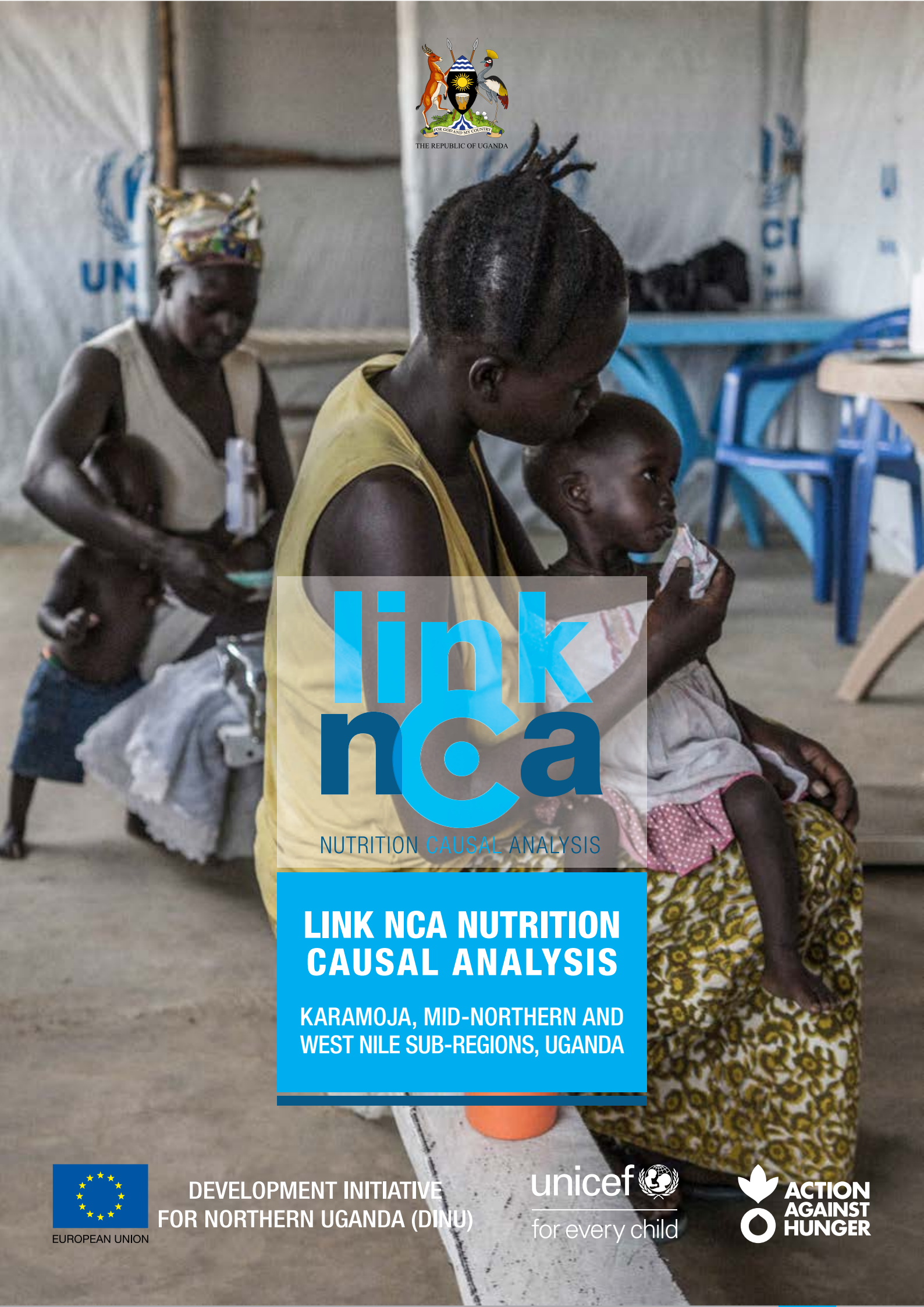

THE REPUBLIC OF UGANDA

link nca

NUTRITION CAUSAL ANALYSIS

LINK NCA NUTRITION CAUSAL ANALYSIS

KARAMOJA, MID-NORTHERN AND WEST NILE SUB-REGIONS, UGANDA

EUROPEAN UNION

DEVELOPMENT INITIATIVE FOR NORTHERN UGANDA (DINU)

unicef for every child

ACTION AGAINST HUNGER

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Office of the Prime Minister
Kampala, Uganda

UNICEF Uganda
Kampala, Uganda

Action Against Hunger, Uganda
Kampala, Uganda

June 2020

EUROPEAN UNION

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ACTION AGAINST HUNGER

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Additional information about the 2019 FSNA may be obtained from the Strategic Coordination and Implementation (SCI), Office of the Prime Minister, Kampala, Uganda

Additional information about the 2019 FSNA may be obtained from the UNICEF Uganda Country Office, George Street, PO Box 7047, Kampala, Uganda

COVER PHOTOGRAPH
Guy Calaf for Action Against Hunger.

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ABBREVIATIONS

AAH	Action Against Hunger
ACF	Action Contre La Faim
ANC	Ante-Natal Care
CAFH	Concerned Action For Health
DINU	Development Initiative for Northern Uganda
DLG	District Local Government
ECD	Early Childhood Development
FGD	Focus Group Discussion
FSNA	Food Security and Nutrition Assessment
HEARO	Horn and Eastern Africa Regional Office
IGA	Income Generating Activity
IPC	Integrated Food security Phase Classification
GSU	Global Support Unit
ITN	Insecticide Treated Net
Link NCA	Link Nutrition Causal Analysis
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDD	Minimum Dietary Diversity
MoH	Ministry of Health
MWE	Ministry of Water and Environment
NCA	Nutrition Causal Analysis
NGO	Non-Governmental Organisation
NMS	National Medical Stores
OPM	Office of the Prime Minister of Uganda
RUTF	Ready-to-Use Therapeutic Food
SBCC	Social and Behaviour Change Communication
SSI	Semi-structured Interview
SMART	Standardized Monitoring and Assessment of Relief and Transitions
TBA	Traditional Birth Attendant
UNICEF	United Nations Children Fund
VHT	Village Health Teams
VSLA	Village Savings and Loan Associations
WASH	Water, Sanitation and Hygiene
WFP	United Nations World Food Programme

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EXECUTIVE SUMMARY

While Uganda has seen the fastest reduction of poverty in Sub-Saharan Africa, and is one of the fastest developing countries in Sub-Saharan Africa and on the African continent as a whole, 84 per cent of the population still live below the poverty line.[1] Food poverty in the country has been estimated at 37 per cent while the population facing food poverty in Karamoja represents 70 per cent, in Acholi 51 per cent, in Lango 30 per cent and in West Nile 38 %.per cent.[2]

As a consequence, Uganda experiences high rates of undernutrition, particularly in terms of stunting. From the 2016 Demographic and Health Survey (DHS), Uganda saw a national stunting rate of 29% per cent and a Global Acute Malnutrition (GAM) prevalence of 4 per cent for children under five years of age, equating to approximately 2.5 million children impacted. Additionally, about half of children aged six to 59 months and one-third of women are estimated to be anaemic.[3] Although there has been significant progress in addressing the problem of undernutrition, the rate of improvement, especially for stunting, has been slow. For instance, the prevalence of stunting reduced from about 48 per cent in 1988 to 45 per cent in 2000 and about 29 per cent in 2016.[4] This current level of child stunting is categorised as "high" in terms of its public health significance.[5] Of recent, the double burden of malnutrition has emerged, where undernutrition exists together with a rapidly increasing problem, overnutrition (overweight and obesity), which is a key driver of Diet-Related Non-Communicable Diseases (DRNCDs), such as hypertension, type-2 diabetes and cardiovascular diseases.[6]

In order to contribute to improved nutrition outcomes of women and children in Northern Uganda, UNICEF, with support from the European Union (EU) as part of the Development Initiative for Northern Uganda (DINU), and from DFID as part of Karamoja Nutrition Programme (KNP), is supporting a multisector response aimed at strengthening health systems and nutrition governance for scaling up nutrition (SUN). With the aim of better understanding the relative importance of factors contributing to malnutrition by agro-ecological zones, Action Against Hunger (AAH) was contracted to carry out a Link NCA Nutrition Causal Analysis in Northern Uganda with the key objective to elucidate the perceived contribution of the different risk factors (immediate, underlying, basic) to the incidence of undernutrition (wasting and stunting) and anaemia, thereby contributing to an improved understanding of causal mechanisms of undernutrition and anaemia in the study zone. The information generated throughout this process will be used for designing context-specific nutrition interventions in the concerned regions/districts, with the aim of improving the nutritional status of most vulnerable groups.

The area of study included eight districts of Karamoja sub-region, namely Abim, Amudat, Kaabong, Kotido, Moroto, Nabilatuk, Nakapiripirit, and Napak; four districts in mid-northern Uganda, namely Pader, Omoro, Otuke and Kole; and six districts of West Nile sub-region, namely Adjumani, Koboko, Moyo, Nebbi, Yumbe, and Zombo.

1 World Bank Group. 2016. The Uganda Poverty Assessment Report 2016. Available at: http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf

2 UBOS (2018). Uganda National Household Survey 2016/17.

3 Uganda Bureau of Statistics (UBOS) and ICF (2018). Uganda Demographic and Health Survey 2016.

4 World Bank. 2019. Prevalence of stunting, height for age (% of children under 5). Available at: https://data.worldbank.org/indicator/SH.STA.STNT.ZS

5 Onis et al. 2018. Prevalence thresholds for wasting, overweight and stunting in children under 5 years. Available at: http://www9.who.int/nutrition/team/prevalence-thresholds-wasting-overweight-stunting-children-paper.pdf

6 Government of Uganda, Office of the Prime Minister (2019). The Uganda Nutrition Action Plan (UNAP) II, 2019 – 2025 Draft.

KEY FINDINGS

The **group most vulnerable to acute malnutrition** in Karamoja region were children from female-headed households and/or extremely vulnerable households, while no child age or gender vulnerability was detected. However, in Mid-North region, male children were more likely to be wasted while in West Nile, children under 24 months of age were most affected. A child in West Nile was also more likely to suffer from acute malnutrition if his/her mother attained only primary education.

The **most vulnerable group to chronic malnutrition** in Karamoja region were male children from female-headed households and/or extremely vulnerable households. Male children were also more likely to be stunted in West Nile region, where children from polygamous households demonstrated higher odds of stunting as well. Children from Zombo and/or Arabica coffee-banana zone in the same district as well as children from Tobacco-cassava-sorghum zone in Yumbe and Koboko districts were more likely to be stunted, while children from Adjumani or Moyo were less likely to be so. Mother's or head of household's education (primary or higher) seems to decrease a child's odds of stunting in West Nile region while in Mid-North the mother's education must be at least secondary level for the same effect. In addition, children from Omoro and Kole districts, or alternatively from Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts were less likely to suffer from chronic malnutrition.

The **most vulnerable group to anaemia** in West Nile region were male children aged 12-23 months, living in Zombo, Adjumani, Yumbe or Moyo districts, which partially overlaps with home district vulnerability for stunting, as explained above. On the other hand, a child aged 24-47 months was less likely to be stunted while a mother's or head of household's education (secondary or higher) seems to decrease child's odds of anaemia in the region. This proved true in Mid-North region too as a child whose mother attained primary education only, was more likely to be anaemic. However, a child above 24 months, living in Otuke or, alternatively, in Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts was less likely to be anaemic. This coincides with lower vulnerability to stunting in the same livelihoods zone.

The analyses undertaken during this Link NCA study allowed the identification of 19 risk factors believed to have an impact on the incidence of undernutrition in West Nile region. Eighteen risk factors were identified for Karamoja and Mid-North regions each. Following a triangulation of data from diverse sources, two risk factors were identified as having a major impact in Karamoja region while none were identified as such in West Nile and Mid-North regions. Ten risk factors were classified as having an important impact in Mid-North region, 12 in Karamoja and 15 in West Nile. Eight risk factors were judged to have a minor impact on the incidence of undernutrition in Mid-North, four in Karamoja and West Nile each.

Across the three regions of the study zone, **limited access to water** and **non-optimal infant and young child feeding practices** received the highest rating while also being categorised as major risk factors in Karamoja region. Other highly ranked risk factors included l**imited access to health facilities, limited access to income sources, low coping capacities** and **inadequate sanitation practices**. In other words, priority sectors for interventions include Water, Sanitation and Hygiene, Health and Caring Practices as well as Food Security and Livelihoods.

The calculation of statistical associations between individual risk factors and nutritional status of children in households surveyed during annual FSNA exercises highlighted similarities and differences in causal mechanisms across regions, giving rise to the so-called "regional" causal mechanisms of undernutrition (wasting and stunting) and anaemia. The compilation of "regional" pathways allowed for the design of "overarching" causal pathways for each condition, which detail

generally applicable mechanisms across the study zone while acknowledging nuances in risk factors across regions.

OVERARCHING CAUSAL PATHWAY FOR UNDERNUTRITION (WASTING AND STUNTING) AND ANAEMIA

A dominant pathway to undernutrition/anaemia across three regions appears to be a combination of **inadequate child care practices** and **low utilisation of health services**. While the inadequate sanitation practices expose a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. The **limited access to water** further accentuates the impact of unsanitary environment on optimal child development, especially long-term, as it demonstrates stronger links with stunting.

A complementary pathway to undernutrition/anaemia across three regions seems to take its roots in **low female decision-making powers**, which influence a household's **access to** a variety of **income** sources and, eventually, its **access to food**. This translates into **inadequate food intake** of children under five years of age and consequently into wasting, stunting or micronutrient deficiency.

Overall, the biggest differences between overarching pathways can be observed at the level of **limited access to water**, which plays a considerable role in the stunting pathway while it is rather absent on pathways for wasting or anaemia. Similarly, an **early initiation of breastfeeding** seems to intervene on the wasting and anaemia pathways, but it is absent on the pathway for stunting. These variations highlight the necessity to adapt future interventions with respect to a region and/or nutritional deficiency, which they will aim to address. However, based on these findings, the following activities are recommended to be considered for incorporation into current/future programming.

An overview of key differences in identified risk factors across three regions is provided in the table below.

Risk factor	West Nile			Karamoja			Mid-North		
	W	S	A	W	S	A	W	S	A
Diarrhoea									
Malaria									
Cough / ARI									
Measles vaccination									
DPT vaccination									
Vitamin A supplementation									
Deworming									
VHT as 1st treatment choice									
Use of income for alcohol and tobacco									
Use of income for cultural celebrations									
Income from livestock sale									
Income from wage labour									
Income from charcoal sale									
Income from formal employment									
Access to agricultural land									
Access to toilets									
Toilet not in dwelling/yard/plot									

*Red cells designate a risk factor, green cells a protective factor.

DOMINANT PATHWAY RECOMMENDATIONS

Dominant pathway recommendations are applicable to the entire study zone and address the risk factors, which were ranked the highest during the Link NCA study. They should be addressed with the highest priority.

1. Encourage the construction of family latrines using methodological approaches, which proved previously successful in the Ugandan context, including trainings and sensitisation activities adapted to context, typical income, lifestyle and concerns;
2. Improve access to water through construction of new and/or maintenance of existing water points using existing structures and mechanisms to ensure their proper long-term utilisation (e.g. water committees, district water departments, etc.). Special attention should be paid to historically or seasonally water-stressed areas;
3. Improve water treatment management at water point and household levels, including the use of appropriate water treatment options and effective water transportation and storage practices to ensure water safety before use;
4. Encourage the creation of baby-friendly play spaces and their appropriate maintenance to decrease potential contamination with the surroundings, especially in households rearing the livestock (cattle, sheep/goats, poultry);
5. Strengthen the sensitisation of mothers as well as other family members on appropriate hygiene and sanitation practices, especially in households, where a mother and/or a head of household attained maximum primary education. Special attention should be paid to hand-mouth contamination by unaccompanied infants;
6. Increase the coverage and capacity of village health teams to ensure the continuous sensitisation of communities, while teaching them how to adapt behaviour change communications to address frequently experiences barriers to change in their community;
7. Increase the capacity of village health teams to screen and treat common childhood diseases (e.g. diarrhoea, malaria, acute respiratory diseases) by increasing their technical and financial support;
8. Improve the utilisation of health facilities by improving quality of provided services, especially via continuous capacity-building of health facility personnel and constant availability of medicinal products, especially in remote rural areas;
9. Ensure regular mass immunisation, deworming and Vitamin A supplementation campaigns, especially in remote rural areas. This may include a revitalisation of growth promotion and nutritional assessments for children under five years of age at health facility and community levels.

COMPLEMENTARY PATHWAY RECOMMENDATIONS

Complementary pathway recommendations are applicable to the entire study zone to a varying degree and address the risk factors, which were ranked relatively high during the Link NCA study, but lower than the dominant pathway risk factors. They should be addressed with medium priority.

10. Strengthen the sensitisation of households on the advantages of joint-decision making for the advancement of household and more equitable division of responsibilities in order to reduce high parental workload and stress;
11. Support the creation and/or capacity-building of external support groups for both men and

women in order to strengthen existing social support mechanisms, putting a particular emphasis on emotional support and stress relief, while creating beneficial business and market linkages;

12. Support the diversification of income opportunities through livelihood zone-appropriate revenue streams, including agricultural production schemes, adapting assistance modalities to target hardship during lean periods. This may include improved access to information and agricultural financing, promotion of diversified, fortified and/or bio-fortified, seeds for planting, improvement of market infrastructure for agricultural outputs, adaptation of agricultural practices to climate change and/or promotion of training in off-farm income generating activities;
13. Promote the use of improved processing technologies to improve shelf life and quality of stored food. This may include community sensitisation on improved storage facilities and food stock management to ensure the continued availability and access to food throughout the year;
14. Promote the use of household income beneficial for maternal and child health, including cash management and saving schemes for emergency spending. This may include the sensitisation of households on the use of income for alcohol, tobacco and cultural celebrations with a potential effect on a child's growth and development;
15. Strengthen the sensitisation of households on adequate infant and young child feeding practices with special attention paid to food hygiene, meal frequency and dietary diversity. This may include general sensitisation on household nutrition, promoting vegetable production and consumption of a diversified diet;
16. Promote appropriate birth-spacing and family planning practices, especially among adolescents, by facilitating access to relevant health, education and/or youth services responsible for relevant information sharing, support and provision of suitable means of contraception to target groups. This may include nation-wide sensitisation campaigns aiming to destigmatise the family planning among men, ensuring that they engage constructively in the respective decision-making.

INTRODUCTION

While Uganda has seen the fastest reduction of poverty in Sub-Saharan Africa, and is one of the fastest developing countries in Sub-Saharan Africa and on the continent, 84 per cent of the population still live below the poverty line.[7] Food poverty in the country has been estimated at 37 per cent, with the population faced with food poverty in Karamoja being 70 per cent, in Acholi 51 per cent, in Lango 30 per cent and in West Nile region 38 per cent.[8]

Uganda experiences high rates of undernutrition, particularly in terms of stunting. From the 2016 Demographic and Health Survey (DHS), Uganda saw a national stunting rate of 29 per cent and a Global Acute Malnutrition (GAM) prevalence of 4 per cent for children under five years equating to approximately 2.5 million children impacted. Additionally, about half of children aged six to 59 months and one-third of women are estimated to be anaemic.[9] Although there has been significant progress in addressing the problem of undernutrition, the rate of improvement, especially for stunting, has been slow. For instance, the prevalence of stunting reduced from about 48 per cent in 1988 to 45 per cent in 2000 and about 29 per cent in 2016.[10] This current level of child stunting is categorised as "high" in terms of its public health significance.[11] Of recent, the double burden of malnutrition has emerged where undernutrition exists together with a rapidly increasing problem, overnutrition (overweight and obesity), which is a key driver of Diet-Related Non-Communicable Diseases (DRNCDs), such as hypertension, type-2 diabetes and cardiovascular diseases.[12] Some of the key factors for the slow progress in reducing undernutrition in Uganda include:

- Limited capacity at all levels to translate political commitment and economic growth into effective, impactful and sustainable policies and strategies;
- Limited institutional and technical capacity to implement essential nutrition actions at the household and community level at scale;
- Inadequate multi-sectoral coordination;
- Limited financial resources to adequately implement and monitor nutrition service delivery and deeply entrenched sub-optimal practices / behaviours that take long to change.

While poverty contributes to the undernutrition situation in the country, lack of access to safe water and sanitation, malaria and diarrhoea burdens, elevated food insecurity, and poor infant and young child feeding practices contribute substantially to the situation too.[13] Indeed, in the recent National Household Survey, inadequate dietary intake was cited as the main driver of malnutrition. The survey classifies the three main causes of undernutrition as low intake of food levels especially due to seasonality in food production, earning patterns, and variability in food prices; inadequate maternal and childcare, and poor access to healthcare; and micronutrient deficiencies, particularly

7 World Bank Group. 2016. The Uganda Poverty Assessment Report 2016. Available at: http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf

8 UBOS (2018). Uganda National Household Survey 2016/17.

9 Uganda Bureau of Statistics (UBOS) and ICF (2018). Uganda Demographic and Health Survey 2016.

10 World Bank. 2019. Prevalence of stunting, height for age (% of children under 5). Available at: https://data.worldbank.org/indicator/SH.STA.STNT.ZS

11 Onis et al. 2018. Prevalence thresholds for wasting, overweight and stunting in children under 5 years. Available at : http://www9.who.int/nutrition/team/prevalence-thresholds-wasting-overweight-stunting-children-paper.pdf

12 Government of Uganda, Office of the Prime Minister (2019). The Uganda Nutrition Action Plan (UNAP) II, 2019 – 2025 Draft.

13 USAID 2018. Uganda: Nutrition Profile. Available at: https://www.usaid.gov/sites/default/files/documents/1864/Uganda-Nutrition-Profile-Apr2018-508.pdf

of Vitamin A and Iron. Only 15 per cent of breastfed children aged six to 23 months receive a minimum acceptable diet. The health care seeking behaviour among the population is relatively high in the Central (90 per cent), Busoga (93 per cent) and Kigezi (88 per cent) sub-regions, and lowest in Karamoja (74 per cent), Elgon (65 per cent) and Bukedi regions (60 per cent). Furthermore, access to healthcare varied across sub-regions with over 34 per cent of the persons in Acholi travelling a distance of at least 5 kilometres to access health care when they fall sick.8

UNICEF supports the Government of Uganda and partners to keep children alive, safe, and learning – ensuring children and women live healthier lives, are protected from violence and exploitation, and children can access good nutrition, starting early in life. UNICEF supports the Government of Uganda to develop evidence-based policies, implement effective and high-coverage service delivery and strengthen dynamic community systems. UNICEF advocates for policies for women and children's issues through strong evidence-based approaches, stemming from the policy review and analysis, research and evaluation and wider consultation with concerned stakeholders for prioritising issues that affect children and their families.[14]

Through the European Union (EU)-funded Development Initiative for Northern Uganda (DINU), UNICEF's support to the Government of Uganda on nutrition governance aims to strengthen the 'enabling environment' for nutrition and improve systemic and organisational capacity at the national and district level for multisectoral coordination, planning, monitoring and evaluation. The overall goal of the action is to contribute to improved nutrition outcomes of women and children in Northern Uganda by strengthening nutrition governance for scaling up nutrition. The specific results of the action are reflected in three outputs:

1. Improved capacity of multi-sectoral nutrition coordination structures at district level to coordinate, plan, cost, monitor and mobilise resources for nutrition actions.
2. Improved capacity of sectors - Health, Agriculture, Education, Water and sanitation, and Gender and Social Development - to plan, budget, implement at scale and monitor nutrition-specific and nutrition-sensitive interventions at district level.
3. Enhanced capacity of district governments to inform their programming based on data collection and analysis.[15]

In this context, UNICEF, in coordination with OPM, carried out this study to enable district local governments to design and implement their nutrition programme based on recent evidences. Moreover, the significant regional variations in both the undernutrition rates and region-specific causal factors require contextual analysis per region to obtain a more nuanced understanding. This study was thus geared towards identifying the major causal pathways leading to wasting, stunting and anaemia for the under-five population among the most vulnerable populations in Karamoja, Acholi, Lango and West Nile regions.[16] It is envisaged that the findings of this study can be used by the district local governments to develop recommendations to adapt programming in order to propose more targeted nutrition interventions. A brief context of these regions is presented below:

14 UNICEF Uganda. 2019. Keeping Children Alive, Learning and Safe; Country Programme 2016-2020 Overview. Available at: https://www.unicef.org/uganda/media/4656/file/UNICEF%20Uganda%200verview%20Booklet%202019.pdf

15 UNICEF, The Republic of Uganda, European Union. 2017. Development Initiative for Northern Uganda. Available at: https://www.unicef.org/eu/media/816/file/Factsheet_-_Development_Initiative_for_Northern_Uganda_%28DINU%29_.pdf

16 Acholi and Lango regions have been merged into mid-north region as per the DINU classification.

KARAMOJA REGION

Karamoja is in North-eastern Uganda and includes the following districts: Nakapiripirit, Kaabong, Napak, Kotido, Moroto, Amudat, Abim and Nabilatuk. Nabilatuk is the newest district in the region having been formed in December 2018. The region contains approximately 2 per cent of the Ugandan population with almost 90 per cent of the population living in rural areas. Many ethnic groups are present and include the Ethur, Iteso, Jie, Dodoth, Ik, Mathniko, Tapeth, and Pokot.

