not have access, or may be more in demand for spacing.

During group meetings, it appears that this is the second reason that has emerged. For them, there is an inability of parents to manage an appropriate birth interval. In the four villages, mothers perceive this failure as a cause of child malnutrition. In the background, mothers are challenging the behavior of men, too eager to have sexual intercourse. They report that men now afford to abandon their wives if they do not accept their demands. Women are somewhat pulled between the fear of abandonment and failure to manage the spacing of children.

Here are some remarks on this subject that appears a challenge for mothers and teenage girls with children: first the desire for children is shared by all mothers, in general, when asked how many children they wish, they give a specific number. They have the desire to have children in conjugal harmony. They seek a union that does not pass through a dowry based on the livestock but stands on an emotional basis. At the same time, they believe that male protection remains the cornerstone of the foundation of a family (mother and child). But through all these changes, they are worried by the dilettante attitude of men, by their commitment to a free choice of a husband who unfortunately manifest in an impoverished environment. Finally, they observe that the loss of livestock brings men to be more present in the villages while before they practiced transhumance, allowing the women to manage appropriate spacing. Men strongly resist the abandonment of polygamy for the nuclear family. When men are asked what the number of women they want to marry is, they report an average of 3 wives per man. They argue that equity remains a safe bet for the wives. They share their income equally, not counting the number of children per wife.

2.6 Poor maternal well being (violence and alcohol)

At the initial workshop (March 2016), the three subgroups of experts had incorporated the issue of alcohol consumption as a risk factor that can produce an effect on maternal well-being and prove to be a cause of child malnutrition in the Moroto district. The qualitative survey was therefore more suitable to provide insight into this problem already identified by experts. The indicator on depression prevalence is relatively high with 26% of women being at risk for depression. We know that in a recent study on resilience[16] that the population of Karamoja suffers high stress and needs to adapt to recurrent shocks caused, for example, by climatic disturbances. In these circumstances, one would expect a higher prevalence of depression risk. We will see this prevalence may be higher in villages located especially in more isolated areas (mountain) district.

16 - Resilience Context Analysis Resilience to food insecurity and malnutrition in Karamoja, Uganda. April 2015.

We also had to test the more specific question of the impact of alcohol consumption and domestic violence on child malnutrition. Do problems such as domestic violence or alcohol would impact enough for the children to be neglected and exposed to malnutrition? We have already mentioned the significant amount of the "residue" of fermented beer that children eat regularly during the dry season. In this cycle, there is therefore a significant amount of local beer produced in the villages and the city of Moroto. According to a recent article (Dancause, 2010) on the subject, it seems certain that mothers and fathers drink local beer for food. Accordingly, the issue was whether the regular consumption of local beer could have an impact on the care of children. This problem came up in both the female and the male discussion groups, as well as in our contact with key informants such as teachers and health workers. The first point is that the local beer has always been a favorite drink; it symbolizes hospitality and reunion, and accompanies festivities and celebration rituals in the communities of the district. But in recent years it has become banal, and it is part of almost every daily meal for both men and women.

Generally after the activities of the day, but especially in the late afternoon, the villagers will consume local beer. The daily consumption of beer is important, and it is the abuse of or addition of strong alcohol (waragi) to the beer which leads to disputes between spouses or co-wives. But participants also recognize at the same time that this is an agreeable means of support which allows them to hold on and face the uncertainties of everyday life.

When we asked the mothers if this could affect the care of children, they have accepted that children could be affected, but they did not discuss the issue any further. In any event, during the free exercise on the causes of malnutrition, they have not selected alcohol consumption as a risk factor for child malnutrition. Thereupon we asked them how they felt emotionally, they mostly responded that they felt good, and declared to be in good mental shape (see the case of a minority village, under hypothesis 27). However, they were less convinced of the good mental health of their husbands. For them, men are possessed by a feeling of melancholy because of the loss of livestock. For their part, men unreservedly acknowledged that they consumed beer daily but also laced it with strong alcohol and could become abusive towards their wives and family.

Among males, perceptions differ on the reasons that lead to alcohol abuse and violent behavior towards their wives. The men reported consuming alcohol for food, but also because their wives sometimes were exasperated and wanted them off the house. Then they would often go meet with friends in the same situation and seek to forget their marital altercations by drinking alcohol.

2.7 Limited male involvement in child care practices

To test this hypothesis, we used the indicator on the perception of mothers for receiving support built via the qualitative inquiry with both men and women group sessions in the villages. This hypothesis covers the absence of the father in the care for children. In December 2012, the FSNA survey showed that men spend very little time with children (Men: 1.2 hours / Women: 6.2 hours). However, the sexual division of labor in traditional pastoralist societies corresponds to this picture. Women take care of children, and men are busy guarding the cattle. As already

mentioned, there are major changes on the side of men's work since they are almost in a situation of “technical unemployment”, at least men in rural areas. In town, men experience a transition in which their life story certainly begins by abandoning transhumance for school. They diverge more and more from the traditional pattern, and seek to integrate into the Ugandan labor market. So, they learn to become a parent in the modern sense that is to say assuming shared "responsibility." These men, individually given the changes that have initiated their parents and their schooling, consciously or unconsciously accept the rules of a market economy. In the urban area, men have concerns related to the labor market; they want jobs, work and earn income to ensure a decent life for their families. Furthermore, urban women have the same commitment; they want to have the financial capital to start businesses. However, for rural men, their description of parenting remains very basic, they evoke support for mothers to bring children to the hospital, and a marginal support to mothers to help with the housework. It seems that traditional masculinity dominates their view of their parenthood life.

2.8 Mental Health

For several years in the district, women's resilience is tested by recurrent shocks (crop failure, livestock loss). We have seen this throughout the analysis of hypotheses on the “well-being of women”. In other words, women have worn year after year their resilience to face these changes. First, they cannot take care of the children as much as they would like, and year after year, they see the well-being of children in the community deteriorate. Secondly, as they protect the men from the deterioration of their chief pastoralist status, leaving them doing nothing, while becoming themselves almost the single breadwinners of their families, conditions are not up to their expectations. They do not have the feeling of being understood by their husbands who tend to show less respect for the rules of traditional marriage and at the same time do not offer help by coming with them to the mining town to ensure the subsistence of the family.

2.9 Mothers not supported especially when women are heads of households

Severity of current changes: In the qualitative study, older women said that the main figure of their social status holder was their husband. But most often, the majority of them were disappointed at the negative attitude of their husbands, who left them deal alone with all necessary tasks. Among the youngest mothers, another configuration appears, it is important because it concerns the negotiation of the dowry of young brides. For these young mothers, support is still meant to come from the mother of the young mother. For example, by taking care of the children, the grandmother will allow the girl to go and work at the bush all day. This practice is less common in the city. In poor neighborhoods, it seems that parents are more eager to marry their daughter, and are often willing to discount a final dot. In all cases, the status of mother is necessarily associated with the status of wife. Women cannot be single mothers, at least when they have their first child. The husband becomes the central support of the wife with the exception of young wives who receive support from their own mother.

Departure or death of the husband: Sometimes wives are left alone, for example, because of the death or the permanent abandonment by their husband. This type of marital holder completely changes the degree of security enjoyed by women and their children. In the RFS survey, the prevalence of female heads of household is slightly lower (21%) than that obtained by the FSNA survey (31%). But even more important is to see how this status can have a negative impact on child malnutrition. In the FSNA investigation, the authors give special attention to the situation of women heads of households, particularly in the food security sector. One fact appears recurrent since 2012; women-headed households are more likely than other households to experience food insecurity. In Moroto District, according to established social rules, it is not acceptable to be a single woman, especially when you are of childbearing age. In support of the survey data, a fairly strong result of the qualitative survey on four life stories of mothers having experienced an episode of severe malnutrition with one of their children shows that the trigger that leads to malnutrition is the loss of the husband. The loss of the marital holder completely destabilizes the lives of mothers and children, left to themselves, and not helped by the community. That is when they finally decide to go to health centers, where they can find support.

2.10 High workload for mothers

At the first workshop, this hypothesis was ranked as one of the three major causes of child malnutrition in Moroto District. As can be seen with the NCA pathway, working women can also have a positive impact on the nutritional status of children. But in Moroto District, the impact would be rather negative. In fact, 44% of women estimated that they had too much work. From the qualitative survey, there are findings to indicate that women had indeed multiple occupations, particularly during the dry season. The FSNA report (2012) shows that women have little leisure time, and have many hours of work compared to men. Also, it seems that what creates a real challenge for rural women is that they had to leave their children and their homes to go to the bush, and to the city. In fact, they are often absent all day. Under these conditions "*Working women with proficient substitute caregivers demonstrated the benefits of a larger income effect, over time a negative effect. However, when preteens were substitute caregivers, child nutrition was compromised* "(NCA Pathway). In the RFS survey, the indicator on this subject shows that this is the case. Mothers leave their children every day with 27.5% of children aged between 0 and 23 months and 43% of children between 24 and 59 months being left to the care of children aged under 12. As already pointed out, mothers do not consider that women work, they say they are providing support to men in order to have an income to feed the family. This perception of their contribution is in line with their traditional role as wives. In recent years, due to poor harvests, they are the longest in months and days over a year. Among urban women, there is a more positive view about the work they want to do in the labor market. This is a genuine motivation to work and even to develop a small scale business. To this they add that the best action to reduce malnutrition is to give women of their neighborhood access to financial capital to start businesses.

2.11 Early child bearing (teenagers pregnancies)

According to the UDHS 2011, the prevalence of women who had their first child before the age of 19 in the Karamoja region is 29.7%, while in 2016, in Moroto District, the prevalence is 36% for women under 18 years. During roughly six years, there seems to be a constant prevalence in the district, with about one third of the girls who become mothers between 15 and 18. Moreover, in the UNICEF strategy, Karamoja is part of a geographical target to reduce early marriages and pregnancies. Compared to the national average which is currently 15%, Karamoja stands at a double percentage (30%). In the context of the qualitative survey, we met in the four villages young girls (a group having at least one child, a group with no children) from the age group 15-19 years. In terms of their general background, girls with no children are waiting to start a family. When they were younger, they were the caretakers of their siblings and participated in household chores. In fact, they do not have other projects than starting a family. In our meeting with community leaders (VHT, LCL1, TBA), we asked whether early marriage has an impact on child malnutrition. In rural areas, over three villages, two community leaders have rejected this hypothesis. According to them, the girls have good physical strength (more than breast milk) and they learned very young to care for their brothers and sisters. We asked girls with children the same question. They said that with the support of their mother and the health center, they felt able to take care of their children. They strongly emphasized the importance of the health facility and they go regularly there for them and for their children. Besides both girls with and without children believe that the best guarantee to protect children from malnutrition is to go immediately to the health center when the child is sick. One can see a form of implicit criticism leveled towards the mothers of their villages who wait too long before going to the health center when children are sick. In the rural areas where community leaders were more likely to state that children of an early marriage were more vulnerable, their crucial point was about the generational change that was taking place in the village where in their view teenage girls were less obedient to the traditional rules on the choice of husband. However, we got the opposite result in urban areas. Community leaders were perceiving a higher prevalence of malnutrition of children with young mothers. In the group discussion among the ten girls who had children before the age of 18, 4 of them reported having had problems of malnutrition with their children. The phenomenon of rapid urbanization in poor neighborhoods seems to lead to a prevalence of child malnutrition via early motherhood. Parents do not have the financial means to keep the new couple and their children, as it can be done in rural areas. The cost of urban housing appears to be the explanatory factor for this difference in behavior. In town, households must pay a monthly amount as opposed to rural households where they do not have to face this constraint since they build their own home. However it is important to keep in mind that it is the women who build and maintain homes in rural areas.

2.12 Lack of caregiver's empowerment

As noted in the DHS (2011), in Uganda "the results of the survey" (empowerment), "*reveal that tradition is likely to play a bigger share in asset ownership than the socioeconomic status of the women*". Based on this observation, this risk factor hypothesis selected in a region such as

Karamoja, had to be tested taking into account the cultural tradition which also still has an important influence in the organization of power relations and the modes of sharing within households. Specific indicators of maternal decision-making power in the RFS investigation mostly show positive results. Mothers (75%) have decision-making power with regard to the education of children, and more power (92%) for their medical consultations. With regard to decision-making power on income and savings, the FSNA survey (2012) and the RFS (2016) essentially get the same prevalence (see table above). Mothers thus appear to hold some control and decision-making power in the household. The qualitative survey improved our understanding of how control and power of decision in the households of the district are organized. Firstly, it should be reminded that families operate in a context where almost 50% of households are polygamous. Men, therefore, are in a dominant position regarding the needs of women and children. Secondly, previous analyses show that currently, certain cultural components attached to the institution of marriage are changing, young girls do not want to marry older men, men who no longer have sufficient capital (livestock, or revenue) take a wife go through another path which is that the spread out of dowry to marry. They are also very resistant to the idea of not being in a polygamous family pattern although the nuclear family seems to be the new model preferred by men and women with more education.