The region is classified as one of the world's poorest areas with 82 per cent of its 1.2 million inhabitants living in poverty.[17] Even as compared to the national average, the region has a very low GDP per capita.[18] The region has historically experienced high food insecurity, socio-economic inequalities, and harsh climates. Conflict over scarce resources has also been a prevalent issue in the region for decades. Existing between clans in Karamoja as well as between communities in Karamoja and those in Kenya and South Sudan, insecurity often leads to armed conflict.[19]

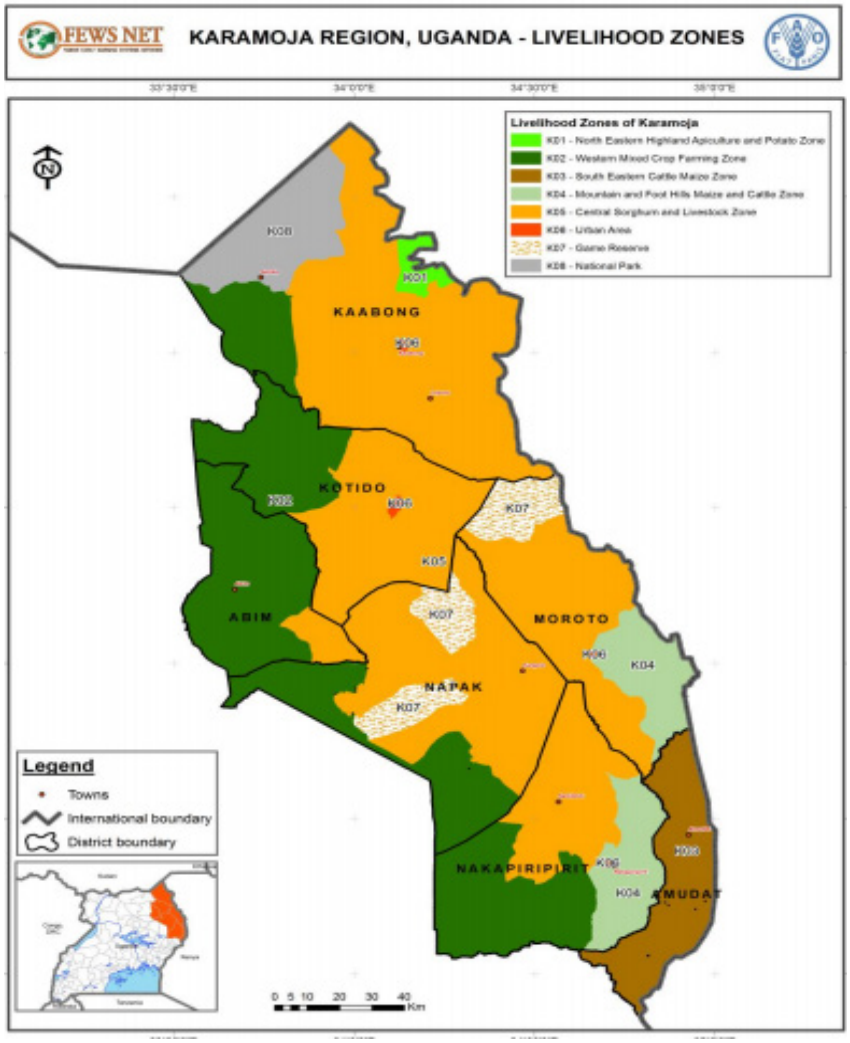


Figure 1: Map showing Karamoja livelihood zones[21]

Integrated Food Security Phase Classification (IPC) reports have consistently indicated that the Karamoja region has the highest food insecurity and malnutrition levels in Uganda. The most recent report in 2019 indicated that 32 per cent of the population were in a food security crisis, and four per cent of the population were reported to be in IPC phase 4 (Emergency) and in need of urgent food aid to reduce the widening food consumption gaps and severe malnutrition among the under fives and pregnant women.[20]

There are three main livelihood zones in Karamoja: 1) the pastoral zone, 2) the agricultural zone, and 3) the agro pastoral zone, which is further divided into five zones: North-eastern Karamoja Highland Apiculture and Potato Zone, Western Karamoja Mixed Crop Farming Zone, South-eastern Karamoja Cattle Maize Zone, Karamoja Mountain and Foot Hills Maize and Cattle Zone, Central Karamoja Sorghum and Livestock Zone.

17 USAID (2017). Climate risk screening for food security: Karamoja, Uganda Climate risk profile.

18 UNFPA (2018). Leaving no one behind in Karamoja. Issue Brief 07.

19 FAO (2018). Resilience Analysis in Karamoja.

20 MAAIF and IPC GSU (2019). Integrated Food Security Phase Classification for Karamoja and Teso regions, Uganda, May 2019.

21 FEWSNET. 2013. Uganda-Karamoja Region Livelihood Zones and Descriptions. Available at: https://fews.net/sites/default/files/documents/reports/Karamoja%20Final_LHZ%20Report.pdf

Livelihood Zone	Districts Included	Food Crops	Cash Income	Livestock	Hazards
North-eastern Highland Apiculture & Potato Zone	• Kaabong	• Maize • Sorghum • Bulrush millet	• Labour sales • Firewood & charcoal sales • Livestock sales	• Goats • Sheep • Cattle	• Prolonged dry spells • Insecurity • Crop/ livestock diseases & pests
Western Mixed Crop Farming Zone	• Nakapiripirit • Kaabong • Napak • Kotido • Abim	• Maize • Sorghum	• Labour sales • Crop sales • Livestock sales	• Goats • Sheep • Cattle	• Prolonged dry spells • Crop disease • Livestock disease
South-eastern Cattle Maize Zone	• Amudat	• Maize • Sorghum	• Labour sales • Livestock sales • Livestock products • Firewood & charcoal sales	• Goats • Sheep • Cattle	• Prolonged dry spells • Insecurity • Livestock diseases
Mountain and Foot Hills Maize and Cattle Zone	• Nakapiripirit • Moroto	• Maize • Sorghum • Beans	• Labour sales • Crop sales • Firewood sales • Livestock sales	• Cattle • Goats • Sheep	• Prolonged dry spells • Crop disease • Livestock disease
Sorghum and Livestock Zone	• Nakapiripirit • Kaabong • Napak • Kotido • Moroto • Abim	• Maize • Sorghum	• Labour sales • Livestock sales • Livestock products • Crop sales	• Goats • Sheep • Cattle	• Prolonged dry spells • Insecurity • Crop disease • Livestock disease

Table 1: Livelihood Zones in Karamoja sub-region

MID-NORTH REGION

The sub-regions in Mid-Northern Uganda include Lango and Acholi. The Lango sub-region includes the following districts: Alebtong, Amolatar, Apac, Dokolo, Kole, Lira, Oyam, Otuke, and Kwania. The Acholi sub-region includes the following districts: Amuru, Agago, Gulu, Kitgum, Lamwo, Nwoya, and Pader. The Lango sub-region contains an estimated 5.8 per cent of the Ugandan population, while the Acholi sub-region contains an estimated 3.2 per cent of the Ugandan population.[8] This study considered two districts from Lango sub-region (Kole and Otuke) and two districts of Acholi sub-region (Omoro and Pader).

From 1986 till 2006, the area experienced massive population displacement due to a 20-year

civil war between the Lord's Resistance Army and the government. At the peak of the conflict, approximately 90 per cent of the population was internally displaced and living in camps. Today, much of the population has returned, and efforts have focused on rebuilding services disrupted during the war, although impacts can still be felt as infrastructure is limited.[22]

The Mid-Northern region of Uganda is characterised by two primary livelihood patterns/zones: 1) Simsim, Sorghum, and Livestock Zone and 2) Mid-North Simsim Maize Cassava Zone.

Livelihood Zone	Districts Included	Food Crops	Cash Income	Livestock	Hazards
Mid-north Simsim, Maize, and Cassava Zone	• Omoro • Otuke • Kole	• Cassava • Sorghum and millet • Beans	• Crop sales • Livestock sales • Labour sale • Petty trade	• Chickens • Goats • Cattle	• Prolonged dry spells • Crop and livestock epidemics • Floods
South Kitgum Pader Abim Simsim Groundnuts Sorghum Cattle Zone	• Pader	• Sorghum • Finger millet • Pigeon pea	• Labour sales • Crop sales • Bush product sales • Livestock sales	• Chickens • Goats • Cattle	• Prolonged dry spells • Crop pests • Insecurity

Table 2: Livelihood zones in Mid-Northern sub-region

Figure 2: Map of Lango Sub-Region[23]

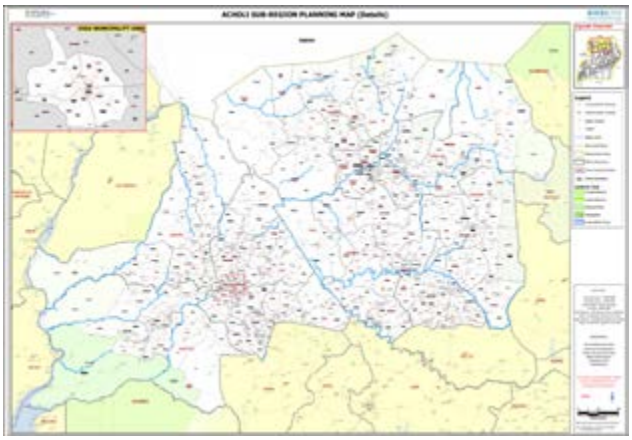


Figure 3: Map of Acholi Sub-Region[24]

Hazards affecting food availability and/or access in this area are relatively infrequent (i.e., occurring once in five or 10 years), but include: prolonged dry spells, crop and livestock epidemics (e.g., cassava mosaic, brown streak disease, and banana bacterial wilt in crops as well as foot and mouth disease in cattle and Newcastle disease in chickens), and floods. Households respond to hazards with a number of strategies, such as increasing livestock sales. Poorer households also respond by increasing their engagement in casual labour, augmenting collection and sale of wild foods, and/or borrowing food or cash.

22 Schramm, S (2016) Tropical Medicine and International Health. Gender and age disparities in adult undernutrition in northern Uganda.

23 OCHA. 2009. Available at: https://reliefweb.int/map/uganda/uganda-lango-sub-region-planning-map-general-23-jul-2009

24 OCHA. 2010. Available at: https://reliefweb.int/map/uganda/uganda-acholi-sub-region-planning-map-jul-2010

Food security surveillance conducted in 2010 in the Lango sub-region indicated coping mechanisms related to seasons with reduced food intake experienced by 99 per cent of households, mainly before the first harvest in June and July.[25] Many coping strategies measured during the survey were reversible and adaptive and do not have a long-term negative impact on the food security situation, though some could affect the future yield.

WEST NILE REGION

The West Nile region is in North-western Uganda bordered by the Democratic Republic of the Congo to the south and to the west, South Sudan to the north and the Albert Nile to the east. It includes Adjumani, Koboko, Moyo, Nebbi, Yumbe, and Zombo districts. The area has a total population of approximately 2,988,300 people.[26] It is home to numerous ethnic groups including Lugbara, Kakwa, Madi, Ukebu, Kuku and Nubians. It also hosts approximately 1 million refugees in Arua, Adjumani, Moyo, Yumbe and Koboko. Thirty-three per cent of the population in these districts are refugees – one of the highest ratios of refugees to host populations in the world. It is known to be one of the fastest growing economic centres in Uganda primarily due to the thriving cross border commerce. That said, the majority of the population live in rural areas and relies on subsistence farming as their main livelihood activity. It has historically been under-developed in comparison with most of Uganda and is known as one of the most disadvantaged regions in Uganda as many of the country's resources are spent on areas farther south.[27]

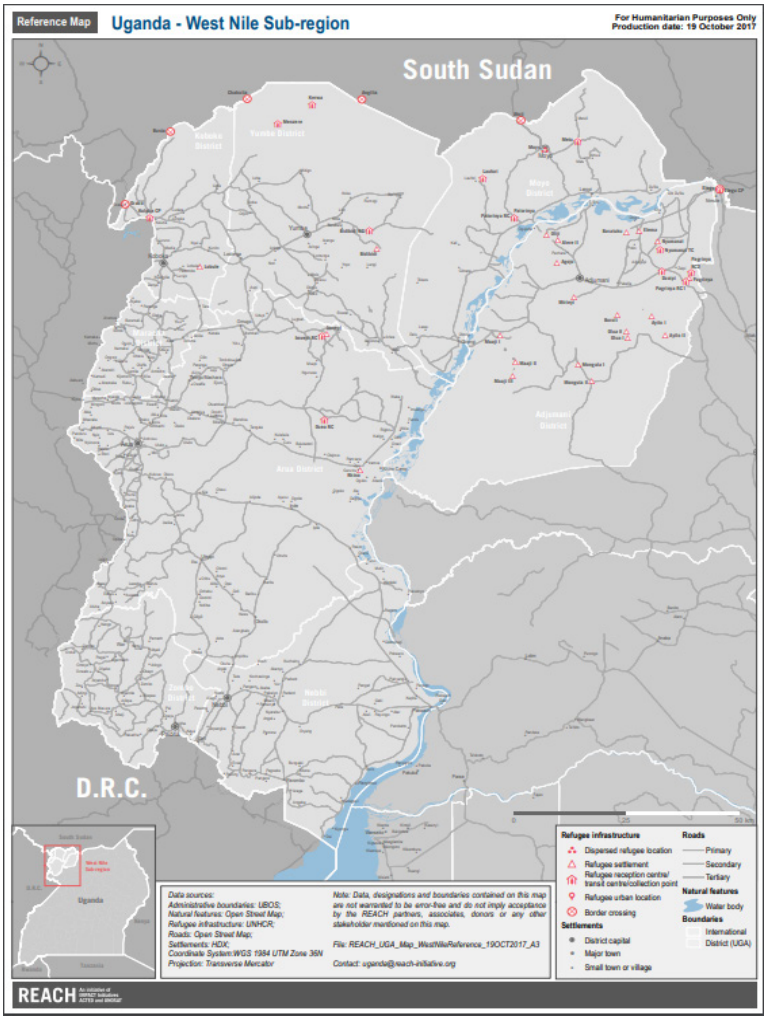


Figure 4: Map of West Nile Region[28]

25 Action Against Hunger. 2011. Food Security and Livelihoods Assessment Lango Sub-region Uganda. Available at: https://www.actionagainsthunger.org/sites/default/files/publications/Food_Security_and_Livelihoods_Assessment_Lango_Sub-region_Uganda_04.2010.pdf

26 Uganda Bureau of Statistics (2017). The National Population and Housing Census 2014, Area Specific Profile Series.

27 Komakech et al. 2019. Integration of health services, access and utilization by refugees and host populations in West Nile districts, Uganda. Available at: https://reliefweb.int/report/uganda/integration-health-services-access-and-utilization-refugees-and-host-populations-west

28 REACH. 2017. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/reach_uga_map_westnilereference_19oct2017_a3.pdf

The region has four livelihood zones: 1) West Nile Simsim Sorghum and Livestock Zone, 2) West Nile Tobacco Cassava Sorghum Zone, 3) West Nile Lowland Cattle Zone, and 4) West Nile Arabica Coffee Banana Zone. Subsistence farming is the main livelihood activity in the region with the main crops including sorghum, cassava, simsim, beans and millet. The West Nile Arabica Coffee Banana Zone is able to host more diverse crops than the other zones. Food availability is a limiting factor in the region due to low agricultural production, prolonged dry spells, water shortages and a lack of extension services.[29] Additional hazards facing the region include crop and livestock diseases, livestock pests and insufficient rain.

Livelihood Zone	Districts Included	Food Crops	Cash Income	Livestock	Hazards
West Nile Simsim Sorghum and Livestock Zone	Moyo Adjumani Yumbe Nebbi	Sorghum Cassava Simsim	Crop sales Livestock sales Labour sales Petty trading Natural products	Chickens Small ruminants Pigs	Crop and livestock epidemics Hail Cash crop marketing Prolonged dry spells Conflict
West Nile Tobacco Cassava Sorghum Zone	Koboko Yumbe	Cassava Beans Sorghum Millet	Crop sales Livestock sales Land rental	Goats Cattle Chickens	Livestock pests Prolonged dry spell Flooding
West Nile Lowland Cattle Zone	Moyo Adjumani	N/A	Labour sales Livestock sales Firewood & charcoal sales Fish sales	Cattle Goats	Flooding Prolonged dry spell Livestock disease
West Nile Arabica Coffee Banana Zone	Zombo Nebbi	Bananas Irish potatoes Vegetables	Crop sales Livestock & livestock products Labour sales	Cattle Goats Chickens	Insufficient rain Crop pests and disease Landslides

Table 3: Livelihood zones in West Nile sub-region

29 FEWSNET. 2010. Livelihood Zoning and Mapping Exercise. Available at: http://fews.net/sites/default/files/documents/reports/UG_zonedescriptions_en.pdf

OBJECTIVES OF THE STUDY

The major objective of the Link NCA for Northern Uganda was to identify the major pathways leading to undernutrition (wasting, stunting) and anaemia among children in Karamoja, West Nile and Mid-North regions. It also aimed at developing recommendations to adapt programming to develop more targeted interventions to address undernutrition.

Specifically, the study set out to:

i. Identify and analyse historical and seasonal trends of undernutrition (wasting, stunting) and anaemia for each region;

ii. Identify the main causal pathways of under-nutrition and anaemia by which certain children in the three regions have become stunted and/or wasted and/or anaemic;

iii. Identify and analyse potential different pathways for different communities living in the regions and identify vulnerable groups for each of the main risk factors or pathways to undernutrition and anaemia;

iv. Identify communities' perception of undernutrition and its drivers;

v. Identify the communities' recommendation to address the major causal pathways;

vi. Develop recommendations to improve nutrition security programmes in these regions and to support the development of a comprehensive multi-sectoral strategy for addressing undernutrition.

METHODOLOGY

The Link NCA methodology was developed by AAH to strengthen the analytical foundation on which nutrition intervention programmes are built. The Link NCA provides a structured and operationally feasible method for conducting a nutrition causal analysis in a specified local context.

A Link NCA study analyses the multi-causality of under-nutrition, as a starting point for improving the relevance and effectiveness of multi-sectoral nutrition security programming in a given context. It is a structured, participatory and holistic study that builds on UNICEF's conceptual framework (Cf: Annex I) with the objective of building an evidence-based consensus on plausible causes of under-nutrition in a local context.

The main tenets of a Link NCA are thus:

1. **Structured -** the steps of the methodology are precisely defined, and guidance and tools have been provided for every step of the method;
2. **Participatory -** the study gives a real opportunity to communities and national/regional technical experts to express their opinion on the causes of under-nutrition, and to discuss, review and finally validate the conclusions of the study. Indeed, information generated from multiple data sources are triangulated and reviewed through a participatory process to generate consensus on under-nutrition causality;
3. **Holistic -** under nutrition is studied globally to avoid a sectorial approach, and to highlight the inter-relations between risk factors and causal pathways;
4. **Specific to a local context** - the Link NCA identifies context specific causes of undernutrition to propose adequate solutions as opposed to epidemiological studies that may in most cases propose generic interventions. The wealth of information gathered from different sources is triangulated to identify risk factors that are ***very likely*** to be causal in a specific context.

Findings of the study are constantly reviewed until validated by all stakeholders. The Link NCA places value on all kinds of evidence before deciding which causes are most likely to influence the undernutrition in a given context. The different verified sources of information, both qualitative and quantitative, are linked to build consensus around the plausible causes of undernutrition in a given context.

The Northern Uganda Link NCA study was designed to identify under-nutrition causal pathways that occur/ may occur in the population studied. The study used a holistic approach, looking at the inter-relation between causal pathways, and the results have been built on a participatory process that included technical experts. Results presented in this report are only valid for the populations in the studied regions of Northern Uganda.

KEY STAGES

In its design, the Link NCA thus requires detailed planning that takes realistic account of the required time, financial and human resource requirements. This Link NCA was conducted in several phases as detailed below.

PREPARATORY PHASE (JUNE - JULY 2019)

At the initiation of a Link NCA study, technical experts from the organisation contemplating such a study met to assess whether the benefits of undertaking it were likely to outweigh the costs and how the results are likely to be used. Another key objective at this stage was to define key parameters of the study, including its objectives, geographical coverage and feasibility. UNICEF (Uganda Office) assessed the need, feasibility and timeliness after which AAH Uganda was contracted to undertake the study. At the onset of the actual study, preliminary secondary data and literature review were conducted to define the structure of the study. Considering the likelihood of availability of quantitative data from the Karamoja Food Security and Nutrition Assessment (FSNA)[30,31] and that UNICEF was conducting an FSNA in Mid-north and West Nile regions, it was decided that only qualitative data would be collected and then this would be triangulated with results of the FSNAs.

Additionally, the preparatory phase included other planning processes like developing the Terms of Reference, production of an Inception Report, resource mobilisation that also included recruitment of a Lead Analyst, Deputy Analysts[32] and a Statistician.

IDENTIFICATION OF HYPOTHESISED RISK FACTORS AND CAUSAL PATHWAYS (AUGUST 2019)

The key responsibility of a Link NCA Analyst at this stage was to gather an overall understanding of a local context and to identify a set of risk factors and their interactions, which could potentially trigger undernutrition among the target population in the region of study. A systematic literature review (using the Link NCA ***Pathways to Undernutrition*** module and all grey literature available locally) was the basis for identification of hypothesised risk factors and causal pathways. An initial discussion and validation of these was done at a National Technical Workshop conducted in Kampala on 6th September 2019, attended by technical experts across the sectors of Health and Nutrition, Food Security and Livelihoods, Water, Sanitation and Hygiene, and Gender, amongst others. The identified hypothesised risk factors were then presented, reviewed and validated for field testing during the Initial Regional Technical Workshops, which took place in Gulu on 12th September 2019 (Mid-North Region), in Arua on 23rd September 2019 (West Nile Region) and in Moroto on 27th September 2019 (Karamoja Region).

30 FSNA studies in Uganda have adopted the SMART survey methodology but with an expanded module on food security indicators.

31 Though hoped that WFP (Uganda office) would conduct an FSNA in Karamoja, this turned out not to be the case and thus data from an older FSNA of 2017 has been used.

32 Five Deputy Analysts recruited due to large geographic scope of the study.

SECONDARY QUANTITATIVE DATA ANALYSIS (AUGUST – NOVEMBER 2019)

Secondary quantitative data for Karamoja region was drawn from FSNAs conducted by WFP in June 2017[33] and UNICEF in January 2018[34]; while that for Mid-North and West Nile Regions was provided by UNICEF in November 2019.[35]

PRIMARY QUALITATIVE DATA COLLECTION (SEPTEMBER – OCTOBER 2019)

The qualitative data collection lasted four and a half (4.5) weeks, spanning from 13th September to 10th October 2019. Working under the overall supervision of the Lead Analyst, data was collected by five Deputy Analysts who were helped by Research Assistants, Translators and Community Mobilisers.[36] In total, data was collected from 11 districts from which 12 communities were purposively selected basing on the distribution of livelihood zones, availability and accessibility of health care services, prevalence of severe acute malnutrition and recurrent food insecurity episodes. Qualitative data collection comprised of an in-depth inquiry on all risk factors identified and validated in preceding stages through semi-structured interviews and focus groups discussions as two principal data collection methods. During data collection, the collected data was captured in writing in the form of notes and on electronic recording devices. Recordings were used to aid content analysis.

SYNTHESIS OF RESULTS AND BUILDING TECHNICAL CONSENSUS (OCTOBER – NOVEMBER 2019)

Upon completion of the data collection stage, the Link NCA Analyst synthesised all collected data sets and conducted a series of analyses to categorise risk factors according to their relative impact on undernutrition in the regions of study. A description of the dynamic relationships between various risk factors and their effects on undernutrition was done. All data / information collected on the categorised risk factors was taken into account for proper triangulation of the results. The overall results, including confirmed causal pathways, were presented during the Final Technical Regional Workshops on 16th December 2019 (Karamoja Region), 18th December 2019 (West Nile Region) and 20th December 2019 (Mid-North Region). Technical participants at the regional workshops were instrumental in the development of operational recommendations for interventions that have been incorporated in the final report.

33 OPM, UNICEF, WFP, FAO (2017). Food Security and Nutrition Assessment in Karamoja Sub-Region Karamoja.

34 OPM, UNICEF, WFP, FAO (2018). Food Security and Nutrition Assessment in Karamoja Sub-Region Karamoja.

35 Uganda Bureau of Statistics (UBOS), Makerere University School of Public Health (MakSPH) and UNICEF (2020). Situation of Food Security and Nutrition Assessment in Northern Uganda 2019. Kampala, Uganda

36 6 Research Assistants, 7 Translators and 12 Community mobilisers deployed at different stages of the data collection process and in different communities.

QUANTITATIVE DATA

Quantitative data for this study was drawn from datasets of the FSNAs conducted by WFP and UNICEF. The FSNA follows the SMART survey methodology but with an extended module on food security indicators.

Karamoja region data was drawn from two FSNAs conducted in June 2017[33] and January 2018[34] in order to get an understanding of the seasonality of undernutrition and the risk factors. The majority of communities in Karamoja have one agriculture season per year, leading to a lean season hunger gap of March to August and post-harvest season of September to February.