We also saw that the recurrence of domestic violence can be largely explained by the husband's alcohol abuse and sometimes that of the wives of the household too. Those women's complaints against their husbands were on the preferring one wife over another. Women wanted more respect from their husbands and at least an effort to reduce the interval between births. To the contrary, men were strongly affected by the loss of their livestock, and were struggling to adopt, at least among rural men, a more modern lifestyle, leading them to more sedentary lives. The traditional dynamic of power relations as well as the sharing of decisions between spouses is being entirely restructured. It is doubtful that women have the power to make full and complete decisions. However, of the new economic sphere (income, savings) appears more favorable to women.

HEALTH

10 indicators (core and optional) describe the health context of Moroto District. In the foreground of the specific risk factor that is the children's health status, the prevalence of diarrhea and acute respiratory infections is different if we distinguish between children most affected by these diseases by age group, i.e. 0 to 23 months (Diarrhea: 49.2%, ARI: 70.6%) were compared with children aged between 24 and 59 months (Diarrhea: 26.9%, ARI: 54.8%). Overall, prevalence rates are significant because half of the district's children are obviously in a weak state of health if we take into account these three childhood diseases.
The protection against malaria with the indicator (observation) on exposure to mosquitoes shows that the majority (61%) of children are not protected overnight by a mosquito net. Paradoxically

according to DPT3 indicator (immunization) indicates that the district's children are fairly well protected (90%) and therefore they would have access to care. It appears that how vaccination programs are deployed in the district should be taken into consideration. According to health workers whom we encountered at local health centers, vaccination campaigns deployed in the district involves the health workers coming to the villages and immunizing all children.
For women, the use or access is more unpredictable. They are irregular for their prenatal visits, but they are likely to give birth at the health center (67.6%). In the focus group, the mothers said that they preferred to give birth at the health center. They were aware that many delivery services are offered (food and hygiene kit) for mothers there, which made birth at the health center much more attractive. It seems that this approach has significantly raised the prevalence of mothers delivering at the health center, (DHS, 2011, Karamoja, 27.1%). In Moroto district, the distance to get to the Health Centre is less than 60 minutes for almost 60% of women. Distance also proves to be a barrier that has a relatively low impact on accessing the health center. Only 15% of mothers have noted that difficulty in the RFS household survey.
In the district, the two barriers with the highest incidence in mothers with access to care relate to the cost, and transport facilities. As regards transport facilities, mothers explained that the high costs of an ambulance or a *boda boda* (motorcycle) when the child is too sick, and the time takes to arrive while the child needs immediate treatment. We will see that in as much as costs are concerned, they are perceived to be high, but in the light of discussions with mothers, the problem is more the indirect costs of the consultation. The presence of a traditional healer in all villages of the district is an additional factor that helps reduce the use of health services when mothers feel that they do not have the time or money to get to the health center.

3.1 Poor health status of children (ARI and Diarrhea)

Between 2009 and 2016, the trend of the evolution of prevalence of respiratory infectious diseases and diarrhea showed a decline, compared to the high prevalence of the years 2011 and 2012. It seems that the current prevalence of diarrhea recorded (38.5%) in March 2016 (children, 0-59 months) is in the same percentage range with that of the years 2009 and 2010. The lowest rate (18%) was recorded in December 2015, and the highest rate (58.5%) in May 2011.

For the acute respiratory infections, we note that the prevalence strongly between 76.2% in September 2011 and 18% in December 2015. Three months later, in March 2016, the prevalence was 62.6% (children 0-59 months), a prevalence almost similar to that observed in 2011. However, there is a high prevalence in the age group 0-23 months (70.2%) while the prevalence for the group aged 24-59 months is much lower (54.8%).

In focus groups, mothers did not select these two risk factors as a cause of malnutrition. However, during the special session on children's health, they explained that the good or the bad state of health is associated with the age of the child. On this specific point the mothers of the city and mothers in rural areas strongly differ. The mothers of the town, who live near the hospital, said that they often use health services and added that the hospital is a source of significant support for them and their children aged 0-12 months. Mothers in rural areas report that 0-23months

children with diseases are common but they go irregularly to the health center compared with mothers in the city. It is useful to emphasize here that childhood diseases (excluding malaria) is the private domain of the traditional healers in rural communities. In role-play, women have shown what these traditional practitioners do. In general, they try to remove from the child's body what is called the "black eye" with smoke and herbs, or else they recommend parents sacrifice a goat for the child to free themselves from the evil spell.

We were unfortunately unable to meet any of these traditional healers but through the TBA we could understand why rural mothers are going back and forth between the health center and consultations with traditional healers. Traditional healers have knowledge of plants and use it for all diseases of children and adults. According to the TBA, they have managed to gain the trust of mothers. According to a TBA testimony "*the use of potions is more effective than some drugs in health centers, such as RUTF, we have tried in our village and it is true* ". In other words, if the child has diarrhea or a respiratory infection, mothers remain convinced that there are two solutions, if one does not work, they go towards the other. However, this does not fully explain why children are affected by these diseases and the impact there of on child malnutrition given that "The burden of common childhood Illnesses correlates well with prevalence of GAM in Moroto District[17] "(FSNA, June 2014). On this point, an interesting fact emerged a statement in every focus group of women in all villages. They do not know why children have a disease[18], especially anything that refers to causes of diarrhea and coughs.

3.2 High prevalence of fever (malaria)

If one follows the evolution of the prevalence of malaria, there is prevalence varies in a range between 60 and 50%, except that observed in May 2015 (see figure below). In fact, since 2009, almost half of children are affected by the disease. The season is conducive to a high prevalence appears to focus on the month of September (2009-2012), the prevalence thus appearing higher in this period. According to RFS investigation, when comparing age groups, it does not appear to be significant differences between child prevalence aged between 0 and 23 months, and that of children aged between 24 and 59 months. In all districts of Karamoja (46.2% Dec. 2015), it is malaria that appears at the top of prevalence of child diseases. However in Moroto District, it ranks second, after acute respiratory infections, and its prevalence remains higher (47.6%) than the average of Karamoja (FSNA). Referring to the analysis of the survey FSNA, malaria, unlike diarrhea and acute respiratory infections is associated with chronic malnutrition (see note 34). In focus groups, mothers said that fever is a fairly common disease in children. Unlike diseases such as diarrhea and respiratory infections, they are more attentive to the advice of VHT and health center workers to reduce fever in children. Besides, for this affliction, they say that traditional healers have no taken, and then they are addressed to VHT (Health Volunteer Team) from their villages.

17 - FNSA, June 2014, Karamoja, Prevalence Rate of undernutrition: Diarrhea and Malaria

18-SLEAC 2015, Karamoja: "*Inadequate knowledge on common childhood illnesses by the community*". For further details, it would be useful to consult the SLEAC report, May 2016 which provides more information on this matter.