The June 2017 FSNA comprised of quantitative surveys in all the seven districts in the region namely: Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak. Overall, the FSNA was designed as a cross sectional household survey using two-stage cluster sampling that provided representativeness at the district level. It was undertaken based on the internationally recognised SMART methods for survey design and anthropometric assessments. In total, the assessment covered 5,108 households drawn from 248 clusters.

The January 2018 Karamoja FSNA comprised of a quantitative survey conducted from 11th to 26th January 2018 in seven districts namely: Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak. This FSNA was designed as a cross-sectional household survey using two-stage cluster sampling based on the internationally recognised SMART method for survey design and anthropometric assessments. 255 clusters (villages) were assessed with the sample comprising 5,028 households; 5,653 children; 4,914 women of child-bearing age; 1,472 and 1,750 women and children assessed for anaemia.

Data for Mid-North Region was drawn from an FSNA conducted by UNICEF from 23rd May to 2nd June 2019, under the Development Initiative for Northern Uganda (DINU) arrangement.[35] The assessment covered four districts namely: Kole, Pader, Omoro and Otuke.[37] This FSNA was designed as a cross-sectional household survey using two-stage cluster sampling based on the SMART method for survey design and anthropometric assessments. In total 2,500 households were selected from 123 clusters (villages) distributed among the four districts.

Data for West Nile Region was drawn from an FSNA conducted by UNICEF between 23rd May and 14th July 2019, under the Development Initiative for Northern Uganda (DINU). The assessment covered six districts namely: Adjumani, Koboko, Moyo, Nebbi, Yumbe and Zombo. This FSNA was designed as a cross-sectional household survey using two-stage cluster sampling based on the internationally recognised method for survey design and anthropometric assessments. In total 4,360 households were selected from 184 clusters (villages) distributed among the six districts as below.

All the quantitative data for the three regions was analysed for the purposes of the study to ascertain any statistical associations between nutritional status of children and other indicators collected during the study. Where needed, the Emergency Nutrition Assessment (ENA) software was used to generate z-scores and estimates for Wasting, Stunting and Anaemia at lower levels. Estimating the statistical relationship was done through Logistic regression and Chi-square procedure in STATA 13 and SPSS 23 software. Results of this analysis are annexed to this report as Annex IV.

37 Only considered mid-north districts in the DINU operation area.

QUALITATIVE DATA

SAMPLING

The objective of the Link NCA qualitative survey sampling framework was not to be statistically representative of the target population but rather to be qualitatively representative of different population segments living in the region. For the collected qualitative data to represent realities of the majority of households, purposive sampling procedure was used to select districts and villages but ensuring that all livelihood zones are represented. Attention was also paid to availability and accessibility of health care services, prevalence of severe acute malnutrition and recurrent food insecurity episodes.

The sampling frame for the qualitative survey is described below:

Region	Livelihood zone	District	Village	Why sampled
Karamoja	South-eastern Cattle Maize Zone	Amudat	Moron	Cultural perspective unique from the other two districts; long distance to nearest health facility; high acute malnutrition
	Western Mixed Crop Farming Zone	Napak	Kaurikiakine	Prolonged dry spells; sanitation problems high malaria prevalence; social conflicts
	Sorghum and Livestock Zone Sorghum and Livestock	Kotido	Loodoi	Prolonged dry spells; conflicts & cattle theft; high diarrhoea, high acute malnutrition, poor health care services
	North-eastern Highland Apiculture & Potato Zone	Kaabong	Lochoto	Cattle raids; cross border conflicts; crop pests and diseases; long distance to health facility
Mid-North	Simsim Groundnut Sorghum Cattle	Pader	Labong	Recent acute malnutrition episodes, prolonged dry spells; crop pests and diseases; flooding
			Lapul-Ocwida	Recent acute malnutrition episodes, prolonged dry spells; crop pests and diseases; flooding; presence of nodding syndrome cases
	Mid-North Simsim-Maize Cassava	Omoro	Aromo	Food insecurity, nodding syndrome, high malnutrition rates
		Otuke	Apoke	Prolonged dry spells; crop pests & diseases flush floods and water logging; frequent food insecurity crises

Region	Livelihood zone	District	Village	Why sampled
West Nile	Tobacco Cassava Sorghum	Koboko	Kingaba	Recurrent droughts; erratic rainfall; poor transport services, refugee hosting district
	West Nile Simsim Sorghum Livestock	Nebbi	Jupuyik	Less humanitarian interventions; semi-arid land; poor health facility coverage; recurrent food insecurity; high addiction to alcoholism
		Moyo	Nzerea north	Recent malnutrition episodes; refugee hosting district
	West Nile Arabica Coffee Banana Zone	Zombo	Patek	Erratic rainfall leading to flush floods, only district in the livelihood zone

Table 4: Sampling frame for the qualitative inquiry

At the village level, the following categories of participants were selected to participate:

a. Community leaders (village leaders, religious leaders and other prominent community figures);
b. Traditional healers and / or birth attendants;
c. Health centre personnel (nurses, health extension workers);
d. Girls who have had early pregnancy / early marriage;
e. Representatives of community-based organisations;
f. Mothers and fathers of children under 5 years of age (both malnourished and positive deviants);
g. Grandparents of children under 5 years of age

TEAM COMPOSITION

Five qualitative data collection teams were composed, each led by a Deputy Analyst and under the overall supervision of the Link NCA Lead Analyst. Each team was assigned a research assistant, a translator and a community mobiliser. Recruitment of research assistants and translators was based on their prior experience in qualitative data collection and the locality selected for the survey. The main role of the research assistant was to help the Deputy Analyst in coordinating the meetings and taking clear notes as the discussions went on, whereas the translator was recruited to help transmit information from the Deputy Analyst to the participants and back. Additionally, a community mobiliser was recruited locally in each village. The main role of the community mobiliser was to ensure equitable selection of participants for each focus group discussion in coordination with community leaders and to carry out any support functions, as needed.

Prior to the commencement of data collection, the Deputy Analysts who were to lead the survey teams received three-day training in Kampala. After initial recruitment of research assistants and translators, the team members received a detailed two-day training, which took place in Gulu town from 10th to 11th September 2019. The training included, among others, modules on survey methodology and tools as well as a detailed explanation of ethical considerations to be respected during the study. A series of practical tests were integrated into the learning process to test the team's level of comprehension of key concepts and practices and to ensure that high quality standard of the data collection was met.

QUALITATIVE STUDY TOOLS

The qualitative survey team used Semi-structured Interviews (SSI) and Focus Groups Discussions (FGD) as two principal data collection methods. The team also used participatory tools to reveal real risk factors for undernutrition in the survey localities.

The selection of participatory tools included:

a. Historical calendar
b. Seasonal calendar
c. Storytelling
d. Daily activities chart
e. Meal composition chart
f. Household expenses
g. Health journey / Therapeutic itinerary
h. Gender boxes
i. Agree/disagree game
j. Courage to change game
k. Risk game

The semi-structured interviews and focus group discussions were guided by detailed interview tools, which covered key topics related to the risk factors validated during the initial technical workshop. The detailed survey tools are annexed at the end of this report (Cf: Annex III).

DATA COLLECTION

The qualitative survey was conducted in selected communities (as per the sampling frame in) from 13th September to 10th October 2019. This period was a post-harvest period for all the regions of study, except for some areas in Karamoja region where there was late harvest due to late onset of 2019 rains that forced late planting by those communities.

The qualitative survey team spent six consecutive days in each selected community, with the length of SSIs or FGDs limited to one hour or one and a half hours maximum. Both focus group discussion and interviews took place between 10:00 and 17:00 hrs from Monday to Saturday. The community's availability and their daily routine were managed through communication between the survey team and the community leadership, under the liaison of the community mobiliser.

The last day of data collection in each sampled community was dedicated to a restitution of findings to community representatives. The objective of the restitution meetings was to seek the community feedback on the interpretation of collected data and to rate the perceived risk factors.

At the end of the survey, a total of 144 FGDs, 40 SSIs and 12 community restitution meetings were conducted with a total number of 2034 of participants.

Region	Village	FGDs	SSIs	Community observations	Community restitution	Days	No. of participants	No. of female participants
Karamoja	Kaurikiakine	12	4	3	1	6	149 (+28*)	98 (+18*)
	Lochoto	12	3	1	1	7	142 (+15*)	99 (+7*)
	Loodoi	12	3	3	1	6	144 (+17*)	108 (+6*)
	Moron	12	5	1	1	6	148 (+23*)	99 (+9*)
Mid-north	Apoke	12	3	2	1	7	154 (+25*)	91 (+10*)
	Aromo	12	3	2	1	8	154 (+25*)	91 (+10*)
	Labongo	12	3	2	1	7	154 (+25*)	91 (+10*)
	Lapul-Ocwida	12	3	3	1	6	149 (+18*)	105 (+5*)
West Nile	Jupuyik	12	3	2	1	6	158 (+27*)	110 (+20*)
	Kingaba	12	3	1	1	6	141 (+12*)	101 (+3*)
	Nzerea north	12	3	3	1	6	142 (+15*)	110 (+3*)
	Patek	12	4	3	1	6	141 (+28*)	101 (+17*)

*- number of participants at the restitution meetings.

Table 5: Summary of community consultations

ETHICAL CONSIDERATIONS

The following provisions were respected during the Link NCA study:

a. Relevant authorities, including the Office of the Prime Minister (OPM), Ministry of Health (MoH), Development Initiative for Northern Uganda Regional Offices and District Local Governments (DLGs) in the 18 districts were duly informed about the study by Action Against Hunger (Uganda Office). All letters for the National and Regional Workshops were signed by the OPM and coordination done by UNICEF;

b. The qualitative survey participants were selected equitably, and their informed consent was sought to ensure that they participated in the study voluntarily;

c. The participants of the qualitative survey were able to participate in more than one FGD, if they chose to, but community leaders/mobilisers were advised to spread the selection of participants across the whole village;

d. The DLG leadership was informed of the selection of villages in their district for a qualitative study at least a week in advance. During the initial meeting they received a detailed planning of research activities in the district to facilitate selection of the community mobilisers. The detailed planning was subject to change, if required by community members. The qualitative data collection team accommodated to their routine as much as possible, considering the time constraints of the study;

e. The anonymity of participants was ensured during all stages of the study (data collection, data analysis and data storage). Their names were neither collected nor shared;

f. The qualitative data collection team organised a community wrap-up discussion during the last day of the data collection to allow communities to review their findings, rank identified risk factors and prioritise actions for the way forward.

STUDY LIMITATIONS

- **Scope and heterogeneity**: The present study, covering 18 districts across three regions of Northern Uganda, has the largest scope operationalised thus far during this type of study. As the standard Link NCA methodology is parametered to analyse causal pathways at a district and/or comparable level, methodological adaptations had to be made to allow for a meaningful study of causal mechanisms for such a large and heterogeneous area. As a replication of 18 standard Link NCA studies was not feasible for a number of reasons, the adopted methodology aimed nevertheless to ensure the qualitative and quantitative representativity of the entire zone. However, the time designated for a qualitative data collection, although substantial, did not allow for a complex study of the dynamics at a district/livelihood zone level. While certain differences were observed and are rightfully highlighted in the findings, certain information might have been omitted or distorted when causal pathways were designed to represent a generally applicable mechanism for the respective region and/or the entire study zone. In addition, results presented in this report are only valid for populations in the districts/regions covered by this study and cannot be extrapolated to other locations in country without a proper compatibility analysis.
- **Use of existing datasets:** The present study made use of existing datasets compiled during regular FSNA exercises instead of collecting the quantitative data via a standard Link NCA quantitative survey. While this approach allowed for a mutualisation of resources and contributed to a prevention of survey fatigue in concerned communities, it also limited a number of variables, which could be correlated with a nutritional status of children living in surveyed households. In other words, while the FSNA datasets covered a variety of standard indicators used in Health and Food Security surveys, other indicators used frequently in the Link NCA process were missing. This translates into evidence gaps in causal pathways presented throughout this report. In this respect, it is important to note that a lack of evidence for certain risk factors should not be misinterpreted as a lack of causal relationship. In addition, while all standard data quality assurance measures were put in place for bivariate and multivariate analyses conducted during this Link NCA exercise, slight differences between official FSNA data and the data presented in this report might occur.
- **Statistical associations**: It is advised to appraise statistical associations with caution as observed links do not necessarily prove the causality, while unobserved links do not mean that the causality does not exist. Correlations thus must be considered within a larger framework, triangulated with other sources of data, and as such can be used for a prioritisation of current and future interventions.

FINDINGS

HYPOTHESISED RISK FACTORS

The identification of hypothesised risk factors was based on a systematic literature review (using the Link NCA Pathways to Undernutrition module and all grey literature available locally), supported by a series of exploratory interviews with key informants, such as representatives of relevant governmental institutions, non-governmental organisations and/or academia with an in-depth knowledge or work experience in the study zones.

Twenty-five standard hypothesised risk factors outlined in the Link NCA methodology were properly documented, presented and examined during a series of regional workshops attended by technical experts in each study zone. The initial technical workshop for Mid-North region took place on 12th September 2019 in Gulu[38], followed by the workshop for West Nile region on 23rd September 2019 in Arua[39] and the workshop for Karamoja region on 27th September 2019 in Moroto.[40]

The technical experts in each region retained for field-testing a set of hypothesised risk factors most likely to have an effect on undernutrition in respective study zones. Nineteen risk factors were selected for West Nile region while 18 risk factors were selected for Karamoja and Mid-North regions each. A complete list of hypothesised risk factors for each zone is presented in Table 7 together with technical experts' rating, who categorised risk factors according to their anticipated contribution to undernutrition in the study zone from one (risk factor expected to contribute marginally to undernutrition) to five (risk factor expected to contribute substantially to undernutrition).[41]

Risk factor	West Nile	Karamoja	Mid-North
Limited access to quality health services	2.75	2.40	3.80
Limited use of health services	3.05	3.15	3.60
Low birth spacing/unwanted pregnancies	4.05	3.95	3.70
Low birth weight	3.25	N/A	N/A
Parental stress	3.15	N/A	3.40
Non-optimal breastfeeding practices	3.70	2.80	3.85
Non-optimal infant and young child feeding practices	4.05	3.20	4.30
Low quality of interactions between a child and caregiver	3.10	3.00	2.95
Low access to food	4.10	4.00	4.35
Low dietary diversity	4.20	4.05	4.40
Use of household income in ways non-beneficial to nutrition status of mothers and children	N/A	3.70	N/A

38 Participants included 14 DLG staff drawn from the Departments of Health, Nutrition and Agriculture; 5 NGO staff drawn from NGOs dealing in WASH, Food security and Nutrition; and two were UN staff.

39 Participants included 18 DLG staff drawn from the Departments of Health, Nutrition and Agriculture; 2 NGO staff drawn from NGOs dealing in WASH, Food security and Nutrition; and two were UN staff.

40 Participants included 24 DLG staff drawn from the Departments of Health, Nutrition and Agriculture; 4 NGO staff drawn from NGOs dealing in WASH, Food security and Nutrition; and two were UN staff.

41 Cells highlighted in red designate top three most plausible risk factors, while cells highlighted in green designate the least plausible risk factors.

Risk factor	West Nile	Karamoja	Mid-North
Low diversity, access and availability of income sources for households	4.20	3.65	4.00
Malfunctioning market or supply system	N/A	N/A	3.20
Low coping capacities/resilience	3.00	3.40	3.40
Low access and availability of water (quality and quantity)	3.55	3.05	4.05
Poor sanitation practices	3.15	4.15	4.40
Poor hygiene practices	3.50	3.95	4.60
Heavy workload	N/A	2.70	N/A
Low female autonomy/decision making	3.10	N/A	N/A
Low social support for women or households	3.25	2.90	3.80
Early marriage and/or Early pregnancy	3.95	3.05	3.75
Low nutritional status of women	3.75	3.70	4.35

Table 6: List of hypothesised risk factors validated for field-testing during initial technical workshops in each study zone, including technical experts' rating

I -WEST NILE SUB-REGION

A.1 HEALTH

The provision of health care services in the West Nile sub-region follows a six-tier health care delivery system beginning from Health Centre I (VHT) to Health Centre II (H/C II), Health Centre III (H/C III), Health Centre IV (H/C IV), district general hospital and Regional Referral Hospital (RRH) based in Arua. In 2000, the Government of Uganda introduced a new layer in the provision of health care services, in which volunteers are trained to serve rural communities. These volunteers are referred to as Village Health Teams (VHT) and they are generally designed to help increase uptake of health services in communities. They are now officially categorised as Health Centre I, and teams should be situated at every village. The H/C II is situated at parish level, H/C III at sub-county level, H/C IV at county (in some cases district), general hospital at the district and RRH at a district with adequate proximity to other district hospitals within the sub-region.[42]

The most recent census data from 2014 estimates the population of West Nile region at 2,660,667.[43] The Ministry of Health indicates that by 2018, West Nile sub-region had 350 health facilities with 1 regional referral hospital in Arua municipality, Arua district. The 349 health facilities included 38 private clinics, 158 HC II (143 government and 15 private), 129 HC III (89 government and 40 private), 11 HC IV (9 government and 2 private), 12 general hospitals (5 government and 7 private) and 1 special AIDS clinic run by the Uganda AIDS Commission.[43]

Access to and utilisation of health services

Participants of focus group discussions indicated high motivation to seek health services from government health facilities. The preference to seek services from government facilities was based on the availability and provision of free medical care and improving customer care attitude from most of the health workers. Participants appreciated the timely provision of antenatal care services and responsive treatment for young children, especially the diagnosis done at the Outpatient Department (OPD). They also appreciated the roles of the health workers at community level, especially the VHTs and the health assistants, who endeavour to sensitise them on health messages on good sanitation practices, prevention of malaria at home level and protection of water sources, among others.

> *VHTs exist at virtually every village in our community and they have been trained to mix nutritional formulas for the malnourished children, they are advised to move with the MUAC tape like a mobile gadget to identify malnourished children in the communities and make immediate referrals for cases they cannot handle. Key Informant,*
>
> **Patek village**

42 Ministry of Health. 2018. National Health Facility Master list 2018: A complete list of all health facilities in Uganda. Available at: http://library.health.go.ug/publications/health-facility-inventory/national-health-facility-master-facility-list-2018

43 Uganda Bureau of Statistics (2014). National Population and Housing Census 2014 Main report.

According to the community participants, availability of health facilities is not of any worry to them. However, they face some geographic barriers in their quest to access services from the available health facilities, whether private or government. Firstly, most of the tier II and tier III health centres are located in a distance of about 5km or more. As there is limited availability of transport services in the communities, most participants said they just have to walk to the facilities since only few households own bicycles or motor bikes. Hiring motorcycles, while temporarily advantageous, presents financial barriers: costs range between Ug.shs 5,000 and 10,000[44] for a one-way trip to the health centre, which are sometimes too high for the poor households. This was particularly concerning for pregnant women and mothers, as they could not easily predict when they might urgently need a health facility. Community participants revealed that natural calamities such as heavy/prolonged rains lead to road network breakdown, yet some areas have a rocky topography making transport even a bigger challenge than it should have been. Because of the long distances with poor transport, roadside deliveries and use of traditional birth attendants were reported among pregnant women, which predisposes them to poor quality health services increasing maternal and child morbidities and mortalities. The other reported outcome of this has been increased use of traditional treatment options, particularly use of herbs and holy water among the Muslim community.

The second and most reported challenge among the participants and health workers is the frequent drug stock-outs at the government health facilities, which decrease the quality of care. All communities where interviews were conducted reported that drugs and other medical supplies to government health facilities are provided by the National Medical Stores (NMS), but stocks are frequently depleted within two weeks' time. Moreover, it was reported that supplies are not re-stocked monthly as communities expect, but rather, quarterly. This forces health workers at the facilities to refer patients to private drug shops and pharmacies to access the drugs. Health facility personnel said this makes them feel that the course of treatment is incomplete, as diagnosing a patient correctly is insufficient; ensuring access to medicines completes the health seeking itinerary of any patient. Anti-malarial drugs are frequently supplied by the NMS, but these also do not last long before patients are referred to buy the same from private providers. Crucial medical equipment was similarly lacking; devices reported to be out of stock included blood pressure machines, delivery and postpartum resuscitation equipment. These challenges, and their approximate order of depletion, are well known in the community.

> *Drugs get over in two weeks from the time NMS supplies. Antimalarial drugs are depleted first before any other drug in the health facilities. We go to the clinics when the drugs get over from the health facilities for treatment, but it is expensive.*
>
> **Focus group participant, Patek Village**

Health workers reported the inadequate stock of nutrition supplements especially for management of Moderate Acute Malnutrition (MAM) since most Severe Acute Malnutrition (SAM) cases are referred to the district hospitals for better management. Although the Ministry of Health encourages that all moderately malnourished children under five years be managed with Plumpy-Nut[45], this supplement is not readily available at health facilities. Indeed, it was alluded by the health workers that the supplement is mainly provided by partners, including NGOs and the UN, but not government. When available and adequately supplied for the malnourished children, it was revealed that other household members also eat the food leaving so little for the targeted children and women, which delays their recovery.

44 Approximately $1.32- $2.64 USD.

45 A Ready-to-Use Therapeutic Food (RUTF) formulated for the nutritional rehabilitation of children from six months of age and adults suffering from acute malnutrition.

> *Incidentally many adults and children are malnourished and tend to eat the same PlumpyNut® we give to children below 5 years, yet we do not have enough stock.*
>
> **Health facility personnel**[46]

It was clear during the qualitative inquiry and from interviews with key informants that most of the health workers have received professional training that is adequate to provide satisfactory health care. Most health centres have Enrolled Nurses and Midwives to manage normal deliveries. Per semi-structured-interviews, these persons indicated they have had sufficient practical training in ANC, deliveries and handling non-complicated outpatient cases. However, two key issues were frequently mentioned as barriers to providing sufficient health services to the populations. Firstly, most health personnel have inadequate training in nutrition and malnutrition case management, which forces them to refer most of the malnutrition cases to the hospitals. Secondly, nearly all lower level health centres are understaffed. It was reported that most of the health centre IIs and IIIs that should have at least a Clinical Officer are left to the few nurses and midwives, in event of the Clinical Officer's temporary or extended absence. These few personnel left to the facility said they feel overwhelmed by the ANC cases, deliveries, child illnesses and adult patients who line up at the health facilities as early as 8:00am. When health facility personnel feel overwhelmed by the workload, they frequently were perceived as, or admitted to, being rude. Some health workers even admitted that they sometimes just advise patients to seek services from private providers or herbalists to reduce the queues at the facilities. Health workers also indicated their dissatisfaction with patients who do not follow advice on how to take prescribed medicines, leading to recurrent infections and unnecessary admissions. Though the few workers are doing their best to manage as many patients as they can, community members complained that some facilities open so late and close so early, leaving many patients unattended to, a fact that health workers said results from workload and exhaustion during the previous shift.

Delayed promotions, low and delayed salaries, non-provision of accommodation near the health facilities, and non-provision of transport for staff who live a distance from the health facilities were mentioned as the other critical factors leading to reduced motivation to work. Some health workers said that they had received rank promotion but had not received a corresponding salary promotion, with time lapses of even up to two years. They lamented that the salaries are not only low but sometimes delay for reasons best known to their bosses at the district headquarters. The lack of accommodation at the health centres forces health workers to rent in nearby town centres, but the government does not provide for refund of this rent expense.

> *We do not have staff accommodation at the health centre, so we are forced to stay far away from the health centre. We sometimes come late to work because the roads are so bad, and we have no reliable transport.*
>
> **Health facility personnel, Moyo district**

Facility infrastructure further introduces quality of care concerns. Some of the health facilities visited during the inquiry lacked adequate water and electricity supply, making it harder for health workers to provide the needed services. Health workers narrated the pain they go through in managing deliveries at night and offering other emergency care. It was a shock to hear how candles and patient phones illuminate deliveries at night; and then after that they cannot even have water to wash their hands or for caretakers to use for washing and cleaning utensils, increasing the risk of infection to both mother and child. While this increasing the risk of sepsis, health facility personnel

46 Location withheld for confidentiality reasons.

narrated the struggle to ensure sufficient water is available on-site, when a water point is not on-premises.

Mothers of children under five years old expressed other socio-cultural barriers to health-seeking, saying that they often are compelled to seek permission from their husbands before making any decision on which health facility to access. Much as it is generally agreed that sick children and mothers should go for medical advice and treatment, the decision on which health facility to use lies primarily with the man. In follow-up interviews with men, they said this is not done to limit access to health services but only to monitor movements of their wives. They also indicated that in most cases medical services involve a monetary cost, which is entirely borne by the man, and thus they should be left to always make a decision on where medical help should be sought by any of the household members. It was mentioned by some men that their wives do not necessarily need to seek permission if they are to go to government facilities, without a necessary follow-up in a pharmacy, as services in the government facility are free.

Whenever child illness is believed to be resulting from evil spirits or bad omen in the family, then community members prefer to use holy water for treatment. The use of holy water, a practice equally found in the Muslim and Christian communities, is most often sanctioned by and managed by the religious leaders. The holy water, termed "***Blessed water***" among the Christians and "***Mahaya***" among the Islam followers, is either consumed by or sprinkled all over the body of the child depending on the advice given by the religious leader. Religious leaders alluded to the fact that illnesses treated using holy water are those resulting in severe acute convulsions and suspected mental illnesses.

> *We use 'blessed water' to chase evil spirits from convulsing children. We make them either drink it or we sprinkle on their bodies and house of the family.*
>
> **Key informant, Moyo district**

It should be noted that convulsions and mental illnesses can lead to brain damage and/or delayed development. Indeed, further inquiries with mothers pointed to the fact that an increasing number of children treated with holy water are not getting healed and end up being hospitalised for further treatment.

Results from the FSNA conducted between May and June 2019 indicate that about 82 per cent of the households in the sub-region seek their first medical help from government facilities[47]. From these 93 per cent, about 10 per cent indicated they prefer going to the main hospital first, 75 per cent prefer going to any of the lower facilities (HC II, HC III) while 8 per cent prefer seeking help from the VHTs first. Besides only seeking first help, the overall utilisation of health services from government facilities was recorded at 93.7 per cent in the sub-region.[48] Though there is on-going sensitisation to all communities to seek first help from VHTs, the uptake of the same is still low. Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between these indicators, which means that the primary health service sought was not a risk factor associated with wasting, stunting, or anaemia in West Nile Region (Cf. Annex IV).

47 Weighted prevalence of the six districts of West Nile who sought medical help from the hospital or health centre first; 2019 FSNA.

48 Weighted prevalence of the six districts of West Nile who go most to main hospital or health centre when sick; 2019 FSNA

Key access and quality barriers of health services are summarised below in Figure 5: Summary of key barriers to healthcare in West Nile sub-region.

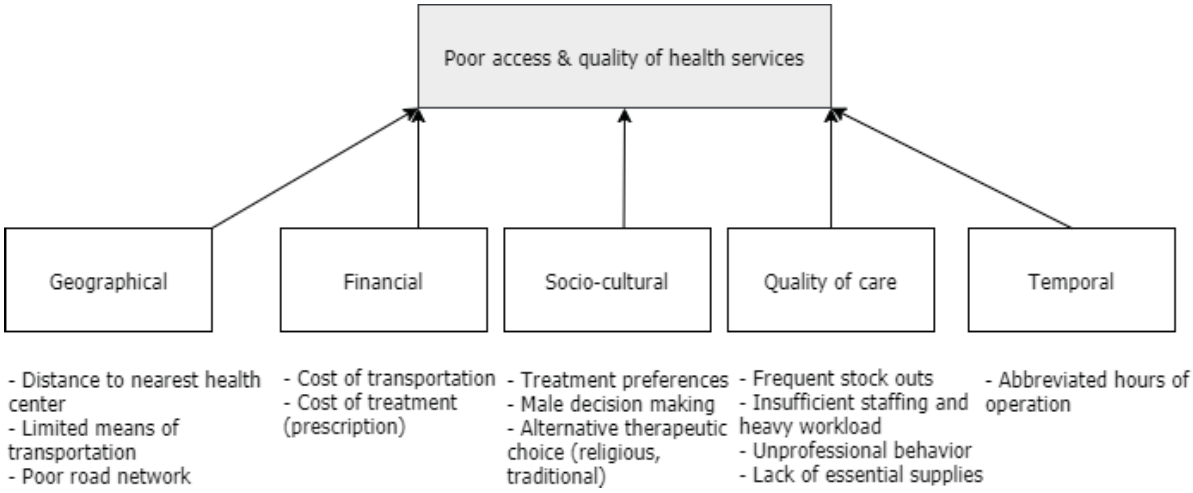


Figure 5: Summary of key barriers to healthcare in West Nile sub-region

Immunisation, Deworming, and Vitamin A

Mothers interviewed during the community discussions indicated their acceptance and comfort with ensuring that their children are immunised. They said immunisation is not only done at the health facilities during pregnancy and after delivery, but also through mass immunisations conducted by the government for all children between 1 year and 15 years of age. They mentioned that their children are immunised against measles, polio, cough, cervical cancer, and pneumonia. At the time of the qualitative survey, the government had announced a country-wide measles-rubella immunisation.

The FSNA data collected in 2019 shows that measles vaccination in the sub-region stands at 94 per cent.[49] Subsequent analyses, taking into account anthropometric measurements of children, revealed a significant association between these indicators, in that it is protecting of wasting and anaemia. The same survey indicates that 88.9 per cent of children were dewormed[50], and deworming was significantly protective of anaemia, and potentially protective of wasting (p-val <0.1). A less intuitive relationship was identified between stunting and deworming, in that deworming was associated as a risk factor for stunting. Further analysis showed Vitamin A supplementation coverage in West Nile is 95.4 per cent.[51] Subsequent analyses taking into account anthropometric measurements of children revealed a potential association between these indicators, in that Vitamin A supplementation may be protective of wasting and anaemia (p-val <0.1).

This analysis reveals that further sensitization and encouragement of the communities to take their children for immunization is important in reducing malnutrition and anaemia among the children under five in the sub-region. Counter-intuitive associations should be interpreted with caution; confounding relationships should be investigated further.

Antenatal Care and childbirth

Focus group participants agreed that it is important for pregnant women to go the health facility

49 Weighted prevalence of the six district of West Nile who reported measles vaccination with or without card; 2019 FSNA.

50 Weighted prevalence of the six districts of West Nile who reported deworming with or without card; 2019 FSNA.

51 Weighted prevalence of the six districts of West Nile who reported vitamin A with or without card; 2019 FSNA.

for consultations to ensure their baby is in good health and good position. Though some women testified they start going for antenatal care consultations at two to three months of pregnancy, others said they prefer visiting the health facility as soon as they realise they are pregnant. Mothers mentioned the benefits from ANC visits to include receiving antimalarial drugs, getting iron tablets, being advised of any growth deformities of the foetus, learning how to eat well during pregnancy, etc. It was confirmed during the community discussions that visiting a religious leader or traditional healer to ensure the baby grows well is highly discouraged. It was common knowledge that religious leaders may add to the blessings to the born baby but not correct growth deformities of the one still in the womb of the pregnant mother.

Focus group participants promised to maintain and even further improve on the ANC attendance as they deem this practice crucial for proper development of the child and as a way of ensuring good health of the child at and after birth. A health personnel at one of the visited localities asserted that they occasionally organise ANC camps in which they sensitise all women of reproductive age on the benefits of ANC attendance.

Results from the 2019 FSNA support testimonies of the female participants at the community discussions. According to this survey, 96.3 per cent of the women in the sub-region seek formal ANC advice from a health professional,[52] with 4.1 per cent doing so from qualified Medical Officers, while the 92 per cent visit health facilities with a qualified nurse or midwife.[35] Only 3.6% of the women were found not to have visited a health facility for ANC during their most recent pregnancy. ANC attendance is good across the sub-region with only Zombo and Yumbe districts having a slightly higher non-attendance of 5% and 6% respectively.

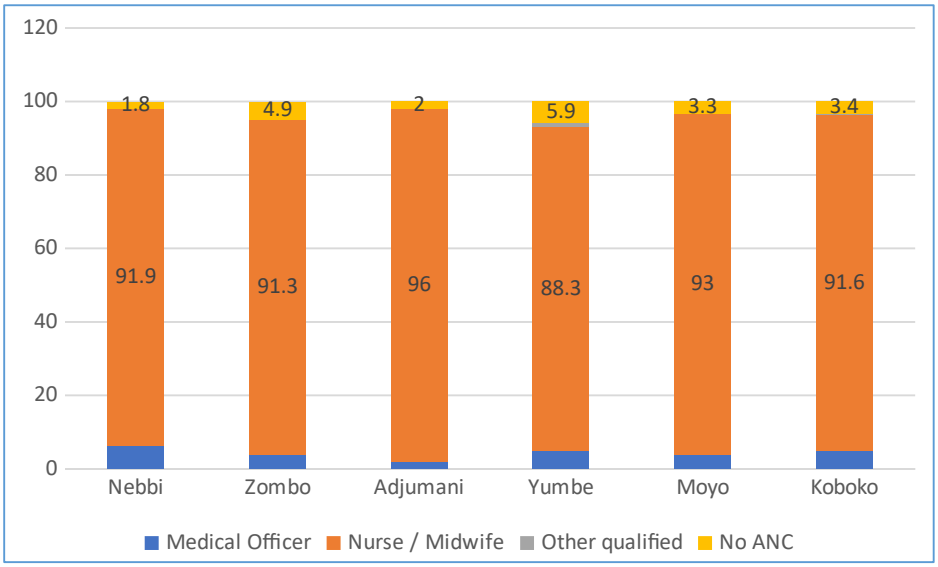


Figure 6: Provider of ANC in West Nile sub-region[35]

Other findings from the 2019 FSNA survey indicate that 19.6% of the women had two to three ANC visits, with 76.0 per cent registering four or more visits.[53] Only 0.9 per cent visited the health facilities once for ANC during their most recent pregnancy. Results on the gestational age at first ANC visit slightly differ from those alluded to during the qualitative enquiry, where women vehemently affirmed the importance of early ANC presentation, as only about 42.3 per cent of the women were found to have attended ANC with the pregnancy less than four months.[53] Another 43.8 per cent had their first ANC visit when the pregnancy was four to five months old while 9.1 per cent did so after six months

52 Weighted prevalence of the six districts of West-Nile, percentage of women who sought ANC from medical doctor or nurse/ midwife.

53 Weighted prevalence of the six districts of West-Nile. Uganda Bureau of Statistics (UBOS), Makerere University School of Public Health (MakSPH) and UNICEF. 2020. Situation of Food Security and Nutrition Assessment in Northern Uganda 2019. Kampala, Uganda

into the pregnancy.[53] Concerning childbirth, most women stated during the community meetings that they prefer to give birth from the health facility where there are qualitied doctors and midwives. Desire aside, they recalled aforementioned barriers to health seeking which prevent them from reaching the health facilities at the time of birth. Most noticeable were the geographic challenges: long distances with poor transport and road network. As most of the roads are of murram[54] nature, and bicycles and motorcycles are the most available transport means, mothers expressed feeling the only options available to them were too dangerous, especially at a time of intense labour pains forcing them to give birth at home or with the help of Traditional Birth Attendants (TBAs). Community participants expressed their sorrow at some mothers who end up delivering on the roadside as they struggle to reach the health facilities.

> *Pregnant women still deliver on road mainly because they have to walk a long distance to reach the health centre which is about 7km and during rainy season the roads get impassable.*
>
> **Focus group participant, Patek Village**

It was clear during the interactions with medical personnel and mothers that the government has discouraged the practice of TBAs helping women in rural areas to deliver. On their part, TBAs insisted that they only help mothers to deliver when they are in the late stages of labour, at which point a mother can no longer be taken to the nearest health centre. After the government discouraged TBAs, some mothers now resort to taking herbs that can enable them to easily give birth from home without the help of either a TBA or medical personnel.

> *TBAs were stopped from delivering mothers in the village so I usually refer mothers to the health facility to deliver. I only deliver a mother when the baby is about to come out. Health workers sometimes call me to help them in the health centre when they get overwhelmed*
>
> **Key Informant (TBA), Koboko District**

> *Usually I give herbs to the mother to stop bleeding after she has given birth but sometimes the herbs do not work because the women tend to over bleed. What I do is to refer them immediately to the health centre for proper management*
>
> **Key Informant (TBA), Koboko District**

Health workers at the visited health facilities reported numerous challenges affecting delivery. Many feel overwhelmed by the hours and responsibilities when the clinic is understaffed. Furthermore, health workers pointed out the lack of basic equipment including Maama Kits[55] at the health facilities. They said they, in most cases, advise mothers to come with their own kits and other material to be used at birth, but this is a big challenge for poor mothers who can only afford to come with a pair of gloves and one reusable polythene bag.[56]

There was mention in some of the localities that they still face a challenge of girls giving birth at quite an early age, with some of them giving birth as early as 14 years. Much as this practice was found to be intolerable in some localities, while other community participants did not find any problem with a

54 Packed dirt.

55 Standard kit for clean, safe delivery in Uganda. These items include a plastic sheet, a preparation sheet, cord ties, surgical gloves, cotton wool, surgical blades, soap, and a child health card.

56 Mothers cannot afford to get good quality plastic bags and so end up using ordinary shopping bags.

15-year-old girl giving birth as long she was married. It was mentioned during the discussions that Islam does not prohibit a girl of 15 years from marriage, yet boys can marry at 18 years.

With regard to maternal post-delivery care, health personnel recommend six to eight hours of rest after delivery and then 24 hours of monitoring in the clinic. During that period, the mother's blood pressure is monitored as well as her temperature, post-delivery recovery, and signs of infection. The baby is monitored for cord bleeding and any signs of infection. Mothers are counselled on postpartum care but not monitored for the same as the medical personnel are typically overwhelmed by the case load. Mothers are generally advised on provision and changing of pads, proper nutrition, hygiene, and light exercise. They are also sensitised on self-monitoring of signs of abnormal bleeding.

Mothers expressed willingness to change practices deemed not to be proper in order to improve their health and give birth to healthy children. Particularly, they suggested discouraging births and marriages for girls below 18 years as they believe their uterus is not well developed; encouraging all mothers to give birth from the nearest health facility to reduce maternal and post-natal mortalities; and discouraging mothers from applying herbs that they believe reduce the intensity of labour pains. Table 7 summarises risks regarding selected ANC and childbirth behaviours.

During the focus group discussions, some mothers said they are able to rest for as long as three months from general farm work. However, they can only afford to rest from major household chores for a maximum of two weeks after birth.

Behaviour	**Perceived risk**	**Community justification + other information**
Non-attendance of antenatal care	High	It is considered important to check the position and a health status of a baby. Women declared they consult a doctor or nurse or mid-wife at some point during their pregnancy and then each time they receive an appointment.
Childbirth at home	High	Women admitted that childbirth at home can be traumatising if a child is in a wrong position or if they lose too much blood. They said they are forced to give birth at home after failing to reach the health facility yet government has discouraged TBAs.
Childbirth at 15 years of age	High	Young woman's uterus is not yet prepared to keep a baby for nine months, leading to many pre-term births.
Pregnant mother not eating well	Medium	Women believe a pregnant mother should eat well, even when they feel weak to ensure proper health of the mother and the baby in the womb. They are not afraid of the baby growing very big.
Pregnant mother fasting	Low	A pregnant woman fasting has no effect on the baby as long as they eat well at the time of breaking the fast. In fact, fasting may ensure blessings to the mother so that she lives well.
Women working normally when pregnant	Low	Working is only a problem if the pregnant mother is overworked, which may cause a miscarriage or pre-term birth.
Behaviour	Courage to Change	Community justification + other information

Photo 1: Maternity ward at Nyapea Health Centre IV, Zombo district

Child illness

Focus group participants and key informants explained that the most common illnesses in the sub-region are malaria, coughs, diarrhoea, skin diseases, and convulsions.

Malaria and Fever

Focus group participants mentioned malaria (and/or fever) as the most prevalent infection in children under five and pregnant mothers. They revealed that malaria affects them throughout the year but is more prevalent during the months of March to May and July to October. Malaria was explicitly identified as the disease that causes anaemia among children and pregnant women and can be fatal if not treated on time.

Community participants said that children and mothers not sleeping under Insecticide Treated Nets (ITNs) are most vulnerable to malaria, as they are more exposed to mosquito bites. They alluded to the fact that the government last massively distributed nets about three years ago and currently some households are using torn mosquito nets. On a positive note, mothers said that whenever they can, children under two years old are prioritised for any available mosquito nets.

> *The last time we got nets from the government was close to three years ago and nets children now use are torn. We don't see the difference between using torn nets and not using at all for both the children and us the adults*
>
> **Focus group participant, Koboko District**

Participants in one of the visited localities attested to improper use of nets by some mothers. They expressed fear that some mothers tend not to wash the nets for a long time, making them a breeding ground for bedbugs that then inflict more bites on the children. They also said that some mothers leave their children out of bed until later hours of the night and then by the time they are put under nets mosquitoes have already bitten them. Health workers in the visited localities confirmed that malaria is more prevalent during the rainy seasons and treatment options are complicated by the frequent stock outs of antimalarial drugs at the facilities. They expressed willingness to continue sensitising mothers on the use of nets, but also expressed fear that most households are not willing to buy nets as they expect the government to provide these free of charge.

Use of at least one ITN for every two persons in the sub-region increased from 38 per cent in 2011 to 61 per cent in 2016. The use of ITN by children 0-59 months increased from 57 per cent in 2011 to 77 per cent in 2016.[9] According to the 2019 FSNA data, 32.9 per cent of children across the region experienced fever during the recall period.[53] The highest prevalence in 2019 was registered in the Arabica Coffee Banana Zone at 44 per cent.

Acute Respiratory Infections (ARIs)

Focus group participants mentioned ARIs as the second most prevalent illness for children. Common ARIs identified included cough, flu, pneumonia and asthma that are most common during the rainy seasons of March to May and July to October. ARIs were more pronounced in the Arabica Coffee Banana Zone (Zombo district) than the rest of the sub-region due to the relatively long rainy seasons and cold conditions. Mothers said they are unable to purchase warm clothing for their children, which exposes them more to the cold weather, putting them at a higher risk of contracting ARIs. Community members reported unavailability of drugs to treat ARIs at the government facilities, forcing them to resort to private facilities where the cost is as high as Ug. Shs 50,000.[57] Some participants reported use of cheaper treatment options, such as herbs that cost about Ug. Shs 3,000[58] for a 500ml bottle of herbal medicine, yet others are using holy water. Though not as prevalent as malaria, ARIs were perceived to be less easy to control than malaria, due to lack of proper treatment options.

Results from the quantitative survey show symptoms of ARI as the third most prevalent child illness in the sub-region, after diarrhoea. The prevalence in 2019 stood at 2.6 per cent, a significant decline from the 8 per cent recorded in 2016.[9] Symptoms of ARI, which include rapid short breathing, chest pain, and cough, are more prevalent in the Arabica Coffee Banana Zone at 6 per cent.

Diarrhoea

From the focus group discussions, diarrhoea was only reported in Koboko District and attributed to drinking unsafe water. However, findings of the quantitative survey indicate that diarrhoea infection is spread across the sub-region, and is the second most prevalent infection, after malaria.[53] Results show prevalence of diarrhoea of 2019 to be at 5.8 per cent, with the Arabica Coffee Banana Zone having the highest prevalence at 8 per cent. This is lower than the prevalence of 16 per cent recorded in 2016.[9]

Scabies

During the qualitative enquiry, skin infections were only reported in the Tobacco Cassava Sorghum livelihood Zone. The infection was associated with the high levels of bed bug infestation in the community and bathing dirty water.

57 Approximately $13.30 USD.

58 Approximately $0.80 USD.

Table 8 summarises seasonal patterns of major child morbidities, as captured in the qualitative inquiry and secondary data review.

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Climate												
Dry season	+++	+++				++					+++	+++
Rainy season			+++	+++	+++		+++	+++	+++	+++		
Health												
Malaria	++	++	+++	+++	+++	++	+++	+++	+++	+++	++	++
Diarrhoea	+	+	+++	+++	+++	+	+++	+++	+++	+++	+	+
ARIs	+	+	+++	+++	+++	++	+++	+++	+++	++	+	+
Malnutrition	+	+	++	+++	+++	+	++	++	+++	+++	+	+
Fever	+	+	+++	+++	+++	++	+++	+++	+++	+++	++	++
Scabies	+	+	+	+	+	+	+	+	+	+	+	+

Table 8: Seasonal calendar of main childhood illnesses in West Nile sub-region

During the discussions, most mothers indicated that they take care of their children, except in some circumstances when they leave them under the care of house helps or other relatives (including siblings) when the mother leaves for income generating activities. As mothers spend the majority of their time with children, they said they could readily detect illness in their child and promptly act. Most mothers revealed that they seek treatment mainly from the health facilities where health services are provided free of charge, but when it requires that the children or women themselves be taken to private clinics, they seek consent from their spouses first. They also occasionally seek treatment from the herbalists and witch doctors for illnesses that delay healing and for illnesses not well understood such as stunting. In a few cases the mothers also seek treatment from the churches/mosques, where they are given holy water to be sprinkled on the body of the child or sick adult.

Focus group participants listed some special care and treatment for a sick child. For example, when a child is sick, they give porridge, tea to drink, soup and breastfeed more frequently. They also indicated that they avoid giving cold food, lemon, and hard food like guava fruit to sick children. Children with oral thrush are not given fish and raw mangoes.

> *When the child has cough, we breastfeed and also give a local leaf juice called "beke" that we mix with salt.*
>
> **Focus group participant**

Birth spacing and family planning

Most women do not utilise family planning services in the health facilities, hence predisposing them to unplanned pregnancies. During the community discussions, participants indicated religion and male decision power as the two factors influencing their low use of modern contraceptives. Men tend to stop women from utilising family planning services, as a large family size is associated with prestige, wealth and strength. Furthermore, small family sizes are strongly doubted as sufficient family labour for farm work. Some men also indicated that the use of modern contraceptives is prohibited in the Islam and Catholic religions. They, however, felt comfortable with their wives using the natural methods like continued breastfeeding up to two years.

> *We the men do not want our women to use family planning because the community attaches high value to a man with many children.*
>
> **Focus group participant, Koboko District**

Most of the households in the visited communities have large household size with low socio-economic status. Most focus group participants acknowledged the challenge of not being able to provide basic needs to the family, including good health care, proper feeding, good education and essential amenities.

It was mentioned during the discussions that women who use modern contraceptives feel stigmatised, while those who publicly admit to not using them are praised. Low sensitisation on the uptake of family planning was stated as one of the factors leading to such stigmatisation. In follow-up meetings, women admitted they stealthily leave home and go to the health facilities where they are helped to use some contraceptive methods. The most common method they are able to use without the immediate knowledge of their husbands is the injection plan[59] that is administered from the government health centres, and the Norplant[60] that is mostly provided in private health centres. Participants revealed how domestic violence normally arises when the man discovers that the woman is on family planning without his consent, which sometimes results in the man marrying another wife who is willing to produce children without limit.

Women indicated high birth rates, saying that by menopause, most women would have had 10 to 15 births. However, when probed, men refuted this, saying they prefer a woman to produce five to six children in total, after which they can stop, though they were reluctant to agree that women should use modern contraceptives after that.

Men from the Islamic community insisted during the discussions that the Sharia law states that women can resume sex 40 days after delivery, which they practically implement. Though this may not be risky health-wise, women who were not practicing family planning identified the practice as a source of frequent pregnancies.

Many women said that they were concerned with low birth spacing because they were not using family planning methods due to the high stigma from both their spouses and communities. Negative testimonies from women who had ever used family planning methods discouraged other potential users. Some women insisted that the resultant low birth spacing was due to poor breastfeeding practices by working women. They said historically mothers would breastfeed for two years, which delayed the next conception, but that is no longer the case.

Women expressed their willingness to change current perception on family planning, but insisted their husbands should be sensitised on the same. They reiterated short birthing spacing as very tiring (physically and emotionally). In addition, a new pregnancy would trigger premature weaning of an infant, potentially putting her/him at risk of malnutrition or other illnesses.

B.1 FEEDING AND CARE PRACTICES

Household feeding practices

Focus group participants indicated that households in West Nile usually eat two to four meals a day

59 Depot medroxyprogesterone acetate, 12-week reinjection schedule.

60 Levonorgestrel-releasing implant.

during food secure seasons, and they reduce to two to three meals as the food quantities reduce in the home. Breakfast is usually served at 10:00am and lunch between 1:00pm and 2:00pm, whereas dinner is served between 7:00pm and 8:00pm. Pregnant and lactating women are advised to have more meals than the other household members, though this depends on preference and availability of food. Men share meal patterns with the other household members though they tend to have bigger portions, a begrudged practice by some women, yet implemented by nearly all.

Most children eat at least three times a day, especially during periods when households have enough food stocks. Women indicated that this is deemed healthy for their children, as sufficient food quantity is necessary for growth. During the fasting period, children eat fewer meals, as they are compelled to feed at the same time as the fasting adult members of the household. Thus, while the spiritual intent and compulsion to fast is not transposed onto children, children typically inadvertently fast based on food availability in the home.

> *Children in our community do not fast, but they go hungry for longer hours during the fasting period as mothers tend to only prepare breakfast for their children and prepare evening meals for the whole family as they break the fast in the evening.*
>
> **Focus group participant, Nzerea Village**

Reduced meal patterns were primarily associated with reduced food availability at home, a result of limited farmland. Families are usually large, ranging from seven to 15 family members per household, which leads to high demand for the little harvested food. During discussions with community participants, it was revealed that both Catholic and Muslim communities fast. Fasting among the Catholics is only practiced during the Lent period (40 days). During this period, individuals are advised to abstain from a highly preferred food. Typical selected food(s) avoided during the Lent season included protein foods, such as chicken, goat meat, beef and duck meat; rice, Irish potatoes, cabbage, carrots, peas and pineapples, among others. Families are frequently encouraged to ascribe to vegetarian diets during the Lent period. Some pregnant and lactating women can fast because of the flexibility of the nature of fasting, meaning that they do not have to abstain from food completely.

The Muslim community has two fasting periods a year, with the longer period in the ninth month of the Islamic calendar, which takes between 29 and 30 days. The short fasting period happens approximately 90 days from the Eid Al-Fitr day that ends the ninth month of the fasting season. Muslim communities, unlike Catholic communities in the qualitative inquiry, prefer dry fasting, in which they take a light meal at dawn, fast through the day, and then break the fasting in the evening. Fasting is usually recommended only for adults. Pregnant or lactating women and the sick can fast at will, while children are exempted from fasting. Except for inclusion of porridge in all meals during the fasting period, there are no other preferred diets among this community during the fasting period.