A few words about the role of VHTs in villages: the majority of them (both male and female) are very well accepted in the community. In recent years, local health centers attempt to increase their professional skills through volunteer training sessions to better track the health condition of both children and mothers. In the villages we visited, all VHT members participated in the focus group. They also act as community leaders and local representatives of NGOs.

3.3 Low utilization of bed net

According to ACF reports (2009-2012), the prevalence of children covered depends largely on net distribution. However, a paradoxical remark is made by the authors of the FSNA survey in 2015. After four years of investigation they conclude that "*while fever was reported to be high, use of bed net for children was high*", which does not stop the authors from identifying this factor as being significantly associated with chronic malnutrition[19]. The use of bed nets decreases from quarter to quarter after the time of the acquisition of the bed net, i.e. when all households are in possession of a mosquito net. This phenomenon is common ground between the years 2009 and 2015. In December 2015, 61.7% of children slept under a mosquito net. In March 2016, the prevalence declined to 39%. It seems therefore quite plausible that the habit of using a mosquito net is not ingrained in the living habits of households.

In the villages of the qualitative survey, mothers were discreet about it. They had no permanent regard for this practice. They say that they rather use the bed net in the rainy season, and very little in the dry season. The heat of the dry season repels them and they often use the bed net for other things. In another village, mothers were asked to transmit the request of mosquito nets to the authorities of the DHO, because they had no more nets, and with the arrival of rains there were more mosquitoes. This allows us to think that they know the benefits of the net, but they resist incorporating its use into their habits and standard practices. So they may tend to use it during the rainy season, but we have no information about the prevalence during the period from May to October since the FSNA investigations are made early in the rainy season (May) and then in the middle of the dry season (June).

3.4 Low utilization of ANC, maternity and postnatal services

The access and use of care by mothers have been increasing since 2011. Half of the mothers continue to go to their antenatal care, and mostly prefer to give birth at the Health Center. We obtained information on the attendance of mothers for post-natal services, particularly as regards the monitoring of children less than a year old. It is clear that the closer the family lives to the health center the higher the motivation of the mothers to put a tracking device for children. This does not mean health centers are not available; they are usually located in the perimeter five kilometers from the villages. However, natural barriers (e.g. rivers or mountains) reduce access and consequently the attendance of postnatal visits.

19- FNSA: There were a number of factors that were found to be significantly associated with wasting. Children were more likely to be wasted if they did not use Insecticide Treated Nets (ITNs) or bed nets (June 2014).

3.5 Insufficient income to cover transport cost to the nearest health center

A comparison between the results of the RFS survey (2016) and those obtained in 2011 (DHS) shows that monetary costs are not the main barrier to accessing a health center; indeed, half of the households select this factor in 2016 (Moroto District), while in 2011 this factor was chosen by nearly 86.3% of households (Karamoja). This development could be interpreted as an improvement of health services. Alternatively, one might suggest that households are able to find solutions to access care[20] (loans for 56% of households, FSNA Dec. 2015).

In focus groups, mothers provide insight into how they perceive the access to health care. Firstly, they say they have good access to health care; but they also complain of lack of access to care due to indirect health costs. Mothers in rural areas said they needed an amount varying between 5,000 - 10,000 shillings to cover indirect costs of medical care (drugs and other indirect costs). In general, it is men who seek money to enable women to go to the health center. As we have seen with the preceding hypothesis, mothers in all villages may use the traditional healer or the VHT when they need care. In town, the postnatal monitoring is attended because mothers are close to the hospital, while in rural areas they also tend to save the visits because of their workload.

In one of the villages of the qualitative survey, a mobile clinic visits the village at least once per month. This initiative of the DOH is also appreciated by mothers. The mobile clinic reduces the number of barriers, including distance. In fact, the problem of transportation costs is relatively higher in remote villages, which have to cross natural barriers such as rivers and mountains. Families do not have the money to pay the transport costs. That is how mothers explain why they reduce the number of medical visits, especially when occupied with housework. Also, mothers refer to medical emergencies involving the arrival of an ambulance in the village. In rural areas families do not use this service because of its high cost (50, 000 schillings, amount reported by the villagers).

UNHEALTHY ENVIRONMENT

Almost all the measurements recorded during the data collection of the RFS survey show high levels of contamination regarding water, sanitation and hygiene practices on the territory of the district of Moroto. Indeed, for 77% of households, water points have a moderate risk of contamination meaning that the borehole can be contaminated (sanitation score: moderate risk). The indicator "water management score" and that on "good practices" show that households do not clean containers, and that they will not proceed with the treatment of water taken from the water point. In terms of sanitary conditions, households use very few latrines (18%), only just over 22% of these households have proper latrines. The children's immediate environment is also in poor condition as only 22% of households will properly remove the defecation of children

20 -FNSA: June 2015: "*The main reasons for debt were to; i) buy food (51%), ii) cover health expenses (17%) and iii) pay school/educational costs (12%)*".

(Disposal of child feces children 0–23 months), and as children often are outdoors, they play or walk on land contaminated with animal waste (77%). Finally, in terms of hygiene practices, a good score is observed (71% of households have good practices) for the hygiene of the house, but for the corporal practices, only 30% of mothers use soap. As a corollary, households consume little water for all their needs, they are according to the "Sphere" standards on average in the category of basic survival water needs[21], while 78.4% of households travel a short distance to access water (under 30 minutes).

4.1 Poor sanitation and hygiene practices

In March 2016, the prevalence of the use of latrines was 18%, about the same as in December 2015 (15%). Compared to 2009, one can note a significant improvement in the reduced prevalence of open defecation (97% 2009). However, in June 2015, the FSNA survey selects this risk factor as a cause of child malnutrition like "poor sanitation" because of the high prevalence of open defecation. In terms of the use of latrines, the record remains poor since only 22% of households with latrines have them in good condition. The FSNA survey supplies the following explanation: "*The problem of ownership and use of latrines in Karamoja is associated with cultural beliefs*" (Dec. 2012). So we explored this direction in the focus group, but did not obtain conclusive results on relevant cultural beliefs. Clearly, open defecation appears as a usual life in rural areas. By contrast, we learned that the use of latrines in the villages visited, largely depended on the size of the village. Two factors are connected to this, i.e. the growth of the population, and the constant presence of men in the villages, forcing villagers to be more receptive to the use of latrines. This is what emerged in a village in the qualitative survey. Also, for participants in focus groups, open defecation is so harmful because of food contamination by flies.
The prevalence of unsafe feces disposal (children 0–23 months) is very high, since 80% of mothers do not attach any importance to this preventive practice. The prevalence indicator of the animal waste (77%) confirms this sanitary gap in the villages. It is important to note here that the prevalence of diarrhea for children aged between 0 and 23 months in March 2016 was 50%. Again, in focus groups, mothers reported that they did not know the dangers of contamination by fecal material.

4.2 Poor hygiene practices in the household

The hygiene practices related to the cleanliness of kitchen utensils are good (70% of mothers use good practices in March 2016). However, in terms of kitchen waste, in 2012, it was found that, very few households are concerned about the kitchen scraps (FSNA, 7.8% of households practiced maintenance of kitchen waste). In 2011, 22% of people used soap. In 2016 the prevalence gets good marks since it amounts to 31.4%. Also in 2011 "*It was noted that the majority of people in Karamoja washed hands with water only*" (ACF, 73.8%). In 2016 in the focus group, only half of mothers reported having this type of practice, which the RFS survey validates by the soap indicator (good behavior: 44%). There seems to be an improvement in personal hygiene practices.

21- In emergency settings or settings with little water, we are following the Sphere standards. In development contexts, we recommend using the FANTA Measurement Guide. NCA Guidelines

Two explanations have been suggested among participating women in the integration of these new hygiene practices by mothers. The first relates to their preference for giving birth at the health center. The reason for this choice is based on the difference they perceive on the hygiene conditions that would be, according to them, more appropriate in the health centers than at their home. Also, the teaching they receive at the time of childbirth, makes them aware of the basics of children's personal hygiene. This outreach work is also present in the villages through the TBA and VHT. In all focus groups in 4 villages, mothers have selected the poor hygiene as a cause of malnutrition.

4.3 Poor quality of drinking water (treatment)

In March 2016, 90% of the district's households had access to improved water points, a prevalence that is relatively similar to 2009. As a result, the RFS survey adds to this an assessment of the risks of contamination around these water sources. It seems that since 2012, there had been deterioration in the maintenance of the wells. Indeed, in December 2012, the FSNA survey rejected the hypothesis on possible contamination of drinking water: "*few households, 2.2% had their drinking water contaminated with faecal matter (E.coli) in Karamoja, 1.6% in Moroto district*", while in 2016, the assessment of all water sources (RFS) shows that 77% of households collect water from water points that could be heavily contaminated (observation).
However, we must consider the improvement in the prevalence of households that treat water. It turns out that in 2012 7.4% of households treated water and in December 2015, 13.5%,. In 2016, they were 18 % to do so. In the qualitative survey, it is the urban participants who are sensitive to this practice, whereas in rural areas, mothers admitted not doing so because they thought that the water from the water point was clean and they had no apprehension about the quality of the water pumped from boreholes.

4.4 Poor chain water and quantity

Since 2009, research (ACF, FSNA) shows that despite a more than adequate access to water sources (boreholes) in the district, households have not yet gotten used to collecting an adequate daily amount of water for basic needs. In December 2015, the FSNA survey argues that this gap "*was significantly associated with all indicators of malnutrition; children in households where the per capita water use was 15 liters or less were likely to be malnourished*." Concerning the collected amount of water, the RFS survey (2016) validates this result. The amount of water used daily would average 10 liters per person per day. In addition, the RFS investigation shows via the "water management score" indicator that households attach little significance to the cleanliness of their container. We observed that most containers are a severe risk of contamination in 34% of households. The qualitative survey helps identify the reasons why families have not yet become accustomed to daily water collection sufficient for all needs. First, for the villages where the borehole is near housing, proximity plays a negative role on water collection, even more so rural areas. Each member of the family (father, mother and children) will get water according to their personal needs. Each person has a container (5 liters for adults) and often around a liter for children. We must not forget that mothers go to the bush during the dry season, they consider appropriate for their needs. Regarding personal hygiene practices, the men usually go bathing

near water points, children often accompany them, which necessarily reduces the amount to be collected. Then, since there is a daily meal, the one liter for cooking therefore does not require a large amount of water daily. Finally, with regard to domestic hygiene, as we have seen, cleanliness does not appear listed among the daily activities of households. A large collection of daily water remains and can be used according to the patterns described above. In 2012, the ACF survey also observed that practice and noted that "*water is used primarily for consumption rather than hygiene*" (May 2012, p. 21).

4.5 Distance to water source and time to need to collect water are long

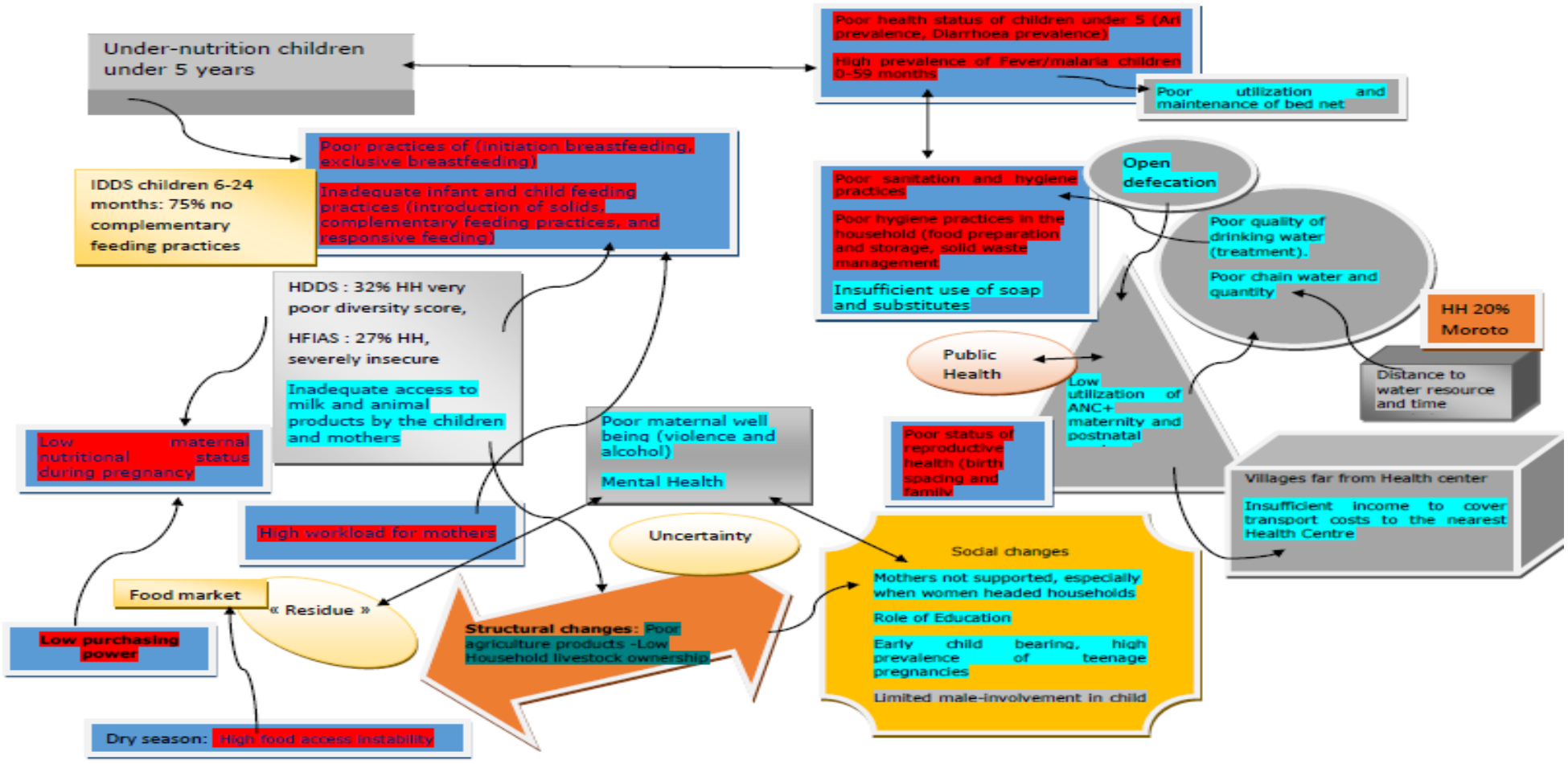
The RFS survey shows that 80% of households are at a distance of less than 30 minutes. This could mean that this risk factor is negligible in Moroto District, that is to say having little impact on child malnutrition. We have however maintained following the evaluation of the investigators on all water points in 30 villages sampled from the household survey. It turns out that in the most remote and isolated villages accessing water points is a real problem for at least 20% of households in Moroto District. Moreover, in 2011, in a large survey (IWRW), the proportion was similar (20%). So even if the water coverage is very good for a large part of the population, we cannot overlook that in some villages, this risk factor is real and could therefore negatively impact on child malnutrition.