> *Fasting is mainly for adults 20 years and above and the nature of fasting is having porridge in the morning then fast till evening at around 6:30pm when they break the fast and eat food.*
>
> **Focus group participant, Nzerea Village**

Fasting seasons among the Catholic and Muslim communities tend to end with feasting celebrations. Though some participants believed that such celebrations deplete food stocks, which threaten their household stores for the next harvesting season, others grossly refuted this assertion, as the

celebrations are a single day event that cannot deprive the family of enough food. Secondly, it was argued by some participants that most of the food eaten at these celebrations is bought from the market and does not in any way reduce the food stocks at home.

The number of feeding times during the fasting season reduces only for the Muslim community and not the Catholic community because of the different fasting approaches. According to secondary data analysis, 62.4 per cent of the households use food for social and cultural celebrations.[53] Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between these indicators, which means that the use of food for social and cultural celebrations was not a risk factor for wasting, stunting, or anaemia (Cf. Annex IV).

As mentioned above, most of the households are able to eat three meals a day for most of the year i.e. breakfast, lunch and super. The composition of breakfast is usually porridge or dry tea (milk tea for some families that can afford it), taken with boiled cassava chips. The usual composition of lunch is mainly carbohydrate foods, with cassava providing the majority of calories. Most households eat cassava with vegetables, beans or fish. For most of the times, the composition of dinner does not differ from that lunch for a particular day. Mothers revealed that they prefer to feed their children the household meal, mashed to a more suitable texture and density, while wealthier families buy soya porridge for the children, to serve in addition to mashed pasted food.

Participants revealed that the number and composition of meals has historically reduced, due to reduced food production and increased sale of the other, nutritious food crops like highland banana, peas, cabbages and livestock products, for disposable income. They also alluded to the increasing population in the community, which reduces food availability in the market and produced from fields, as another source of reduced food quantities at home. It was mentioned that households ate more protein foods in the past than they do today. Communal eating was a practice in the past when families could share food with other families and there was no rationing at mealtime, as is the case today.

During participatory exercises regarding meal composition, participants mentioned a variety of foods, however consumed diets are not balanced. They commonly selected a few energy giving foods as the other food crops are sold to bring in some income to cater for other pressing household needs.

Meals	Koboko District (Tobacco Cassava Sorghum Livelihood Zone)	Nzerea Village (West Nile Simsim Sorghum and Livestock Zone)	Patek Village (Arabica Coffee Banana Zone)	Jupuyik Village (West Nile Simsim Sorghum and Livestock Zone)
Non-Fasting Season				
Breakfast	Porridge made from maize flour commonly consumed by children and tea (with or without sugar) taken by adults Accompaniment: cassava, pumpkin or sweet potatoes	Porridge made from maize flour or tea (milk or non-milk) Accompaniment: cassava, pumpkin or sweet potatoes	Porridge (made from millet, maize) commonly for children while adults mainly take tea (coffee and tea leaves) Accompaniment: pumpkin, Irish potato, rice, boiled maize, ripe bananas, eggs	Porridge (made from millet, maize) commonly for children while adults mainly take tea (coffee and tea leaves) Accompaniment: pumpkin, Irish potato, rice, boiled maize, ripe bananas, eggs

Lunch and dinner	Cassava, sorghum, potatoes, maize, posho with beans, sweet pea leaves, pumpkin leaves, fish, egg plants, okra, spinach, fish, amaranthus and other vegetables	Cassava, sorghum, potatoes, maize combined with beans, posho, beans, sweet pea leaves, pumpkin leaves, fish, egg plants, okra, spinach, fish, amaranthus and other vegetables and bush meat occasionally	Cooked maize seeds and beans, cassava, millet, ground nut paste in source, pumpkin leaves, amaranthus, groundnut, simsim and passion fruits, green vegetables (Malagwang)	Sorghum, maize, millet, beans, amaranthus, pumpkin, groundnut simsim and passion fruits
Other day times	Groundnut seeds, raw cassava, roasted simsim	Ground nut seeds, raw cassava, roasted simsim	Mangoes, avocado, ripe bananas and groundnuts, roasted soya grains	Mangoes, avocado, ripe bananas and groundnuts, roasted soya grains
Fasting season				
Breakfast	No breakfast	Porridge made from maize flour or tea with cassava or pumpkin Accompaniment: cassava, pumpkin or sweet potatoes	Milk in Porridge (made from millet, maize) commonly for children while adults mainly take milk tea (coffee and tea leaves) Accompaniment: pumpkin, Irish potato, rice, boiled maize, ripe bananas, eggs	Porridge (made from millet, maize) commonly for children while adults mainly take tea (coffee and tea leaves) Accompaniment: pumpkin, Irish potato, rice, boiled maize, ripe bananas, eggs
Lunch	No Lunch	Cassava, sorghum, potatoes, maize combined with beans, sweet pea leaves, pumpkin leaves, fish, egg plants, okra, spinach, fish, amaranthus (dodo) and other vegetables and occasionally, bush meat	Majority fast by not eating the food they like most e.g. fish, meat and silver fish while minority have dry fast during day. Usual composition is cabbage, millet bread, boiled maize seeds, beans, cassava, millet, ground nut paste, pumpkin leaves, amaranthus, pumpkin, simsim, fruits, avocado, chicken fried with simsim oil, pasted fish, Irish potato with heavy paste, avocado with salt plus, Sorghum bread (cassava mixed with sorghum)	Majority fast by not eating the food they like most e.g. fish, meat and silver fish while minority have a dry fast during day. Usual composition is cabbage, millet bread, boiled maize seeds, beans, cassava, millet, ground nut paste, pumpkin leaves, amaranthus, pumpkin, simsim, fruits, avocado, chicken fried with simsim oil, pasted fish, Irish potato with heavy paste, avocado with salt plus, sorghum bread (cassava mixed with sorghum)

Dinner	Cassava, sorghum, potatoes, maize combined with beans, posho, beans, sweet pea leaves, pumpkin leaves, fish, egg plants, okra, spinach, fish, amaranthus and other vegetables	Cassava, sorghum, potatoes, maize combined with beans, posho, beans, sweet pea leaves, pumpkin leaves, fish, egg plants, okra, spinach, fish, amaranthus (dodo) and other vegetables and occasionally bush meat	Usual composition is cabbage, millet bread, boiled maize seeds, beans, cassava, millet, ground nut paste, pumpkin leaves, amaranthus, pumpkin, simsim, fruits, avocado, chicken fried with simsim oil, pasted fish, Irish with heavy paste, avocado with salt plus, Sorghum bread (cassava mixed with sorghum)	Usual composition is cabbage, millet bread, boiled maize seeds, beans, cassava, millet, ground nut paste, pumpkin leaves, amaranthus, pumpkin, simsim, fruits, avocado, chicken fried with simsim oil, pasted fish, Irish with heavy paste, avocado with salt plus, Sorghum bread (cassava mixed with sorghum)
Other day times	Do not eat till dinner time	Majority who fast a given food best liked still eat ground nut seeds, raw cassava, roasted simsim	Majority who fast a given food best liked still eat mangoes, avocado, ripe bananas, groundnuts, and roasted soya grains	Majority who fast a given food best liked still eat mangoes, avocado, ripe bananas, groundnuts, and roasted soya grains

Table 9: Results of a participatory exercise on meal composition in West Nile

Breastfeeding practices

Early initiation of breast-feeding ensures suckling of colostrum by the new born, which increases the provision of immunogenic properties to the baby, thus reducing chances of illness and neonatal mortality. During the community discussions, mothers attested that they are sensitised on breast feeding practices at the health facility, typically during the antenatal visits and immediately after birth. Most are aware breast feeding helps babies develop strong immunity from infection and disease. Even though they fully understand the advantages of early initiation of breastfeeding, some mothers admitted not doing it especially in the first hour of birth.

Secondary data from the sub-region confirms the testimonies given by mothers during the community meetings. From the 2019 FSNA, early initiation of breastfeeding (within the first hour) stands at 64 per cent, with the lowest rate being noted in Yumbe district at 42 per cent.[35] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a statistical association between these indicators, such that early initiation of breastfeeding is protective of anaemia, but bore no significant association with wasting or stunting (Cf: Annex IV).

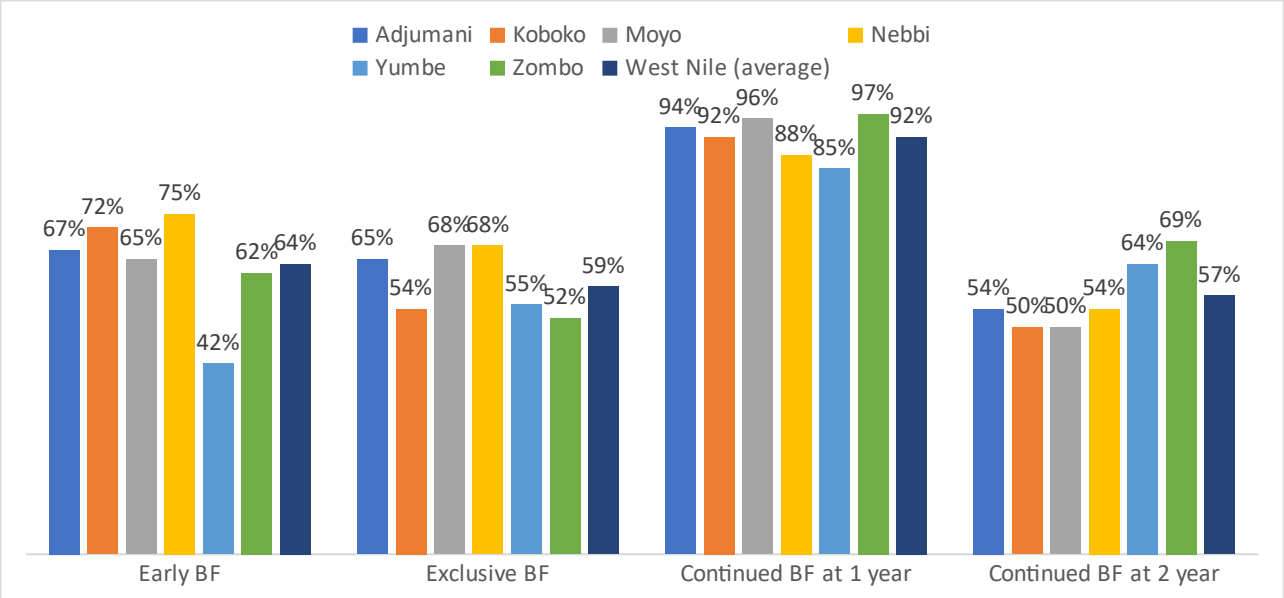


Figure 7: Breastfeeding practices in West Nile sub-region, September 2019[35]

During the focus group discussions, breast-feeding mothers indicated that they could not breast-feed their children in a timely manner because of heavy workload. In most cases, they spend the morning time in the garden after which they concentrate on other household chores, leaving little time for breast feeding the children. Indeed, it was discovered during the semi-structured interviews that babies were rarely breastfed on demand.

> *Mothers go to the garden and leave the breast-feeding child at home. This child misses breast milk the whole day.*
>
> **Focus group participant, Nebbi District**

Mothers expressed difficulty in practicing exclusive breastfeeding due to various challenges and beliefs. During the community discussions, they confessed that when they breastfeed, they also give the baby some water since the baby is thirsty due to hot weather. When the quantity of breast milk is perceived as insufficient, mothers will begin supplementing it with cow and/or goat milk, which typically happens after three to four months of breastfeeding. Mothers say they give other milk to keep the baby satisfied, happy and strong. Besides water and milk, mothers also give their babies passion fruit juice when they have an episode of diarrhoea. Some mothers attested that they are forced to continue breastfeeding because their breasts hurt when they stop, otherwise they would have stopped even before six months.

Some mothers said they start giving solid food to their babies at four months, since at that age the milk turns hot when they are in the gardens and is no longer good for the young baby. According to these mothers, breastfeeding is then only done in the early morning and late evening when the breast milk cools again. Mothers admitted they give the young baby porridge and other solid but minced food. They, however, avoid giving the baby cold food ***(kuku kwen)***, avocado, and ripe bananas, as these can make the baby vomit.

According to findings of the 2019 FSNA, exclusive breastfeeding was reported to be 59 per cent, breastfeeding up to one year stands at 92 per cent while continued breastfeeding at two years stands at 57 per cent.[53] The lowest rate of exclusive breastfeeding was noted in the Arabica Coffee Banana Zone (Zombo district).[35]

Young couples primarily depend on parents to help them care of young children, including breastfeeding babies, especially in times of looking for casual labour. This naturally introduces a breastfeeding lapse, as the mother and child can be separated for long periods of time during the day. Young parents associated care of the child by 'weak' grandparents with recurrent skin infections, poor hygiene, and even kwashiorkor, though the pressures to generate income left them with no option.

Table 10 summarises perceived risk with certain breastfeeding behaviours, as well as the courage to change current practices.

Behaviour	Perceived risk
Breastfeeding when a woman is pregnant	Low
Breastfeeding when a woman is hot or ill	Medium
Giving holy water and tea to babies as complementary feeding	Medium
Leaving baby with grandparents, before the baby is 6 months	High
Behaviour	Courage to change
Eating little or fasting during pregnancy	Difficult
Early initiation of breastfeeding	Easy
Exclusively breastfeeding up to 6 months	Easy
Breastfeeding on demand	Easy

Table 10: Risky behaviour associated with breastfeeding in West Nile

Young child and maternal care practices

While mothers endorsed fairly high knowledge in childcare practices, practice is impeded by resource constraints and heavy workload, including farm work, market visits, petty trade, and seeking casual labour opportunities (Cf: Gender). It was clear from the discussions that mothers typically rest on Sundays, or Fridays for some Muslim families. The remainder of the week, babies and young children are typically left in the care of grandparents, young siblings and other house helpers. On typical farm days, young children are left at home with porridge that they take in the morning, and then go hungry for the rest of the day until late afternoon/ evening, when the rest of the household members will have lunch.

Findings from 2019 FSNA reveal that 42 per cent of children under five years old had been left alone at home for more than 1 hour at least once a week.[53] Survey results further indicate that 58.5 per cent of the children are left at home with siblings younger than 10 years of age; about 65.1 per cent are left under inadequate supervision at least once a week- meaning, alone or with a sibling younger than 10 years of age.[53] Moyo, Yumbe and Koboko districts have the highest percentage of young children left under inadequate care.[35]

Complementary feeding is introduced at four months as mothers claimed at that time the quantity of breastmilk starts reducing and others just indicated that they cannot stay at home to breastfeed the child in a timely manner, so the solution is to start giving the baby porridge. Unfortunately, the porridge is also given by the grandparents or young siblings. Secondary data also shows that timely complementary feeding in the sub-region is at 39 per cent, which confirms testimonies from mothers regarding delayed introduction.[53] The worst performing districts are Adjumani and Zombo at 31 per cent and 33 per cent respectively.[35]

District	Timely CF	Minimum Meal Frequency[61]	Minimum Dietary Diversity[62]	Minimum Acceptable Diet
Adjumani	31%	46%	30%	16%
Koboko	44%	27%	27%	13%
Moyo	45%	39%	25%	14%
Nebbi	43%	28%	33%	9%
Yumbe	41%	37%	28%	20%
Zombo	33%	41%	43%	20%

Table 11: Feeding practices for children six to 23 months in West Nile, 2019 FSNA

During the community discussions, participants linked poor food preparation (i.e. poor hygiene), lack of vitamins, and lack of leafy green vegetables as increasing risk of a suffering severe acute malnutrition, particularly kwashiorkor. In follow-up interviews, mothers identified the following barriers contributing to poor child feeding: poor feeding habits of the general household, low food availability, lack of time to cook, general negligence of some mothers, heavy workload (particularly in agriculture), and taking too much time in the market, among other factors.

Mothers alluded to poverty as one of the major factors impeding them from providing enough and diversified food to their children. Mothers indicated their urge to give young children groundnut paste, tomatoes with groundnut paste, banana, and vegetables like amaranth (dodo) but often cannot afford to buy these from the market.

Results from the 2019 FSNA confirm most of the facts given by mothers during the qualitative inquiry. According to this survey, only about 36.5 per cent of the children aged six to 23 months met minimum meal frequency and only 31.8 per cent of children met minimum dietary diversity, or four of the seven main food groups.[53] Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association with minimum meal frequency, which means that minimum meal frequency was not a risk factor associated with wasting, stunting, or anaemia in West Nile Region (Cf. Annex IV). These analyses did identify a significant relationship between minimum dietary diversity and anaemia, but not wasting or stunting (Cf. Annex IV). Minimum acceptable diet, a composite of minimum dietary diversity and minimum meal frequency, was not significantly associated with wasting, stunting, or anaemia.

Women are primarily responsible for the care of children, including washing clothes, feeding them, attending community sensitisation sessions regarding health, taking sick children for treatment, and monitoring the child's sleep. Men, on the other hand, monitor to ensure that the mother takes good care of the child and make decisions on where to seek medical care. Both men and women agreed that their children suffer immensely when there is separation or divorce, when the parent engages in alcoholism and other unnecessary drug abuse, when the parent is negligent, and when parents sell food that would have been for home consumption.

During the community discussions, participants revealed how some overburdened mothers may relieve stress by slapping or beating a child. If the child consequently falls sick, it becomes the responsibility of the mother to have the child treated. Negligence from men is typically identified as failing to financially provide for the home. Since the fathers are not buying food, the mothers

61 Minimum daily meal frequency is defined as twice for breastfed infants aged six to eight months; three times for breastfed children aged nine to 23 months and four times for non-breastfed children aged six to 23 months.

62 If the child is at least six months old but less than 24 months old and getting at least four of the seven food groups, then the child is considered to have adequate dietary diversity.

then have to overexert themselves in agriculture or casual labour. In this process, children either go hungry or are subjected to the same insufficient food as the rest of the household.

C.1 FOOD SECURITY AND LIVELIHOODS

Income generating activities

The main occupation for most households in West Nile sub-region is agriculture, with an increasing number of households engaging in livestock keeping, particularly poultry keeping.

Crop sales are the main source of income for most households in the sub-region. The main crops grown for sale are coffee, cassava, groundnuts, simsim, beans, maize, rice, and vegetables. The growing of tobacco and mirra plants is also an important source of income, especially for households in the Tobacco Cassava Sorghum Livelihood Zone. In addition to crop sales, poultry keeping, casual labour, burning and selling of charcoal, and brick laying are the other important sources of income for households.

Most income is diverted to immediate household level expenditures, including food, school fees, paying medical bills, and other basic needs. Due to increasing financial demands, households in this sub-region have supplemented agriculture with other low-income risky activities, such as quarrying and charcoal burning. As the same crops consumed at household level are also cash crops, sometimes households sell the little they harvest and then rely on other income sources to purchase food.

According to the 2019 FSNA conducted in May, the main sources of income in the sub-region are sale of crop produce (38 per cent); trade (20 per cent); waged labour (19 per cent); and formal employment (11 per cent).[35] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a statistical association between these indicators, in that primary source of income from livestock sales, trade, or formal employment was significantly protective of stunting, meaning that children whose head of household engaged in those professions were less likely to be stunted. Waged labour, and sale of firewood/ charcoal, were significant risk factors for anaemia, meaning that children whose head of household depended on waged labour were more likely to be anaemic (Cf. Annex IV).

According to the focus group discussions, despite a negligible or non-existent financial cushion, men divert income to alcohol consumption. Participants castigated men and women who spend evenings at alcohol selling points, where they spend the little income that would have been used to purchase food and other needed necessities. Participants stated that increased alcohol consumption depletes households of the little income they have, and it also makes a number of able-bodied youths unproductive as they fail to engage in meaningful income generating activities.

According to the 2019 FSNA, the proportion of households self-reportedly using income for alcohol and tobacco consumption is about 10 per cent.[53] Subsequent analyses taking into account anthropometric measurements of children in the household revealed statistical association between these indicators, which means that children in homes that diverted income to alcohol and/or tobacco were more likely to be wasted or stunted (Cf. Annex IV).

Communities have embraced the idea of Village Savings and Loan Associations (VSLA) through which they save money and can access soft loans to start family businesses. Members of the VSLAs informed that the soft loans accessed have been used to set up income generating activities like purchasing utensils, chairs, tents and carpets that can be hired out for functions and parties.

According to some participants, they have been able to access bigger loans from the associations that they can use for their agricultural sales. In one of the visited localities, participants indicated that they are accumulating savings that they intend to use for commercial farming.

> *We save weekly in the community VSLA where members can save from the range of Ug. Shs.2000-5000. The accumulated funds are then loaned at an interest of 10 % and the proceeds shared at the end of the year or other pre-determined time.*
>
> **Focus group participant, Patek Village**

Sentiments regarding the increase in migration trends to neighbouring districts and other parts of the country very. It was revealed that men now frequently migrate to neighbouring districts and other parts of the country in search for casual labour and farmland. In one of the visited localities, it was shocking to hear that some men migrate to escape unbearable debts. It was further revealed that during the dry season, when agricultural activities cease, community members (both men and women) migrate to engage in businesses in districts that are more developed and some shift to engage in fishing activities.

During the discussions, women were close to or in tears, recalling how they and their families suffer when men migrate and either take long to return or do not send remittances. Men rarely leave behind enough resources, so women struggle to provide for the children in their absence. Consequentially, as the mother is stressed to provide food, children are forced to drop out of school. Longer-term challenges mentioned that arise out of migration without sufficient support include divorce, adultery for the fulfilment of sexual desires, and prostitution to get some extra income for the family. Participants further revealed that historically there were fewer migrations, both short and long term, than is the case today.

Farming

Households grow a variety of crops, for sale and/or consumption. These include maize, beans, cassava, sorghum, potatoes, simsim, highland banana, groundnuts, rice and millet. Livestock keeping complements crop farming where mainly sheep, goats and poultry are kept. According to the 2019 FSNA, the most commonly grown crop in the sub-region is cassava that is grown by 80.5 per cent of the households, followed by maize (73.5 per cent) and then potatoes (24.3 per cent).[53] While most households engage in subsistence crop farming, many also sell crops that would otherwise be consumed by the household.

According to the 2019 FSNA, 87 per cent of households in the sub-region have access to agricultural land.[35] Subsequent analyses taking into account measurements of children in the household revealed a statistically significant association between access to land and anaemia, in that children whose households had access to agricultural land were more likely to be anaemic (Cf: Annex IV). Access to agricultural land was not significantly associated with stunting or wasting.

Qualitative findings from the focus group discussions revealed challenges with agricultural farming in West Nile. Community participants were quick to mention that acreage was historically not a problem but only started arising as poorer households sold off their land to richer households and commercial farmers. Increased population also resulted into land fragmentation, further reducing average acreage for crop cultivation. According to estimates during qualitative inquiry, poorer households use between half an acre and two acres for farming, while richer households are able to use two to five acres. Land acreage is perceived as insufficient by most households, regardless of wealth quintile. Community members attested that currently the poor rent land from

rich landowners at a cost of Ug. Shs 60,000 – 80,000[63] per plot per year. Reduced farmland has forced some households to migrate to other areas where they can find enough land to grow both food and cash crops. In addition, there are reported land conflict cases today compared to ten years ago.

> *Today, because of land fragmentation, food cultivated is mainly for home consumption compared to historically when grandparents had enough land to produce for both home use and commercial use.*
>
> **Focus group participant, Koboko District**

Community participants alluded to reduced soil fertility due to over cultivation and mono cropping as another major cause of reduced agricultural productivity in the sub-region. Other factors mentioned were planting of poor quality seeds, planting poor breed stems/cuttings of potatoes and cassava, and reduced farm labour. Another limiting factor mentioned was the continued use of rudimentary tools for preparing, clearing and cultivating the gardens. Participants revealed that most farmers still use the hand hoe and slasher, with only some middle-income farmers hiring oxen and tractors to open the land for planting. The use of rudimentary tools that require a lot of energy is only exacerbated by the fact that most of the subsistence farm work is done by women.

> *Most men do not work on farms for food but farm mainly narcotic crops like marijuana that they sell and most of the time stay in the trading centre eating marijuana instead of helping out women in the farms.*
>
> **Focus group participant, Koboko District**

Even with the apparent climate change that has resulted in prolonged dry spells and erratic rainfall patterns, no irrigation schemes and practices were observed in the visited localities. Though some community members reported watering crops by collecting water from the rivers with hand containers, this type of irrigation was never observed in any of the localities.

Other challenges leading to reduced production are crop pests and diseases, drought and destruction of crops by both wild and domestic animals. The common wild animals are monkeys, wild rabbits, hippopotamus (from the River Nile), elephants and antelopes (from Nimule National Game reserve). Of constraints related to agriculture, subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between physical ability or sickness and stunting, meaning that children in homes with a head of household who experienced that constraint were more likely to be stunted (Cf. Annex IV).

According to the same survey, which was conducted during the harvesting in some districts, only about 51 per cent of the households had food stocks from own production. Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between these indicators, which means that food stocks from own production at the time of the survey was not a risk factor associated with wasting, stunting, or anaemia in West Nile Region (Cf. Annex IV).