LOCAL CAUSAL MODEL

The formalization of the local causal model based on two pillars that characterize the Moroto local context. These structural changes occur in the district: loss of livestock, and recurrence of bad harvest during the rainy season. They result in social changes, more precisely social relations that alter the lifestyle of pastoralist communities. Note that such representation builds on two main characteristics that households use to define poverty. For them, there is a process of impoverishment in progress for several years. In the rainy season, the crops are not sufficient, and in the dry season, the income-generating activities are not sufficient to ensure household food security. This depletion leads to uncertain perceptions of the future. The traditional world of pastoral communities is disturbed by an unintended settling process. Indeed, households have no cattle to transhumance; they must look to the future by relying on other strategies that will lead them to search for a job.

Despite this transition, institutions devoted to health and education appear in the economic and social landscape of the villages. These institutions are by definition bearing of positive changes aimed at improving children's living conditions. There was an increase in the use of these services by households. But a gap remains in the implementation of services in the institutional safety net; the communities have not yet understood the requirements of the spirit of the institutional protection which is that of empowering parents to get a good grip on the care of their children e.g. good hygiene practices.

Figure 35: NCA Local causal model: District of Moroto



Legend: Red: major hypotheses. Blue: important hypotheses. Gray: minor hypothes

RECOMMENDATIONS

The NCA analysis found 12 major risk factors and 13 important risk factors for under nutrition in Moroto district. Thus, it appears that for several years (2009), the high malnutrition prevalence has been particularly complex. However, the detailed of the risk factors analysis shows that we can formulate more appropriate action plans in light of causal demonstrations that have emerged from the NCA analysis. According to the four sectors studied in the analysis of results, we can confidently recommend the following actions.

6.1 In the field of food security and livelihoods

Seasonality punctuates vulnerability to food insecurity. Everything is at stake on the quantity harvested during the rainy season. If this amount is small, it has a strong impact on women's ability to hold income-generating activities. Women are able to partially meet the food needs of the family. However, they must sacrifice the quality of the food diet of children for most of them are primarily fed through the preparation of a fermented cereal recipe which is called the residue. It would be useful in this context to deepen one hand the nutritional impacts of this recipe, and also to know what the effects of this recipe on the health of children in the long term.
A survey on the impacts and effects of residue would as a result of implementing a "cash transfer" system allowing mothers to have access to the food market during the dry season. All conditions for establishing a food security safety net should be examined as to the magnitude of the food crisis during the rainy season.

6.2 In the field of Care practices and Mental health

Regarding care for children (IYCP), it seems that for years there has been no real progress on risk factors related to practices in this area, the most important being the practice of exclusive breastfeeding. It is of crucial matter to address the enhancement of the practice. This practice proves to be a pre-requisite for a good introduction of complementary foods and the establishment of a diversified diet thereafter.

Regarding care of women, we now know that a major cause of malnutrition in Moroto district refers to the heavy job of mothers, particularly during the dry season. We know that this risk factor has a strong impact on malnutrition for two important reasons. First the mothers must leave home to go to the bush, they leave their children unattended. Then, they must go to the market to sell and buy food, which means they are not able to prepare two or three meals a day, taking care of their health or that of their children. Community organization of child care when mothers are at work could be a social innovation that enables secure children.

A risk factor emerged as being fundamental to the mothers of the villages in the rural area, it is the respect of the birth interval. As we observed, the men here are very reluctant to change the traditional male role, which does not mean they are resistant to reducing the prevalence of

malnutrition. It would be appropriate to have an awareness campaign for men to have all the information about the negative impact of low birth spacing.

6.3 In terms of health

As we have seen, there is a demand from women wanting to give birth in health centers. From this transition, it appears appropriate to continue to sensitize mothers to attend health centers for prenatal visits and especially to encourage them to establish a health check for their infants. Here one can think of TBA and VHT capacity building programs so that women can incorporate into their care practices, which can be simply termed as preventive practices against malnutrition.

6.4 In the field of unhealthy environment (water, sanitation, and hygiene)

This is probably in this area that we can respond quickly and effectively to as much as several years, the prevalence of all risk factors in this sector has not changed. It clearly appears that households have not integrated hygiene practices. This is an important vector in the prevalence of infectious diseases. A WASH action plan for improving hygiene practices thus appears entirely appropriate in Moroto District.

CONCLUSION

Holding an NCA inquiry aimed to identify risk factors that put children under five years old with a high prevalence of malnutrition (wasted, stunting). Three components emerge from this analysis. First, food vulnerability is visible in Moroto District. Households must adopt strategies that are challenging the health of women, causing them to be in the search for income-generating activities that can not sufficiently meet the basic food needs of the family. To this is also added the recurrence of inappropriate practices in hygiene. Finally, if child malnutrition appears as an event for families, the representation of malnourished children among mothers is trivialized. In other words, they are all protection fronts facing the possible disappearance of their traditional way of life of pastoral communities.