63 Approximately $15.95- $21.26 USD.

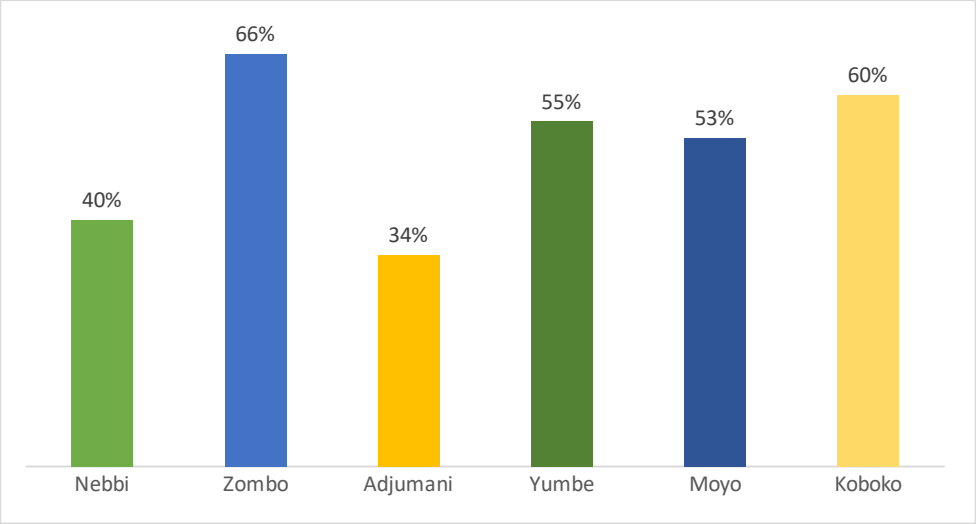


Figure 7: Households with food stocks in West Nile in July 2019

Livestock rearing primarily complements crop farming and is conducted on a small scale. Even in the West Nile Simsim Sorghum and Livestock Livelihood Zone, no large herds of livestock were observed. Livestock kept includes poultry, goats, sheep, pigs and cattle. Community participants informed that they mostly rear poultry for home consumption and as a quick source of income during shocks. Sheep, goats and cattle are kept for commercial purposes at an average of three head of cattle per household and six sheep or goats per household. Livestock vectors and diseases were mentioned as the main constraint to livestock production on the area.

From the 2019 FSNA, the average Tropical Livestock Unit holding in the sub-region is 2.3, with 26.0 per cent of the households having negligible holding, 17.2 per cent with low holding and 16.3 per cent with slightly high and high holding. About 40.6 per cent of the households in West Nile sub-region did not report owning livestock.[53] Subsequent analyses taking into account measurements of children in the household revealed a statistical association between these indicators, which means that the primary health service sought was not a risk factor associated with wasting, stunting, or anaemia in West Nile Region (Cf. Annex IV).

Market access and other household expenditure

Small, weekly markets and larger, daily markets are spread across the sub-region. Rural markets are planned on specific days of the week, and therefore function once or twice a week. Many participants in the visited communities required one hour to reach the nearest weekly market, due to lack of transport means. They narrated the difficulty in accessing the markets during the rainy season as the roads become impassable.

Farmers taking their produce for sale in the weekly markets often face stiff price competition from large sellers, who can sell less expensively on a smaller scale, making it difficult for the local sellers to transact. Much as the reduced prices favour purchasers, local sellers suffer losses. During the discussions, community farmers indicated that they now try to store their produce after harvest in the hope that the prices will rise in the future, after which they can sell. However, this is sometimes ineffective, as the large sellers move to the villages to buy produce directly from the farmers, who have no option at times but to sell as they feel pressure to make accommodations for immediate household needs. Communities complained how these large sellers do not only cheat them by reducing the price, but also use inaccurate weighing scales. Unfortunately, the same food that is bought from them cheaply is sold back to them expensively during times when the food stocks are depleted.

> *We are cheated in a way that buyers use fake weighing scales and also cheat us by setting their own market prices in their favour and not ours as the farmers. They intimidate us by saying that they are doing us a favour to buy our produce.*
>
> **Focus group participant, Patek Village**

On a positive note, community participants reported availability of food and other household necessities in the markets throughout the year. During times of reduced food availability, traders import food from other districts into the local markets, but this is sold at relatively higher prices, making it challenging for poor households to access.

Coping mechanisms

During the focus group discussions, participants reported that as they run short of agricultural produce to sell in the markets, they have no option but to cope by reducing some essential household expenditures. The availability of farm produce to sell is a deterministic factor for household expenditure, as most households have not successfully diversified into other household income generating activities. They at times reduce expenditure on food, leading to inadequate food availability, reduce purchase of basic needs including salt, soap, and drugs, and others defer school fee payments, forcing children to drop out of school.

During difficult times of limited food availability, community participants reported the tendency to reduce number of meals, reduce meal portions sizes, and also ration food to ensure young children and men eat, at the expense of other adults.

Other coping mechanisms commonly adopted include intercropping, selling livestock to buy food, growing short term maturing crops, selling land and houses, hiring out land, engaging more in casual labour to earn daily wages, and selling seeds stored for next season. Other community participants reported selling of firewood, borrowing from friends and neighbours, and selling other household items like furniture, beds, bicycles, saucepans, and motorcycles.

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Climate												
Dry season	+++	+++	++			++					+++	+++
Rainy season			+	+++	+++		+	+++	+++	++		
Economic activities												
Demand for (local) agricultural work			+++	+++	+++	+		+++	+++	++	+	
Migration	++	++		++	++			++	++	++	++	++
Heavy workload of men	+	+	+	++	++	+	+	++	++	++	++	+
Heavy workload of women	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Food Security												
Price of food	++	+++	+++	+++	++	+	+	+	++	+++	++	+
Availability of food	+	+	+	+	++	++	+++	+++	++	+	+	+++
Availability of financial resources			++	++	++	++	++	++	++	++	+	+
Hunger Gap	++	++	+++	+++	++	+		+	+	+++	++	

Table 12: Seasonality of agricultural activities and food security in West Nile sub-region

D.1 WATER, SANITATION AND HYGIENE

Poor WASH conditions facilitate ingestion of faecal pathogens, leading to diarrhoea, intestinal worms, and environmental enteric dysfunction. Extended exposure to such pathogens weakens the body's ability to resist and respond to sickness by affecting the absorption of nutrients and decreasing the body's immunity. An analysis of access and affordability of water, sanitation, and hygiene practices, distance from the household to a water point and general household water management is therefore crucial as these factors have direct and indirect links to nutrition.

Water, Sanitation and Hygiene is a Primary Health Care (PHC) approach that aims at prevention of water borne diseases. Water borne diseases in communities tend to result from consumption of contaminated water while water washed diseases arise from inadequate water for personal hygiene.

Water Availability and Access

According to the Ministry of Water and Environment (MWE),[64] as of June 2019, the percentage of the rural population using an improved water source in the West Nile sub-region was estimated at 69 per cent (compared to 70 per cent in FY 2017/18). It is noted in the same report that during the period July 2018 to June 2019, the rural population increased by an estimate of 993,766 persons, yet new water supply interventions covered only half (50 per cent) of the population increase. Functionality of water sources was reported to be above 75 per cent in Yumbe, Koboko, and Adjumani districts, between 70 and 75 per cent in Moyo and Nebbi districts and between 60 and 69 per cent in Zombo district. Safe water coverage in the sub-region was reported to be over 70 per cent except for Yumbe where it was below 50 per cent.[64]

From the qualitative findings, boreholes, protected/open wells and springs, streams, rainwater and tap water are the main water sources in the sub-region. Communities said that priority water uses are drinking, other domestic household use (cooking, washing, bathing), watering plants and for livestock. Results from the 2019 FSA confirm the information given by community participants during the qualitative inquiry, regarding water point options and usage. According to this survey, 63 per cent of the households in Northern Uganda access water from boreholes, which are considered safe at the point of distribution.[53]

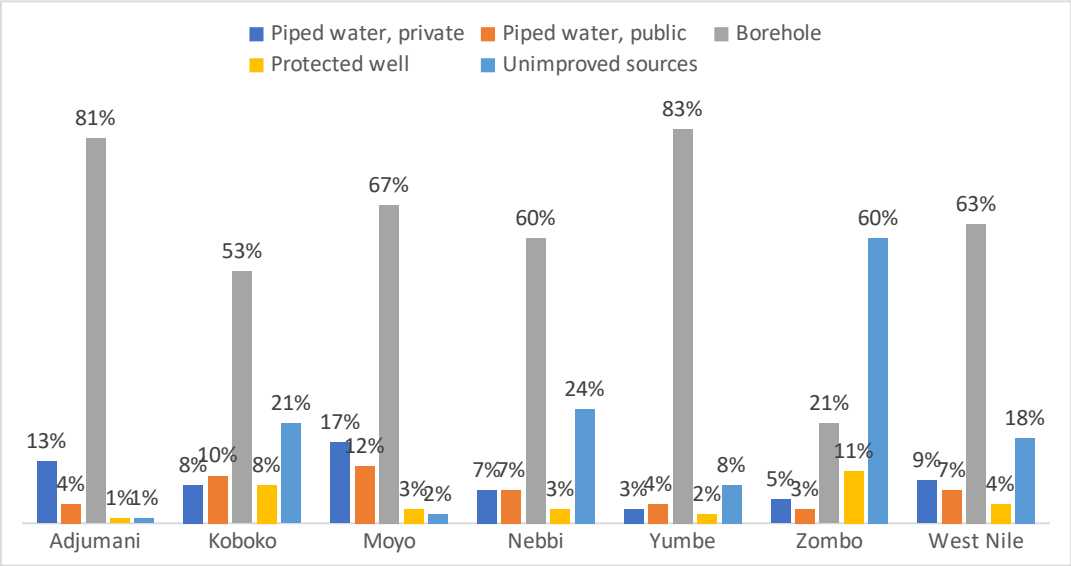


Figure 8: Reported water sources in West Nile, September 2019

64 Ministry of Water and Environment (MWE): Water and Environment sector performance Report 2019. Available at: https://www.mwe.go.ug/sites/default/files/library/SPR%20FINAL%20BOOK%202019.pdf.

Overall, 77.3% per cent of the households are accessing water from safe and improved sources, whereas 8.8 per cent of the households still access water from unimproved sources that include open springs and streams.[53]This population is vulnerable to consumption and use of contaminated water, which can be a source of stomach infections, including diarrhoea. Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children whose households utilised safe water sources were significantly less likely to be stunted[65] (Cf. Annex IV).

Access to safe water has a bearing on utilisation of water and disease prevention and indeed areas that easily access safe water tend to have reduced illnesses. According to community participants, physical accessibility to water sources during rainy season is easy, since all the nearby water sources have adequate water, compared to dry season, when it is a challenge. Most of the water sources are reported to have either reduced flow or completely dry up during the dry season, resulting in reduced water supply for both community members and their livestock. Inadequate water supply is associated with water washed diseases such as skin diseases like scabies. Scabies was reported in one of the visited localities. Water from commonly used unsafe water sources (wells and streams) was reported to be cloudy, while other less common safe water sources (springs and boreholes) were reported to be clear. Other illnesses believed to be water-borne included typhoid, stomach pain, worms and diarrhoea. Most women in the visited localities said that they carry six to 10 jerry cans a day depending on their family size.

From the community discussions, participants reported that time taken to reach the nearest safe water point was between 60 and 150 minutes, yet that taken to reach the nearest unsafe water points was between 30 and 90 minutes. The waiting time at the water point ranged from 15 minutes to one hour, depending on the queue and the population using that particular water source. Community members living near water sources walked shorter distances to the water sources and spent the least waiting times, as they could monitor congestion, compared to people living in distant places from the water sources. The long distance to safe water sources undermined their use in the visited localities; therefore, most community members resorted to using unsafe water sources that were closer to them which have less waiting times.

According to the most recently available secondary data, 9.2 per cent of the households in the sub-region have the nearest water point located on or very close to their premises, 61.3 per cent take about 30 or less minutes to access the water and 26.6 per cent require more than 30 minutes to fetch water from the nearest point.[53] Due to the long distance to the nearest water point and considering the amount of waiting time, a number of households are unable to avail to themselves enough water for use in a day. According to the 2019 FSNA, 69 per cent of the households in West-Nile sub region use 15 or more litres of water per person per day.[53] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children whose households used more than 15 litres of water per person per day were less likely to be stunted (Cf. Annex IV).

Improper water handling and storage can render water from safe water sources unsafe. Communities in West Nile sub-region reported to have water contamination through poor water handling and storage. Participants revealed that they in most cases contaminate water using dirty hands and dirty water containers, thus increasing infection among the community members. Participants also added that they leave water to settle down, and after they have used the clear water, they pour away the bottom water, a practice that needs to be encouraged since most disease causing agents are found in the settled water, which is commonly poured away. Apart from leaving the water to settle,

65 No significant relationship with wasting and/or anaemia.

which is only done for water from wells and springs, communities did not report other means of water treatment before use.

According to findings from the 2019 FSNA, only 11 per cent of the households treat water before use[53], especially drinking water, with the population in Zombo and Koboko districts treating water by boiling, yet the others just leave it to settle. Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal a significant association between these indicators, in that children whose households treated water before use were not more or less likely to be wasted, stunted, or anaemic (Cf. Annex IV).[66]

Communities with Operations and Maintenance (O&M) Committees tend to have less episodes of diarrhoeal diseases. Of the qualitative inquiry sampling framework, some of the communities had O&M committees, while others did not have. Some communities had self-driven leadership with water committees on water source (wells, springs and streams), while others had the committees led by the village Local Council ones (LC 1s), whose role is to ensure that the water sources are maintained clean. Most LC1s did not ask community members to pay user fees but instead mobilised the community to clean water sources in times when this was required. Scheduled maintenance of the water sources was primarily in the form of tidying the surrounding area; i.e. weeding and sweeping around the water sources. Communities that did not have such committees tended to have dirty water sources, as well as increased morbidities. Concerns of poor maintenance of water sources were more pronounced in Nebbi district.

> *There are so many worms and much sand around the spring pipe. Anyone can choose to clean the water source because there is no one responsible.*
>
> **Focus group participant, Nebbi District**

Unhealthy activities around water sources increase water contamination and hence diseases at community level. These activities include washing of clothes, bathing, grazing and taking animals to drink at the water source and rinsing of dirty water containers, which all increase contamination at unprotected water sources. It is clear that, in most cases, contaminated water drains near the clean water source, thus predisposing the communities to infections and their associated complications. Faecal matter is another source of contamination of water sources that results into disease. Participants in all the visited localities confirmed the contamination of water by human and animal faecal matter. They reported that some adults and children still defecate openly around and near the open water sources.

Study communities also suffer break down of boreholes and delayed repair by the lower local government management. Most sub-county water and sanitation committees are not active, as they do not receive adequate funding to perform their roles. Repair of the boreholes is usually through community mobilisation, but this also takes time for communities that lack Operation and Maintenance committees.

Participants also revealed that most water contamination takes place directly from unclean water containers used to gather and/or store water. They also specifically made mention of the challenge of water contamination by children at home who play with drinking water containers. They also made mention of contamination at the point of collecting water from the container, as family members use a cup for scooping water and the same cup for drinking water, which encourages spread of disease.

66 It is important to note that water quality tests were not conducted as part of the survey; thus, it is impossible to differentiate possible over-reporting of water treatment, thus a diluted association with water treatment and malnutrition outcomes.

Behaviour	Perceived risk	Community justification
Grazing animals around water sources	Medium	Common practice from ancestors
Not boiling water from unsafe water sources	High	Common practice from ancestors
Poor water handling –dirty hands contaminating water and storage in dirty containers	High	Common practice from ancestors
Use of inadequate water during dry season	Medium	In adequate water produced from water source

Table 13: Risky behaviour associated with water use in West Nile

Sanitation and Hygiene

The local leadership in the sub-region has played an important role of putting in place bylaws which ensure most of the households have latrines. From observations during the qualitative inquiry, most households have pit latrines. Community participants attributed the improved latrine coverage and use to the bylaws enacted by the local government. The challenge with latrines was that some lack any construction around the covered pit; those which are constructed had short structures (favouring only short people) and poor ventilation. The other critical observation was that the majority of the pit latrines are not well cleaned; most of them always had faecal matter around them. Community participants attributed failure to clean the latrines to the type of flooring. Almost all latrines in the visited localities had mud floors that cannot be cleaned, except by smearing ash on the faecal matter and then physically lowering it into the pit. Poorly maintained pit latrines have a close association with infection. Flies play a large role in spreading faecal matter to food and people's hands, hence causing disease.

Even though pit latrine coverage has improved over time, community participants reported a sizeable number of households have not constructed their own toilets. These households either share with the neighbours or are using bushes. Open defecation was reported to be a pervasive problem, in that many adults were reported to defecate about 40-100 metres from the house, while children were said to defecate 10-15 metres from the house. Some young children were reported to defecate 5-10 metres away, yet their caretakers rarely take the faecal matter to the pit latrine hence predisposing the community to disease. It was clear from follow-up discussions that latrine coverage and use is higher in districts in the northern part of the sub-region than in the southern part.

> *From the time people started having pit latrines, children sickness has also reduced greatly.*
>
> **Focus group participant, Nzerea Village**

Some communities in the swampy areas (especially in the West Nile Simsim Sorghum and Livestock Livelihood Zone) face a challenge of digging shallow pit latrines that fill up quickly, making them opt for open defecation. The high-water tables in the swampy areas and flooding seasonal rivers tend to destroy pit latrines thus making some of the community members too lazy to re-set up pit latrines an act that increases faecal contamination and disease.

Findings from the 2019 FSNA confirm most of the testimonies from the focus group discussions. According to this survey, 90 per cent of the households in the sub-region have access to toilet facility of which 74 per cent have their own facility while 16 per cent are sharing.[53] Toilet access is lowest in Yumbe district where 21 per cent still practice open defecation, followed by Zombo district

where 16 per cent practice open defecation.[35] Nebbi district has the highest number of households sharing toilet facilities (32%) followed by Zombo district where 21 per cent of the households use shared toilet facilities.[35]

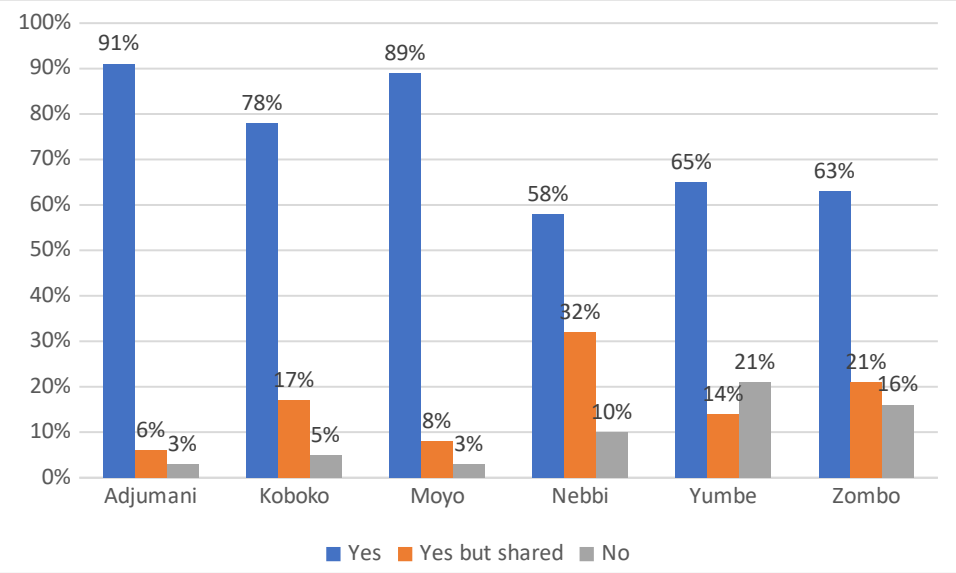


Figure 9: Access to toilet facility in West Nile sub-region, 2019 FSNA

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children whose household had access to a toilet were significantly less likely to be stunted (Cf. Annex IV).

Households with good sanitation facilities tend to have reduced disease burden. It was observed that most communities had sanitation facilities such as bath shelters, pit latrines and a few wires for hanging clothes. Noticeably lacking were hand washing facilities and rubbish pits; furthermore, some households had un-cleared bushes around homes that breed mosquitoes. Most households had animals moving around, exacerbating contamination on items that were not raised.

Households sharing living areas with animals tend to have zoonotic illness. The habit of sharing shelter with livestock varied from community to community. From observation, most communities offered shelter to their livestock, especially chicken and kids.[67] In as much as some participants said they do not share living shelter with poultry and livestock, they admitted the animals sometimes get into their living houses predisposing them to zoonotic illnesses. On the contrary, apart from animals destroying household property including utensils, no zoonotic illness were reported, but this could be due to lack of recognition, for example, diarrhoea occurring secondary to contact with poultry faeces.

> *"The animals litter the compound with excreta, so we have to keep cleaning. Animals walk around our compounds and houses destroying food and other property"*
>
> **Focus group participant, Patek Village**

Compound and house cleanliness are very important because of the bearing it has on disease aetiology in most communities, in that when the surfaces are dirty, they can easily become the point of contact for infection. When infection gets into the human body, the end result is disease progression, which leads to inadequate food in-take and malnutrition. On a positive note, most

67 Baby goats

compounds in the visited localities were clean and cleared of litter, except around where livestock stay commonly at the house mounds. Most participants made mention that they regularly sweep their houses and throw away rubbish in either rubbish pits or near the compounds. Most households did not have dug rubbish pits but had areas reserved for rubbish besides the compound. Houses were also smeared with black soil and cow dung as part of house cleanliness in the visited localities.

Qualitative findings reveal that many communities in the sub-region did not have hand washing facilities and rarely wash their hands with soap, a malpractice predisposing them to infections. While some participants said soap was expensive, the majority said that they could afford buying soap but were using it for other activities. Most respondents limited hand washing to mainly before and after eating food, while some participants reported washing hands after visiting a latrine. Most participants also added that people rarely wash hands as a routine especially before feeding children, after touching dirty surfaces and whenever necessary. Hand washing is not part of most families' routine, so it is difficult to incorporate. Few WASH sensitisation programmes at community level were identified, particularly on the importance of handwashing.

Self-report from the 2019 FSNA somehow contradicts discussions during the qualitative inquiry. Across the sub-region, only about 24.4 per cent of households had members that did not have water, soap, or cleaning agent for washing hands.[35] Furthermore, 39 per cent of households had an area for washing their hands with water and soap, while 9.7 per cent only water.[35] The practice of washing hands with water and soap was reportedly highest in Zombo district at 71 per cent, and lowest in Moyo district at 25%.[35] The same results show that over 50 per cent of the households in the sub-region have a handwashing place in a distance less than 10 paces from the main house.[53] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators in households with a handwashing place but toilet outside of the yard, in that children whose household had a handwashing station but a toilet outside of the dwelling/ yard were significantly more likely to be wasted or stunted[68] (Cf. Annex IV). This possibly reflects delayed (or non-) washing of hands post open defecation, as open defecation is more likely to take place further away from dwelling.

Focus group participants identified bathing practices as problematic, as most people bathe once a day with a sizeable number not bathing for close to a week. Mothers reported that children under five years bathe a minimum of two times a day. The community attributed infrequent bathing patterns to inadequate water availability and low social pressure or commitment to bathing. This is especially true during cold rainy seasons, as most people fear to bathe cold water. Most adults bathe from home bath-shelters, while some children and some adults bathe from streams and around wells, a practice that can contaminate water and predispose communities to disease. Women in the focus group discussions said that they spend time to bathe young children, but teach them to bathe themselves from an early age, to reduce their workload.

Participants identified washing clothes as a priority, and most were observed dressed in clean clothes during the qualitative inquiry. Participants said that they use soap for washing their clothes from either home or common water sources, and then they bring the clothes to dry at home. Young children are also taught to wash their clothes by their mothers so that they learn how to wash for themselves with time. On observation, most households did not have drying wires for hanging clothes. Most of them said they lay their clothes on grass to dry, a practice that attracts insects especially ticks and other pests/ parasites (especially of faecal origin) to get into their clothes, thus exposing them to disease.

68 No significant correlation with anaemia.

E.1 GENDER

Marriage and decision-making

Community discussions revealed high rates of early marriages because of increased school dropout rates (mainly at primary level) and religious beliefs. Islam encourages girls to get married at the age of 15 years while Christianity (particularly Catholics) discourages modern contraceptive use among followers, thus increasing the risk of early pregnancy. Reported age of marriage for girls was 14 or 15 years, while for boys it was typically 17-18.

Participants frequently associated early marriage with high school drop-out rates, saying the disincentives for school attendance disproportionately affect girls. These include lack of school fees, long distance walked to schools (often one to two hours one way) and need for sanitary towels and other supplies.

Inadequate partner support and reduced food in households too play a role in encouraging early marriages. Parents endorsed girls as the final decision maker regarding marriage; however, many participants also pointed to bride price as a welcomed source of income for parents.

Divorce is not a common practice among the population in the visited localities, except for young couples that simply separate before formalising their marriage. Participants attributed divorce and separation to financial hardship, polygamous behaviour in communities where it is deemed religiously inappropriate, inadequate partner support, an inability to bear children, and drug or alcohol abuse.

Concerning decision-making, participants reported that both men and women make decisions on household expenses, sometimes jointly and most times separately. Often, women make decisions on the household expenses, and men can support or dispute the decision. Men spend more money and time on trying to acquire family assets like land and livestock, as well as the decision to marry other women. Since crop agriculture is the main source of food and income in the sub-region, decisions are made on proportion of food to be reserved for food and to be sold. The decision on food reserved for consumption is made jointly, while men usually singly make decisions on where and how much to sell.

Decisions on family planning are seldom made jointly, as most men do not support the use of modern contraceptives. Participants attested that a few brave women in the community make independent (secret) decisions on family planning, but they commonly suffer domestic violence if/when the spouse learns of the decision. As sensitisation improves over time, participants said that some women can now seek permission from their spouses on family planning, but men are usually wary of the side effects, which they leave women to handle in case they arise.

Women feel pressured to work very hard to provide for their large households. Most of the income generated by the women is spent on providing for the family with or without any discussions with their spouses. Part of the expenditure goes into saving groups for both men and women which later help them in the lean season. Women make daily decisions on food stock management, including the type of food to be prepared, meal frequencies and apportioning of food during lean seasons. Most men play the role of balancing the diets by buying animal protein foods like fish and meat. Though women complained of men making decisions on the food portion they should be served, most men rejected this testimony. They informed that they hardly complain about the portions served to them, given the fact that the family sizes are big, and women provide most of the food cooked in the homes. Some men informed that they sometimes resort to eating from restaurants in the trading centres, which could spark domestic disputes.

At times when men migrate, women revealed the decision-making challenges they face in the absence of their spouses. Common decisions that women wait for men to make include decisions on taking children to private clinics which need payment, selling of assets such as land and livestock in times of hardship, and bride price (dowry). Lack of quick efficient communication mechanisms like mobile phones among the couples increase decision-making time and this delay has particularly troubling implications in case a decision on where to treat a sick child from has to be made. In times when men migrate, women also reported engaging less in income generating activities such as brewing of alcohol, selling produce and fish, which reduces income available to the household, leading to reduced access to food and other basic needs. Women also reported reduced childcare practices in form of child feeding and child welfare (bathing, protection from injury and dirt) due to increased workload when men migrate. They also associated other challenges with migration, such as school dropout, depleted savings, new partnerships, sexually transmitted diseases, and even abandonment of children and/or divorce.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed significant associations between marriage and decision-making indicators. Children in polygamous households were more likely to be stunted. Children in households where men made the decision, or the decision was jointly made, regarding cattle production were more likely to be anaemic (Cf: Appendix IV). Decision making for sheep/ goat production, and poultry production, was not significantly associated with wasting, stunting, or anaemia.

Women workload

Community discussions revealed heavy workloads of women compared to men mainly because of domestic work, garden work and gendered roles of childbearing and care. In as much as some men said that their workloads were equally heavy, the majority conceded women had more work than they did. Despite heavy workloads, women's feeding patterns were reported as inadequate, a practice that predisposes them to malnutrition.

The typical woman's day starts with waking up at 6:00am. She prepares breakfast, sweeps the compound as she helps young ones brush their teeth, and washes utensils (and occasionally clothes) such that by 8:00am-9:00am breakfast is ready. She goes to the garden immediately after breakfast until 11am-12:00pm. She then returns home, gathers food to prepare for lunch and have it prepared such that lunch gets ready by 2:00pm. She finds time to peg goats too before lunch is prepared. If a child is sick, she takes him/her to the health facility before serving lunch. She then serves lunch and goes back to the garden, where she continues with garden work until 5:00pm-6:00pm. She collects firewood sometimes from within the garden or on her way back home. On arrival home, she collects water using a 20 litre jerry-can from the nearest water point and can collect as many as 10 jerry-cans in a day, depending on the household size. She prepares dinner, which is served between 8:00pm and 9:00pm for the children and usually after 9:00pm for the husband. She then goes to bed at 10:00pm.

The daily routines of the pregnant and lactating women are more or less the same, except lactating women have to breastfeed children within their routines. Women who are financially able to prepare special meals for young children do so. Typically, congested daily routines of women undermine childcare activities such as breastfeeding, cooking food, complementary feeding, bathing, taking sick children to the health facility and watching over the children as they play.

During the dry season, women's time also diverts to income generating activities. For example, some can collect water for their spouses to make bricks for sale, engage in businesses like selling harvested crops, resell bulked food during harvest season, sell fish and brew alcohol as income

generating activities. They also farm in distant swamps and cut thatching grass from distant places during the dry season, making them tired.

Reduced male partner support increases women workload in the sub-region. Inadequate male support is anchored around in strong cultural beliefs that women are meant to work to pay back the dowry, increased substance abuse (alcohol and marijuana/cannabis and mirungi/khat), and childcare gendered beliefs (bathing children, feeding children among others). Other factors are gendered expectations for domestic roles; men work on commercial farms, leaving women working on subsistence farms. Migration for longer term work opportunities is only for men.

Form the discussions and observation, a heavy workload on women has had both short- and long-term effects. There is evidence of reduced childcare practices (breastfeeding and complementary feeding) predisposing children to malnutrition. Some women decried loss of weight and beauty after 10-15 years in marriage and the heavy associated workload. They said that they were healthier and more beautiful at their parents' homes, than at their marital homes because of heavy workload. Women who do not meet the workload demands of the households often go through stressful stigmatisation in society.

> *Women who do not carry four to 10 jerry cans of water a day are called lazy, feel sweet and do not know how to work. Our culture dictates that a woman must be hard working if she is to earn respect in the village.*
>
> **Focus group participant, Koboko District**

Women admitted that the routine of women 15-30 years ago was different, in that women had lighter workloads then, as compared to today. Men used to farm in subsistence farms alongside their wives, while women concentrated more on household chores. However, today women perform all or most farm activities on subsistence farms, as men work in casual labour on commercial farms. Women also used to have enough postpartum rest of three to six months with only light work, but today most of them feel pressured to resume work only three days after a normal delivery. Pregnant women before had light workloads but today most routines of pregnant women are the same as those of non-pregnant women. Additionally, historically, men used to break in and dig gardens, as women used to focus on the weeding. Today, these responsibilities have shifted to the woman, as women both dig and weed in addition to their domestic roles.

Men's workload

Men's workloads have seasonal variations depending on the primary occupation of the man. The typical farmer's day starts with waking up at 6:30am-7:00am and going straight to the garden after brushing his teeth. He either briefly returns home for breakfast or is brought breakfast by his wife, which he takes at about 11:00am. He returns home for lunch at 2:00pm or eats in a restaurant/trading centre. In the afternoon, he goes to the nearest trading centre to relax as he takes alcohol or narcotics (khat, cannabis, or mirra) until 6:00pm-7:00pm. When he returns, he interacts with the family members as they wait for dinner, which he will have after 9:00pm. During the dry season, men who are farmers tend to go hunting (antelopes, wild rabbits, warthogs and squirrels, among others), lay bricks, get involved in charcoal burning, build houses and ride boda-boda. Men with small-scale businesses tend to be more active in the dry season, making papyrus mats, selling produce, and/or selling narcotics.

The typical fisherman's day starts with waking up at 6:30am-7:00am and going straight to the fishing site after brushing teeth, which is often an hour or two walk. Some men spend the night fishing and only return home in the morning. For those who go in the morning, the man stays at the fishing sites

until 2:00pm, then he goes back home for lunch, which is usually at 4:00pm. Soon after lunch, he starts aligning and organising fishing nets in preparation for the next day's work. He rests at 6:00pm and in most cases stays home. Very few fishermen go to the trading centres to relax. But when they do, they go to play Ludo with fellow men, watch football, play cards, go and graze animals (on days they have returned early from the fishing sites). Fishing activities take place year-round.

Historically, men, especially farmers, used to shoulder heavier workloads than today. Most men practiced subsistence farming and less commercial farming. They used to dig, weed, and harvest crops. Today most men occasionally dig ground on subsistence farms, and leave weeding and harvesting to women. They instead look for casual labour on commercial farms.

F.1 UNDERNUTRITION

According to the anthropometric survey integrated into FSNA, which was conducted between May and July 2019, the prevalence of wasting (GAM) in the West Nile sub-region stands at 3.4 per cent (2.7-4.3 per cent, 95 per cent CI) while the prevalence of severe acute malnutrition is 1.6 per cent (1.1-2.2 per cent, 95 per cent CI). The prevalence of wasting in the Arabica Coffee Banana Zone was the highest, yet the confidence intervals overlap with other livelihood zones. The prevalence of wasting was also higher for boys, though the confidence interval overlapped with wasting for girls.

The prevalence of stunting was estimated at 27.8 per cent (25.9-29.8 per cent, 95 per cent CI) with the highest prevalence estimated also in the Arabica Coffee Banana Zone. Results show that the prevalence for stunting was higher in boys than in girls. The proportion of anaemic children was estimated at 62 per cent and the prevalence of anaemia in the Tobacco Cassava Sorghum Zone was higher than in the other livelihood zones. (Cf: Annex IV).

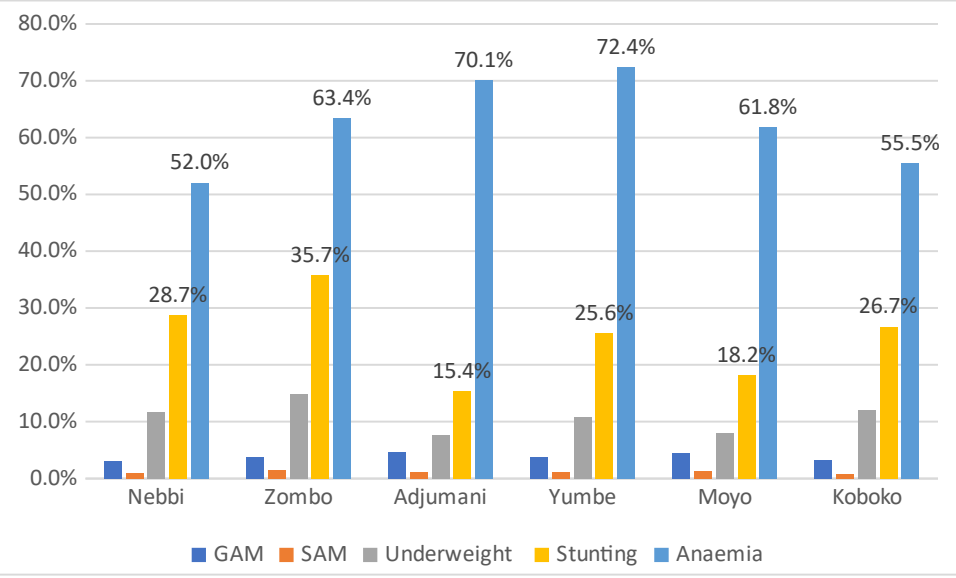


Figure 10: Prevalence of undernutrition and anaemia in West Nile, by district

Historical and seasonal trends of undernutrition

There is no historical disaggregated nutritional data for the West Nile sub-region, so studying the historical trends can only be based on sub-regional data.

At a more aggregated level, prevalence of wasting in the West Nile has only reduced by 0.4 per cent during the eighteen-year period 2001 to 2019; after shooting up significantly in 2016 to 10.4

per cent.[9] With the exception of 2016 and 2006, wasting levels in the sub-region are generally low. Stunting has been generally high and very high during the eighteen-year period, having reduced from 37 per cent in 2001 to 28 per cent in 2019. Anaemia levels have been of high public health significance through the eighteen-year period, having only reduced from 72 per cent in 2001 to 62 per cent in 2019.

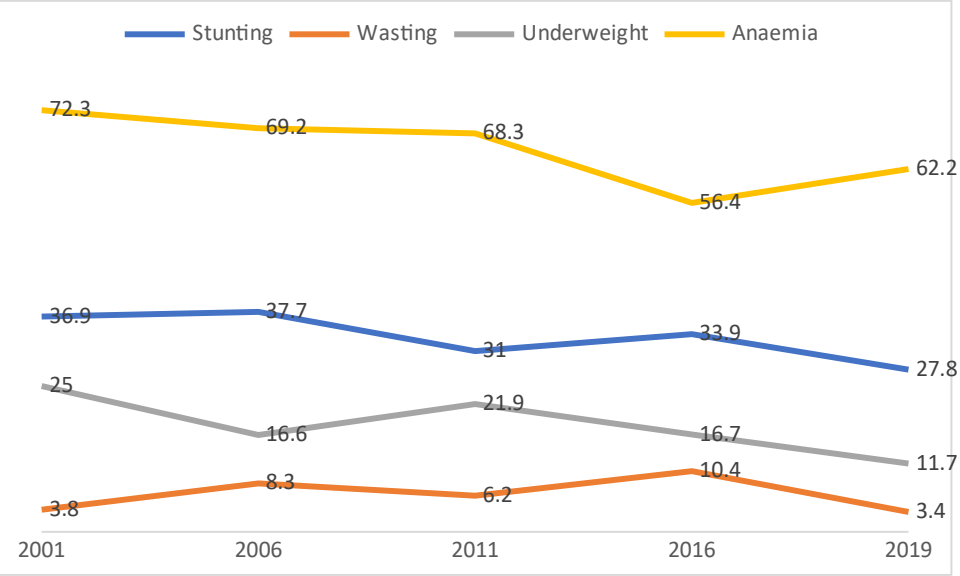


Figure 11: Undernutrition trends in West Nile sub-region

The available historical data was never tied to seasonal variations, so it is impossible to make any conclusions on the seasonal trends of undernutrition in the sub-region.

G.1 COMMUNITY PERCEPTIONS OF UNDERNUTRITION AND THERAPEUTIC ITINERARY

Community perception of undernutrition

Community members defined a healthy baby as one that looks happy, has good appetite, and when you measure the arm it is bigger than the rest of the kids. The healthy baby is active and plays well with other children.

When presented with photos of malnourished children, community members easily noticed that these children were not normal. In the Tobacco Cassava Sorghum Zone, a child with marasmus was described as a thin child ("Zinga"), who suffered because of poor child spacing by the mother. In the northern part of the Simsim Sorghum and Livestock Zone, a marasmic child is described as "Indria," implying a child with a low birth spacing illness. Women believed that an early pregnancy makes the baby sickly, leading to marasmus. From further discussions, marasmus was associated with spiritual beliefs or taboos, such as walking over a tortoise, bumping into a spirit at the mountain, or even witchcraft; yet other participants suggested bad luck, eating cold food, inadequate feeding, worm infestation, tuberculosis , asthma, malaria (fever), diarrhoea and vomiting to be causes of marasmus. Parents in Nebbi District revealed that they could not allow their children to reach that stage. They said they try as much as they can to feed their children well and when that fails, they seek medical advice.

In the Arabica Coffee Banana Zone and southern part of the Simsim Sorghum and Livestock Zone (Nebbi district), children with kwashiorkor were described as children with "Aboga-boga"

illness that manifests in a bulging stomach ("Iludu/Idele") and having an old man's face. In the Tobacco Cassava Sorghum Zone, kwashiorkor is locally termed "Avoavo," implying an illness that arises out of not eating a balanced diet. In other localities, kwashiorkor was locally termed as "Afuta"/"Labungu" meaning a child with a swollen stomach ("Lumatatogo"), brown hair and swollen cheeks. Mothers associated kwashiorkor with poor birth spacing, not feeding well, child suffering from bilharzia[69] ("Ndingi / Aludda") because of drinking dirty water, and a woman breastfeeding when she is pregnant. Other factors believed to cause kwashiorkor were missing ANC visits and feeding the child cold, uncovered food. During the community discussions, parents said children with such signs have significantly reduced in their localities. If identified, they are promptly taken to a health facility for treatment.

Stunting was frequently described in the visited communities, though its perception varied. In Koboko District, participants indicated that about 10 to 20 children in every village present signs of shortness, which they strongly associated with HIV/AIDS or other natural factors. In Nebbi District, participants said a stunted child can be referred to as "Afuta", implying a child born at a premature age (pre-term birth) or a child who missed a polio vaccination. In Patek village, participants said they had not seen such children for a long time but believe they existed in other localities in the district. All participants described a stunted child as one with bones that are not growing well. The causes of the abnormal bone growth ranged from unknown natural factors, to children born with HIV, children not well spaced, children not fed well, and children whose parents are naturally short. It was also believed that people have naturally become short over time, hence giving birth to children whose bones cannot grow easily.

During follow-up interviews, health personnel said there are still considerable cases of malnourished children and women in West Nile. Health providers revealed that many children and women were malnourished, mainly due to inadequate food consumption and lack of knowledge on balancing the diets.

> *Many children suffer from malnutrition because of the kind of diet they are fed on. Most of the children are fed on carbohydrate diet i.e. posho in form of porridge and posho as food for the meal.*
>
> **Health facility personnel, Moyo District**

Community participants believed that more girls are malnourished than boys, because of the quality of care preferences mothers have for boys. But they also expressed discomfort with the way mothers of malnourished boys are stigmatised in society. The community attaches higher value to a boy child.

> *It's a prestige to have a boy child in the community. Mothers in most cases care more for the boy child than the girl child leaving the girls not well fed.*
>
> **Focus group participant, Koboko District**

From the focus group discussions, participants believed that lactating women, pregnant women and young children were all likely to get malnourished if they ate poorly and were prone to illness. They, however, suggested that in the current community context, children are more likely to be exposed to factors leading to malnutrition than women. They said women can only grow thin and stressed due to heavy workload but not easily get malnourished. In further discussions, community

69 Schistosomiasis.

participants identified children who are more vulnerable to malnutrition. They specifically pointed out children from female headed households, children from households where the father and mother are engaged in fishing with less time spent on crop production, children from very poor households, children from large families, children under the care of elderly grandparents, and children whose fathers and mothers are not educated. They informed that such children are very likely to be malnourished in their early years of life. They further stated that children from large families are underfed, as such families never have enough food for everyone, while poor households have small land holdings leading to low food production, yet they cannot afford to buy food from the markets. It was clear from discussions that community members understand that when the parents lack basic nutrition knowledge, then it is likely that their children will become malnourished.

Community therapeutic itineraries

Much as there is a tendency in the communities to treat illnesses using herbs and sometimes refer to religious leaders who give holy water, community participants said that any cases of wasting are taken immediately to the health facility. At the health facilities, the malnourished children are treated with PlumpyNut®. Health workers further informed that MAM cases are managed at HC III where they are mostly handled as OPD cases, but all SAM cases are referred immediately to the district hospital for proper management. It was also revealed that VHTs are being trained to diagnose malnutrition cases at the lower community level and sensitise the parents so that such cases are managed in a proper way.

For some child illnesses like malaria, high temperature, vomiting and diarrhoea they use herbs like pilopilo, bazacobi, burusibi, and gingiba leaves; and holy water (Mahaya). However, these are rarely given to wasted children, as parents prefer taking them to the health facility for special nutritious foods. In case of oedema, parents said they can first massage the child with shear nut oil or cooking oil and some local herbs to reduce the pain, but then the child is taken to the heath facility. On further interaction, mothers said in the past the community lost a number of babies when they tried to treat malnutrition locally, so they were discouraged to do so now.

On the other hand, community participants attested that when a child's bones fail to grow normally, as was believed for some forms of stunting, they prefer consulting traditional healers as they do not believe this is a result of malnutrition. When traditional healers fail, then they can take the child to the Church or Mosque where they are mostly given holy water to either drink or sprinkle all over the body. It is when these two options fail that a child is taken to the health facility.

Overall, the health itinerary in the sub-region involves three key players. Parents either go the health centres (which is their first preference for wasting cases), traditional healers, and religious leaders (their first choice for stunting).

H.1 COMMUNITY PERCEPTIONS OF CAUSAL MECHANISMS OF UNDERNUTRITION

The qualitative inquiry in West Nile region included about 60 independent exchanges with approximately 600 participants. Their detailed and complementary testimonies helped to define a causal pathway for undernutrition in the region, which served as a basis for the triangulation with the available secondary data, particularly 2019 FSNA data sets.

The community identified inadequate care practices and inadequate infant and young child practices as key risk factors for wasting while both are linked with heavy women's workload. A mother's multiple household occupations, often complemented by her income-generating responsibilities, do not leave a lot of time for proper child care, which also manifests in inadequate utilisation of

health services, increasing child's vulnerability to illness and/or chronic illness due to a delayed treatment. In addition, young mothers do not tend to have sufficient knowledge on basic childcare practices, which in combination with childcare by another family member, may result in an increased risk to infection and/or inadequate food intake. Mothers admitted struggling with breastfeeding and child feeding as their heavy workload prevents them from being able to breastfeed and/or prepare multiple meals a day. Secondly, due to poverty, children rarely eat balanced and diversified meals. In effect, low household economic power and early marriages were identified as triggers of undernutrition, extending a vicious cycle to the next generation. The scarcity of income was described as an outcome of low crop production due to inadequate farm inputs, erratic rainfall, and pests and diseases.

According to the community, key risk factors for stunting reflect those for wasting while inadequate hygiene and sanitation practices also play a role. As latrines are scarce and open defecation is still practiced, a contamination at ingestion is very likely for children playing in unsafe play areas and/or if a household uses an improved water source close to open defecation sites.

I. SUMMARY OF FINDINGS AND CATEGORISATION OF RISK FACTORS

In order to understand how participating communities perceive the severity of risk factors to undernutrition, a prioritisation exercise was conducted in each of four localities at the end of the qualitative data collection period. All risk factors identified by community members over the course of this study were presented back to them with the use of flashcards, portraying each discussed risk factor. After a recapitulation of survey findings by the qualitative data collection team, participants were invited to validate the interpretation of results and suggest modifications, if necessary. Subsequently, they were requested to divide risk factors into three categories (major, important, minor), depending on their impact on child undernutrition. The results of this exercise are presented in the table below. Risk factors perceived as having a major impact on undernutrition are highlighted in red, important factors are marked in orange while risk factors with minor impact are coloured green. White cells marked "N/A" signify that a respective community did not identify that risk factor as a cause of undernutrition in their milieu.

	Risk factor	Kingaba	Patek	Jupuyik	Nzerea	Overall
A	Limited access to quality health services	+	++	++	+	++
B	Limited use of health services	+	+	+	+	+
C	Low birth spacing/ unwanted pregnancies	++	+	+++	++	++
D	Low birth weight	N/A	+	+	N/A	+
E	Parental stress	+++	+++	+++	+++	+++
F	Non-optimal breastfeeding practices	+	++	++	++	++
G	Non-optimal infant and young child feeding practices	+++	+	++	+++	++
H	Low quality of interactions between a child and caregiver	++	+++	+++	+	++
I	Low access to food	+++	+	++	+++	++
J	Low dietary diversity	+++	+++	+++	+++	+++
K	Low diversity, access and availability of income sources for households	++	+	+	++	++
L	Low coping capacities/ resilience	+	+	+	+	+
M	Low access and availability of water (quality and quantity)	++	++	++	+	++
N	Poor sanitation practices	+	++	+	+	+

O	Poor hygiene practices	+	+	++	+	+
P	Low female autonomy/decision making	+	+	+	+	+
Q	Low social support for women or households	++	++	+++	++	++
R	Early marriage and/or Early pregnancy	+++	++	++	+++	+++
S	Low nutritional status of women	+	++	++	+	++

*N/A - respective community did not identify that risk factor as a cause of undernutrition

Table 14: Summary of results of community rating exercise for West Nile sub-region

After the completion of both qualitative data collection and secondary quantitative data analysis, Link NCA Analyst triangulated all available data sets, compared correlations for each risk factor and determined the strength of its association with undernutrition. The ratings for each hypothesised risk factor are summarised in the table below.

	Risk factor	Strength of association with under-nutrition from scientific literature	Prevalence of risk factor according to secondary data (literature review)	Statistical associations from secondary data				Seasonal and historical associations with under-nutrition	Findings from the qualitative study	Community rating exercise	Interpretation/ Impact of risk factor
				W	S	A	O				
A	Limited access to quality health services	++	++	N/A				++	++	++	Important
B	Limited use of health services	++	+					++	++	+	Important+
C	Low birth spacing/ unwanted pregnancies	++	+	N/A				-	+++	++	Minor
D	Low birth weight	+	++	N/A				-	+	+	Minor
E	Parental stress	++	+	N/A				+	+++	+++	Important
F	Non-optimal breastfeeding practices	+++	++					+	++	++	Important
G	Non-optimal IYCF practices	+++	++					++	+++	++	Important
H	Low quality of interactions between a child and caregiver	++	+++	N/A				+	++	++	Important
I	Low access to food	++	++					++	++	++	Important
J	Low dietary diversity	++	+					++	++	+++	Important
K	Low diversity, access and availability of income sources for households	++	++					+++	++	++	Important+

L	Low coping capacities/ resilience	+++	+++					++	+	+	Important
M	Low access and availability of water (quality and quantity)	+++	+++					+++	++	++	Important
N	Poor sanitation practices	++	++					+	++	+	Important+
O	Poor hygiene practices	++	++	N/A				+	++	+	Minor
P	Low female autonomy/ decision making	+	+					+	+	+	Important
Q	Low social support for women or households	++	+	N/A				+	++	++	Minor
R	Early marriage and/or Early pregnancy	+	+	N/A				+	+++	+++	Important
S	Low nutritional status of women	+++	++					+	++	++	Important

Table 15: Summary of categorisation of risk factors for West Nile sub-region

The weight of each risk factor was determined in line with the rating grid presented below.