Also, this analysis was to better understand why the malnutrition prevalence rate remains high despite efforts to support the population in Moroto District since 2009. We can now answer this question. The sedentarization is formalized by an abandonment of a pastoral society to that of an agricultural society remains undefined and abstract issue for the population. By staying in the dark, men forget the difficult conditions in which women find themselves. Trying to protect the pastoralist life of this test, women cannot protect children as they would like.

Finally, we can say that such investigation and thorough analysis that follows provides partners, local, national and international stakeholders an analytical framework that can be deployed in all fields of expertise in child malnutrition. The NCA analysis can then serve as a lever in order to

formalize much more accurate projects indicators and programs so as to achieve in the coming years targets for reducing child malnutrition in Moroto District.

BIBLIOGRAPHY

NUTRITION AND FOOD SECURITY AND LIVELIHOODS

1. BASELINE HOUSEHOLD ECONOMY ASSESSMENT OF KARAMOJA, May 2010, ECHO-FAO, 39 pages.
2. COVERAGE ASSESSMENT OF THE INTEGRATED THERAPEUTIC FEEDING PROGRAM FINAL REPORT, KAABONG AND MOROTO DISTRICTS KARAMOJA, UGANDA, July 2011, ACF UNICEF-WFP-DHO, 36 pages.
3. FEWSNET- UGANDA Food Security Outlook Update August 2015, January 2016, 2 pages.
4. FOOD SECURITY & NUTRITION ASSESSMENT, Karamoja Region, June 2015, Uganda, UNICEF-WFP, 88 pages.
5. FOOD SECURITY AND NUTRITION ASSESSMENT (FSNA) in Karamoja, December 2014, UNICEF-WFP, 233 pages.
6. FOOD SECURITY AND NUTRITION ASSESSMENT IN KARAMOJA REGION, December 2012, Karamoja Region, Uganda, UNICEF-WPF-DHO-Ministry of Health, 111 pages.
7. FOOD SECURITY AND NUTRITION ASSESSMENT IN KARAMOJA REGION, December 2013, UNICEF-WFP-DHO-Ministry of Health, 44 pages.
8. FOOD SECURITY AND NUTRITION ASSESSMENT IN KARAMOJA REGION, January 2016, UNICEF-WFP, 54 pages.
9. FOOD SECURITY AND NUTRITION ASSESSMENT IN THE KARAMOJA REGION, May 2013, UNICEF-WFP-DHO-Ministry of Health, 100 pages.
10. FOOD SECURITY AND NUTRITION ASSESSMENT, June 2014, UNICEF-WFP, 49 pages.
11. INTEGRATED NUTRITION SURVEILLANCE SYSTEM IN KARAMOJA REGION, Final report number 004, December 2010 Nutrition Surveillance Karamoja Region, Uganda, UNICEF-ACF-DHO, 15 pages.
12. INTEGRATED NUTRITION SURVEILLANCE SYSTEM IN KARAMOJA REGION. Final report number 003, September 2010, UNICEF-ACF-DHO, 12 pages.
13. INTERGRATED FOOD SECURITY PHASE CLASSIFICATION FOR KARAMOJA May-Sept 2011.
14. KARAMOJA SEASONAL ANALYSIS AND INTERVENTION GUIDE, April 2014. USAID, 11 pages
15. MILK MATTERS IN KARAMOJA: MILK IN CHILDREN'S DIETS AND HOUSEHOLD LIVELIHOODS, Elizabeth Stites & Emily Mitchard, October, 2011. Save the Children-UNICEF, 40 pages.
16. MONTHLY MARKET MONITOR, BULLETIN APRIL 2015 ISSUE 13, WFP, VAM, 7 pages.
17. NUTRITION AND FOOD SECURITY ASSESSMENT, Round 8, May 2012, Karamoja Region, Uganda, UNICEF-ACF-DHO-ECHO, 27 pages.
18. NUTRITION SURVEILLANCE SYSTEM IN KARAMOJA REGION. Final report number 001. December 2009, UNICEF-ACF-DHO, 11 pages.
19. NUTRITION SURVEILLANCE SYSTEM IN KARAMOJA REGION. Final report number 002, May 2010, UNICEF-ACF-DHO, 11 pages.
20. NUTRITION SURVEILLANCE, Round 5, May 2011, Karamoja Region, Uganda, UNICEF-ACF-DHO, 21 pages.
21. NUTRITION SURVEILLANCE, Round 6, September 2011 Karamoja Region, Uganda, UNICEF-ACF-DHO-ECHO, 28 pages.
22. NUTRITION SURVEILLANCE, Round 7, December 2011 Karamoja Region Uganda, UNICEF-ACF-DHO-ECHO, 25 pages.
23. REPORT OF THE INTEGRATED FOOD SECURITY PHASE CLASSIFICATION ANALYSIS FOR KARAMOJA, 22-26th June 2015.
24. RESILIENCE CONTEXT ANALYSIS RESILIENCE TO FOOD INSECURITY AND MALNUTRITION IN KARAMOJA, Uganda. April 2015, FAO, UNDP, UNICEF, WFP.111 pages.

25. WHAT TO DO ABOUT KARAMOJA? WHY PASTORALISM IS NOT THE PROBLEM BUT THE SOLUTION. A FOOD SECURITY ANALYSIS OF KARAMOJA. FAO-ECHO. September 2010. 58 pages.
26. The Analysis of the Nutrition Situation in Uganda May 2010, FANTA, 2010, 93 pages.
27. Feeding Practices and Nutrition Outcomes in Children Examining the Practices of Caregivers Living in a Rural Setting Nankumbi, Joyce, Joshua Kanaabi Muliira,and Margaret K. Kabahend, 2012, 7 pages.

HEALTH, INFANT AND YOUNG PRACTICES, CARE OF WOMEN, PSYCHO-SOCIAL CARE

1. AVAILABILITY, UTILISATION AND QUALITY OF MATERNAL AND NEONATAL HEALTH CARE SERVICES IN KARAMOJA REGION, UGANDA: A HEALTH FACILITY-BASED SURVEY Calistus Wilunda, and al. REPRODUCTIVE HEALTH (2015).
2. CATTLE RAIDING,CULTURAL SURVIVAL, AND ADAPTABILITY OF EAST AFRICAN PASTORALISTS, Sandra Gray, Mary Sundal, Brandi Wiebusch, Michael A. Little, Paul W. Leslie, and Ivy L. Pike. CURRENT ANTHROPOLOGY Volume 44, Supplement, December 2003.
3. PSYCHOSOCIAL DISTRESS AND WELL-BEING AMONG ACHOLI WOMEN IN NORTHERN UGANDA, WORKING PAPER NO. 1. April 2013, World Bank, 24 pages.
4. THE NATIONAL STRATEGY TO END CHILD MARRIAGE AND TEENAGE PREGNANCY 2014/2015, UNICEF, Republic of Uganda. 68 pages.
5. UGANDA DEMOGRAPHIC AND HEALTH SURVEY, 2011 Uganda Bureau of Statistics Kampala, Uganda. UNICEF, WFP, USAID. 461 pages.
6. DELIVERY OF HEALTH SERVICES TO A SEMI NOMADIC POPULATION, Karamoja, Dr. James Lemukol, CUAMM, 2009.

WATER, SANITATION AND HYGIENE

1. ELIMINATION OF OPEN DEFECATION THROUGH COMMUNITY LED TOTAL TRANSFORMATION (CLTS), Action Against Hunger (ACF-USA) Uganda, April 2012, 40 pages.
2. HYDROGEOLOGICAL STUDY ON IMPROVEMENT OF WATER RESOURCE KNOWLEDGE AND MANAGEMENT IN KARAMOJA REGION UGANDA: July to December 2011, ACF-ECHO-FCL. 352 pages.
3. OKOK SUB CATCHMENT INTEGRATED WATER RESOURCES MANAGEMENT PLAN, KARAMOJA (KAPIRI) WATER CATCHMENT, KYOGA WATER MANAGEMENT ZONE, January 2012 to December 2016, ECHO, IUCN. 27 pages.
4. THE CONVERGENCE OF TRADITIONAL AND STATUTORY INSTITUTIONS IN NATURAL RESOURCE GOVERNANCE AND MANAGEMENT: LESSONS FROM THE LOKOK SUB CATCHMENT IN THE KARAMOJA REGION, UGANDA, January 2014, ECHO ACF, 13 pages.

TRANSITION, MIGRATION, CONFLICT IN KARAMOJA REGION

1. A GENDER ASSESSMENT OF NORTHERN KARAMOJA LIVELIHOODS, HEALTH AND PEACE- THE SUSTAIN PROJECT, Mercy Corps, March 2013, 82 pages.
2. A STUDY OF DECISION-MAKING IN A POST-CONFLICT SOCIETY, Irish AID, 2013, 48 pages.
3. ADAPTATION AND RESILIENCE: RESPONSES TO CHANGING DYNAMICS IN NORTHERN KARAMOJA, UGANDA, Elizabeth Stites and Carrie Stefansky Huisman, November 18, 2010. Save the Children, 15 pages.
4. ANGERING AKUJŮ: SURVIVAL AND SUFFERING IN KARAMOJA: A Report on Livelihoods and Human Security in the Karamoja Region of Uganda, Elizabeth Stites, Darlington Akabwai, Dyan Mazurana and Priscillar Ateyo. 2007. Tufts Univ., 90 pages.
5. IT'S BETTER TO SWEAT THAN TO DIE: RURAL-TO-URBAN MIGRATION, NORTHERN KARAMOJA, UGANDA, Elizabeth Stites, John Burns, Darlington Akabwai. Mercy Corps, TUFTS, USAID, July 2014, 49 pages.
6. KARAMOJA CONFLICT AND SECURITY ASSESSMENT, SAFERWORLD, September 2010, 133 pages.
7. KARAMOJA, A LITERATURE REVIEW. SaferWorld, March 2010, 36 pages.

8. LIFE IN TOWN: MIGRATION FROM RURAL KARAMOJA TO MOROTO AND MBALE, Elizabeth Stites and Darlington Akabwai, Save the children, March 2012, 28 pages.
9. LIVELIHOOD DYNAMICS IN NORTHERN KARAMOJA: A Participatory Baseline Study for the Growth Health and Governance Program, May 2013, 79 pages, Mercy Corps.
10. NORTHERN KAMAMOJA GROWTH, HEALTH AND GOVERNANCE PROGRAM, 2013, World Vision Uganda, 102 pages.
11. NORTHERN KARAMOJA VHT FUNCTIONALITY ASSESSMENT REPORT, May 2013, World Vision Uganda.
12. PROFILE HAZARD, RISK AND VULNERABILITY KARAMOJA MOROTO DISTRICT, August 2014, UNDP, 44 pages.
13. RESEARCHING LIVELIHOODS AND SERVICES AFFECTED BY CONFLICT LIVELIHOODS, BASIC SERVICES AND SOCIAL PROTECTION IN NORTHERN UGANDA AND KARAMOJA, WORKING PAPER, 4 Kirsten Gelsdorf, Daniel Maxwell and Dyan Mazurana, August 2012, 64 pages.
14. THE CONFLICT MANAGEMENT SYSTEM IN KARAMOJA: April 2013, MERCY CORPS, 15 pages.
15. TRADITION IN TRANSITION: CUSTOMARY AUTHORITY IN KARAMOJA, Khristopher Carlson, Keith Proctor, Elizabeth Stites, and Darlington Akabwai, Uganda, October 2012. Irish Aid, TUFT Univ. 40 pages
16. UGANDA PEACE-BUILDING AND RESILIENCE STUDY, July 2013, Mercy Corps, 71 pages.
17. LIVELIHOOD IMPACTS OF DISARMAMENT IN KARAMOJA, UGANDA E. Stites and D. Akabwai, Save the Children, 2009, 43 pages.
18. PASTORALISM, SUSTAINABILITY AND THE COMPLEXITY OF HUMANITARIAN CRISES IN AFRICA: COMPARATIVE ANALYSES AND CASE STUDIES Panel in the framework of the First World Conference of Humanitarian Studies University of Groningen , February 4th-7th 2009.
19. THE KARAMOJA SYNDROME: TRANSDISCIPLINARY SYSTEMS RESEARCH INFORMING POLICY AND ADVOCACY - Sacha Kagan (IKKK, Leuphana University Lüneburg). November 2008, Groningen.
20. SECURITY AND THE INCIDENCE OF RAINFALL IN KARAMOJA: THE PROBLEMS WITH 'PEACE', Ben Knighton (Oxford Centre for Mission Studies): Conference Climate change and security in Africa, Paris, January 2009.

Census and Official Statistical information

NATIONAL POPULATION AND HOUSING CENSUS, UBOS, Uganda, 2014.

MOROTO DISTRICT LOCAL GOVERNMENT, STATISTICAL ABSTRACT, 2012/13 Report prepared with support from UNFPA and Uganda Bureau of Statistics, JUNE 2013.