Category	Criteria
Major risk factor	No conflicting information AND Strength of association with literature review classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information
Important risk factor	A minor amount of contradictory information exists AND Strength of association from literature review is classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information
Minor risk factor	A moderate level of contradictory information is permitted AND Strength of association from literature review is classified as [+] or [++] AND Majority of [+] for all other sources of information
Risk factor rejected	Non-contradictory information AND Majority of [-] or [+] for all other sources of information

Table 16: Rating grid for the categorisation of risk factors

At the same time, Link NCA Analyst revisited causal pathways of undernutrition, as developed with communities during the qualitative inquiry, and developed two simplified outlines, likely to explain a majority of cases of undernutrition (wasting and stunting) and anaemia in West Nile region.

Figure 12 below depicts a causal mechanism for undernutrition, highlighting the risk factors with a significant statistical association with wasting and/or stunting. The most vulnerable group to acute malnutrition were children under 24 months of age and children whose mothers attained only primary education. The most vulnerable group to chronic malnutrition were male children, children older than 12 months and children from polygamous households. Children from Zombo and/or Arabica coffee-banana zone in the same district as well as children from Tobacco-cassava-sorghum zone in Yumbe and Koboko districts were more likely to be stunted while children from Adjumani or Moyo were less likely to be so. The mother's or head of household's education (primary or higher) seemed also to decrease a child's odds of stunting.

A dominant pathway to undernutrition in West Nile appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate access to sanitation facilities exposes a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. A child living in a household where the toilet was not in a dwelling/plot/yard, had higher odds of wasting and stunting while a child with access to a latrine was less susceptible to stunting. In addition, a child with access to an unsafe water source was more likely to suffer from chronic malnutrition.

On a health-seeking side, a child who received a measles vaccination and a Vitamin A supplementation was less likely to be wasted while a child who received DPT vaccination was less likely to be stunted.

A complementary pathway to undernutrition in West Nile seems to take its roots in low female decision-making powers, which influence a household's access to a variety of income sources and eventually its access to food. This translates into an inadequate food intake of children under five years of age and consequently into wasting/stunting. A child living in a household where other members of the household took decisions on poultry production demonstrated higher odds of stunting. At the level of limited access to income, a child living in a household which identified the physical inability or sickness as the key constraint to farming, had higher odds of wasting and stunting. On the other hand, a child living in a household with formal employment and livestock sale as primary sources of income, suggesting a certain stability of income, was less likely to suffer from chronic malnutrition. The same applied to a child living in a household with primary income from trade.

The stability of income could eventually translate into a household's coping strategies as children living in households deploying coping strategies more frequently, were more likely to be stunted. In addition, a child living in the household, which uses income for the purchase of alcohol and tobacco was more likely to be wasted or stunted, thus suggesting the non-beneficial use of income for child development.

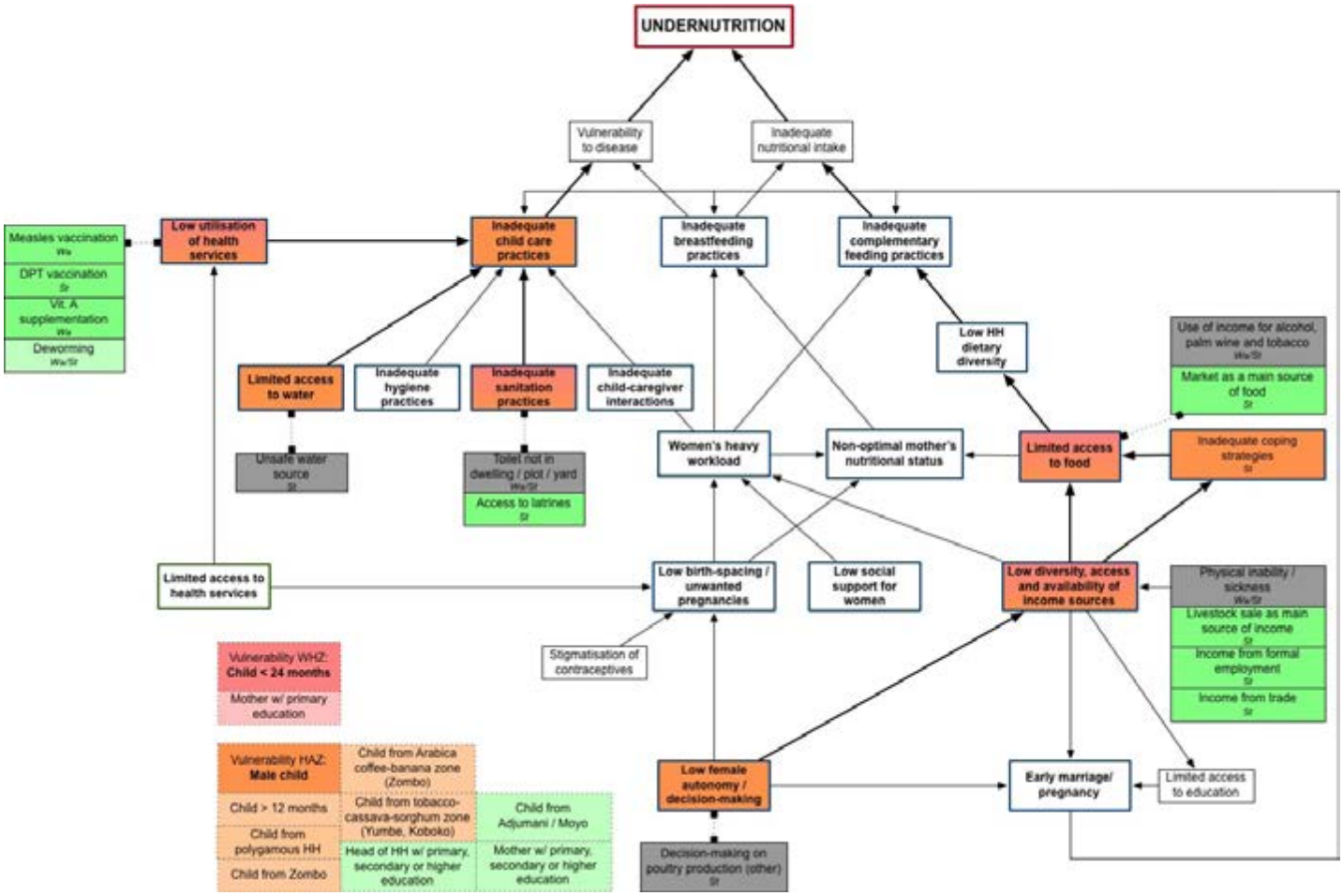


Figure 12: Simplified causal pathway for undernutrition (wasting and stunting) in West Nile Region[70]

Figure 13 below depicts a causal mechanism for anaemia. The most vulnerable group to anaemia were male children aged 12-23 months, living in Zombo, Adjumani, Yumbe or Moyo districts, which partially overlaps with home district vulnerability for stunting, as explained above. On the other hand, a child aged 24-47 months was less likely to be stunted while a mother's or head of household's education (secondary or higher) seems to decrease child's odds of anaemia in the region.

Similarly to wasting and stunting, a dominant pathway to anaemia appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate sanitation practices expose a child to environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in micronutrient deficiency. In West Nile region, inadequate sanitation practices appeared to be linked with livestock ownership and access to agricultural land. While this may appear counter-intuitive from a food security perspective, it is likely that children living in households dependent on agricultural production are more exposed to environmental contamination through the proximity with animals, which may lead to (repetitive) infections. On a health-seeking side, measles and DPT vaccinations, Vitamin A supplementation and deworming demonstrated a protective relationship against anaemia.

70 Dark red cells represent risk factors presenting a significant statistical association with acute malnutrition while dark orange cells represent risk factors presenting a significant statistical association with chronic malnutrition. Cells in a mix of dark red and dark orange represent risk factors presenting a significant statistical association with both acute and chronic malnutrition ($p < 0.05$) (See Annex 4). Cells highlighted in light red and light orange signify risk factors with a potential link to acute and chronic malnutrition, respectively ($p < 0.1$) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with acute and chronic malnutrition.

A complementary pathway to anaemia across three regions seems to have its roots in low female decision-making powers, which influence a household's access to a variety of income sources and eventually its access to food. This translates into inadequate food intake of children under five years of age and consequently into a micronutrient deficiency. A child living in a household in which a man took decisions on livestock production or such decision-making was shared, was more likely to be anaemic.

At the level of limited access to income, a child living in a household with a charcoal sale or wage labour as primary sources of income, was more likely to be diagnosed with anaemia. The access to income could eventually play into household's coping strategies as children living in households deploying coping strategies more frequently, were more likely to be anaemic.

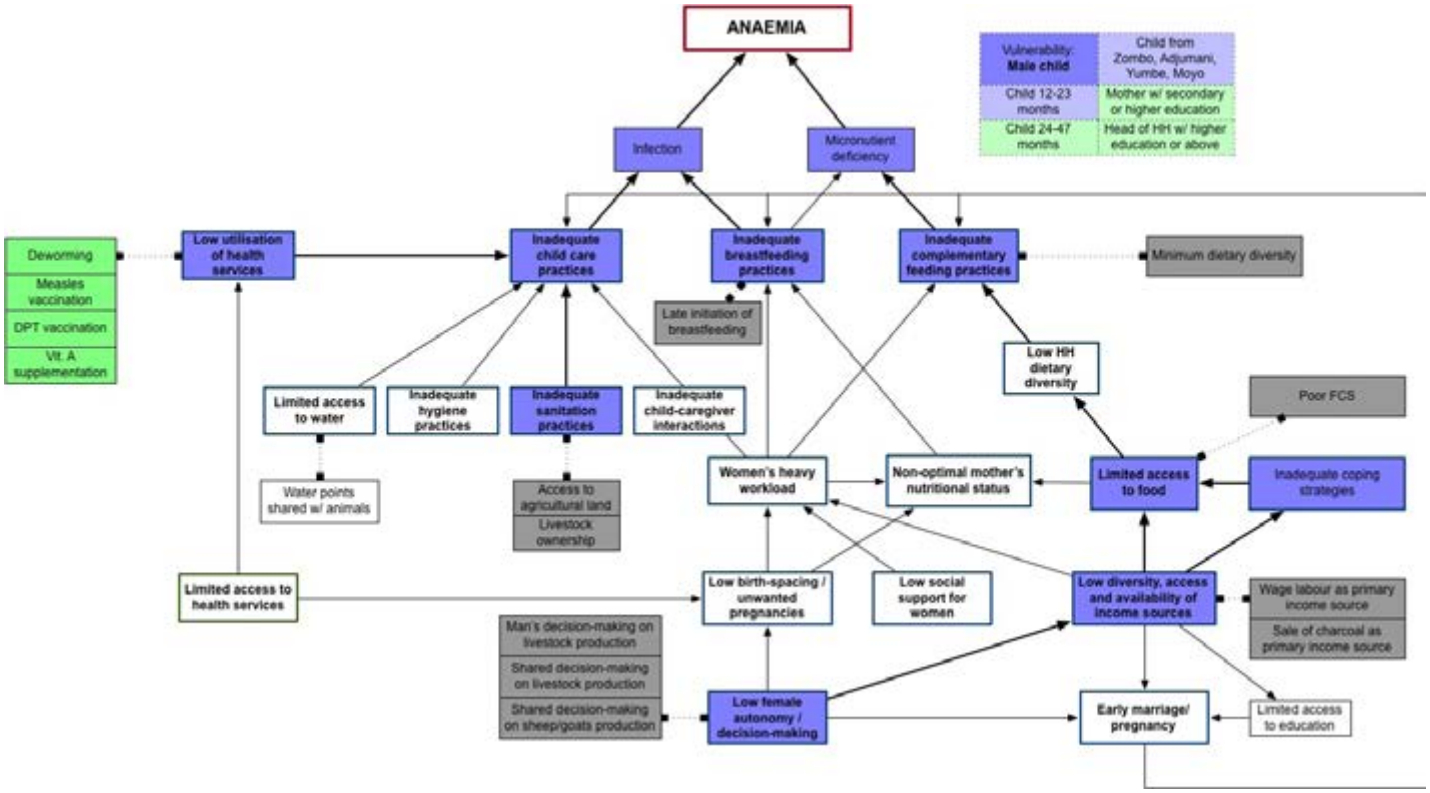


Figure 13: Simplified causal pathway for anaemia in West Nile Region [71]

71 Dark purple cells represent risk factors presenting a significant statistical association with anaemia (p 0.05) (See Annex 4). Cells highlighted in light purple signify risk factors with a potential link to anaemia (p <0.1) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with anaemia.

II -KARAMOJA SUB-REGION

A.2 HEALTH

Health services in Karamoja sub-region are provided through a six-tier health care delivery system beginning from Health centre I (VHT), Health centre II (H/C II), Health Centre III (H/C III), Health centre IV (H/C IV), district general hospital and Regional Referral Hospital (RRH) based in Moroto district. In 2000, the Government of Uganda introduced a new layer in the provision of health care services to the population, in which volunteers are trained to serve rural communities. These volunteers are referred to as Village Health Teams (VHT) and they are generally designed to help increase uptake of health services in communities. They are now officially categorised as Health centre I, and teams should be situated at every village. The H/C II is situated at parish level, H/C III at sub-county level, H/C IV at county (in some cases district), general hospital at the district and RRH at a district with adequate proximity to other district hospitals within the sub-region.

The Ministry of Health indicates that by 2018, Karamoja sub-region had 144 health facilities, including one regional referral hospital at Moroto municipality, Moroto district. The remaining 143 health facilities included 89 HC II (79 government and 10 private), 44 HC III (35 government and 9 private), four HC IV (all government), and four general hospitals (two government and two private). An additional two registered private clinics were identified.[42] In sum, 146 health facilities serve an estimated population of 1.3 million.[43]

Access to and utilisation of health services

Per secondary data review, geographic coverage is seemingly higher for Karamoja sub-region than the other studied areas; indeed, all localities visited during qualitative inquiry had access to at least one government-supported health facility.[72] Geographic barriers remain, as some clinics are located 5km or longer away. Households then in most cases have to walk to the centres or incur some transport cost (using motorcycles), which is a physical, temporal, and/or financial burden. The challenge of distance to the nearest health centre[73] has been exacerbated by the bad quality of the roads, which leads to high transportation costs[74] that are in most cases unaffordable to the poor communities. In one of the localities visited, participants alluded to poor quality roads seemingly abandoned by local authorities.

Focus group participants and health workers alluded to the inability of the health facilities to avail quality health services to the community members as a looming problem. Stock out of essential

72 Irriri health centre II (Kaurikiakine locality), Lokalis health centre II (Moron locality), Rengen health centre III (Loodoi locality) and Kamion health centre II (Lochoto locality).

73 Long distances to the health centres have resulted in some women giving birth on the way.

74 Average cost to the nearest health centre is about 5000/= in three localities, but about 10,000/= in Lochoto.

medicines is common; other essential medical supplies (such as mama kits, gloves, and insecticide treated nets) are virtually lacking for most of the year.

> *The centre lacks even the very basic things like cotton wool and gloves, yet the expectant mothers also come without them. The mothers also indicate inability to buy which forces us to borrow from neighbouring health facilities and a private for-profit hospital that is located within our sub county*
>
> **Health facility personnel, Napak District**

The unavailability of medical supplies and drugs at the nearby government health facilities (especially HC II) is forcing communities to embrace traditional herbalists, religious entities, private clinics and drug shops as their first therapeutic choice. Community participants noted that prayer was offered as treatment option for children whose illness is not well understood. There was also mention of the limited water supply at the government health centres. The water is needed for washing, cleaning, and bathing by the patients, and washing medical equipment.

The medical personal staffing was low at all visited health centres in comparison to the number of patients visiting the health facilities. Because of low staffing, medical staff develop stress, which leads to poor attitude towards the patients. During key informant discussions, health personnel revealed increasing pressure and fatigue arising from the many patient needs. They also revealed that heavy workload coupled with delayed payment of their allowances/salaries[75] leads to late opening and early closure of the health facilities. This further negatively affects the provision of quality health care services to the community.

> *The health facility is opened from 10:00am to 1:00pm, yet on the sign post it is written from 8:00am-5:00pm.*
>
> **Focus group participant, Napak District**

In other communities, it was, however, mentioned that the government health centres open by 7:00am and close by 12:00 noon for the outpatient departments (OPD), with 24/7 emergency services. On the contrary, health workers complained about the late coming of patients to the facility, which makes health education sessions difficult. Late coming of patients was attributed to their decision to do some household work, including farm work, before going to the health facilities, and the fact that most of them just walk to the health facilities, which takes an hour or two, one-way.

> *We are both caretakers and nurses because the expectant mothers come to the health facility without caretakers. They come in weak since they will have not eaten anything and unable to support themselves. We also clean the mothers and ensure they eat something before and after giving birth*
>
> **Health facility personnel, Napak and Kaabong districts**

Participants noted provision of soya flour as a motivating factor for attending ANC and immunisation visits, and associated its lack of provision with poor quality of care. To emphasise the importance of food provision within the health facilities, the participants said when there is food for pregnant and lactating mothers, the clients always come in big numbers and when the food is out of stock, they are demotivated to go for appointment. However, health personnel in Amudat district said that there

75 It was revealed that some health workers are not even on the payroll, which complicates payment of their remuneration.

has been a reduction in the provision of the soya flour by World Food Program (WFP) since August of 2019. She further stated that out of 10 clients on vaccination appointments, only six attend when there is no supplementary food at the health centre.

Participants noted a financial barrier in the high cost of treatment at private facilities, including the private not-for-profit hospitals. Estimated costs for malaria ranged from Ug. Shs 15,000 to 30,000[76] in case of prescription of tablets but about Ug.shs 80,000[77] in case of IV treatment.[78] Diarrhoea treatment costs at least Ugshs50,000[79], while cough in children is treated for Ugshs10,000-15,000.[80] Treatment costs were reportedly relatively higher in the South-eastern Cattle Maize Zone than other localities visited, but no quantitative data was available to support this important community feedback.

Some community members actually indicated that they have resorted to treating their children with local herbs due to the high treatment costs. It was reported that elders in the community mostly prepare these herbs, and they are free or inexpensive, i.e. Ug.shs 3,000[81] per 500ml bottle. Children who develop joint pains due to pneumonia and other illnesses are treated using a powder herb. In this case, the child is injected at the knee with powder to not only reduce the pain but also help the child walk again. Reports of such treatments were corroborated by one of the health workers, who informed that patients resort to use of herbs due to lack of money for transportation.

In all localities visited, the participants recognised the importance of Village Health Teams (VHT), since they act as emergency health care agents within the communities, especially during the night hours. However, community members said the VHTs are demotivated by continuous stock outs of medicine at the government health facilities. Others are discouraged because of the low facilitation extended to them, in that they do not feel like formal members of the health work force. Even though VHTs are voluntary, it is expected that a transport and lunch allowance is extended to them, most especially during monthly meetings.[82]

> *VHTs are the closest medical staff to us but we have not seen them since the year began.*
> **Focus group participant, Napak District**

Findings from the June 2017[33] and January 2018[34] FSNA indicate that over 93 per cent of the Karamoja sub-region seeks health services first from government aided health centres; another 5 per cent first consult VHT's. Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant relationship between these indicators. Children who were first treated by the VHT were significantly less likely to be stunted (2017, 2018); however, they were more likely to be anaemic.

76 $3.99- $7.97 USD.

77 $21.26 USD.

78 When intravenous medication/drug is used.

79 $13.29 USD.

80 $2.67-$3.99 USD.

81 $0.80 USD.

82 The size of the area of coverage and the demand for VHT work in the community complicates the notion of voluntary service.

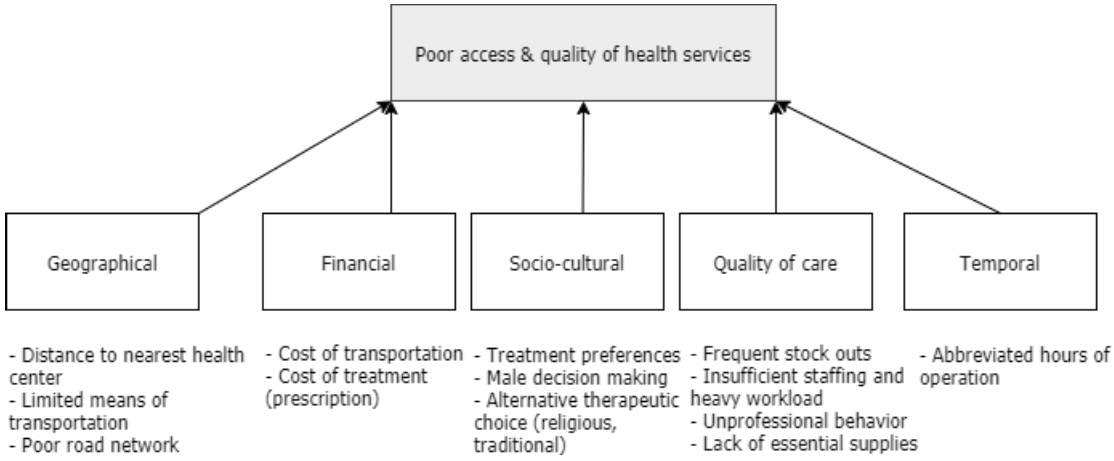


Figure 14: Summary of key barriers to healthcare in Karamoja sub-region

Immunisation, Deworming, and Vitamin A

Most participants highlighted the benefits of vaccination, in that they protect pregnant women from diseases such as pneumonia and syphilis. These diseases can make pregnant women lose nutrients in the body and can affect the foetus in the uterus leading to low birth weights. It was also noted that vaccination protects children from Tuberculosis, Polio, Measles, symptoms of ARI including pneumonia, and other killer viral diseases. Following up on the effects of the above diseases, once children miss vaccination, participants stated that children can die, lose blood, have diarrhoea, and can become lame. When probed on the availability and accessibility to vaccines, participants and health workers stated that vaccines are available but sometimes they delay to be brought to the health centres where the actual vaccination is done. Participants stated that their culture accepts vaccinations, and nothing scares them.

> *The absence of vaccines from the health facility for the last three weeks has been due to lack of money to fuel a vehicle to go and pick the drugs from the district; as a result mothers are being referred to a health centre III that is about 20km away*
>
> **Health facility personnel, Amudat district**

An analysis of the FSNA data of 2017 and 2018 indicates that measles vaccination stood at 96 per cent in 2017[33],[83] and 96 per cent in 2018[34],[83], whereas DPT vaccination rate was 97 per cent in 2017 and 74 per cent in 2018. On the other hand, recorded or reported Vitamin A supplementation was 86 per cent in 2017 and 83.2 per cent in 2018. Approximately 80 per cent of children aged more than 12 months had been dewormed in 2017, yet this proportion was 89.5 per cent in 2018.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant relationship with these indicators. Children who were not vaccinated for measles were more likely to be wasted or anaemic, but less likely to be stunted. Children who were not dewormed were less likely to be stunted and more likely to be anaemic. Children who did not receive DPT vaccination were less likely to be stunted and more likely to be anaemic. Vitamin A supplement also significantly associated with stunting (Cf: Annex IV).

83 With card or mother's confirmation

Antenatal Care and childbirth

Focus group participants agreed that it is important for pregnant women to go to the health facility for consultations to ensure the baby is in good health and properly positioned. In follow-up discussions, mothers said they prefer visiting the health facility as soon as they realise they are pregnant. The mothers appreciate the ANC services at the health centres and the health talks given in preparation to receiving their babies. Community participants and health personnel said health talk topics during ANC visits include birth preparedness, care for the new-born baby, danger signs during pregnancy, advantages of breast feeding, disadvantages of using native medicine, importance of health centre delivery and malaria prevention. Mothers said benefits from ANC visits include getting antimalarial drugs, iron tablets, advice on any growth deformities of the foetus, and knowledge on how to feed well during pregnancy.

During focus group discussions, participants were forthright on their use of traditional birth attendants. Health facility midwives encourage the expectant mothers to visit the health facility, when their time is due, with a traditional birth attendant. This is done to ensure the safety of the mother and baby, in the event she gives birth on her way to the health facility. The other reason for TBA accompaniment is assistance during the birth, especially in the event no health personnel are available in the centre. One traditional birth attendant said she had helped 20 mothers deliver between June and September of 2019. Her confidence in carrying out this work is vested in the fact that the health facility staff recognise her work. In this particular village, the traditional birth attendant said due to lack of gloves by the mothers, she uses a white transparent polythene paper ('Kaveera'). The traditional birth attendant said women resort to her services because of the long distance from the village to the health facility.

In as far as care practices are concerned, mothers said the health facilities have been a great source of information, including the VHTs, who act as the community's first line of health advising. ANC visits and the VHT sessions with the mothers have had a profound positive effect in terms of the proper care of the unborn and born babies/infants within the different communities.

There are socio-cultural barriers to antenatal care and clinic deliveries; some expectant mothers delayed going to the health facilities due to fear of having prolonged birth or pregnancy. This results in some mothers giving birth at home or on the way to the health facility. Mothers faulted local authorities and centralised government regarding roadside deliveries.

> *On arrival at the health facility, the nurses ask us what makes us to give birth on the way and we feel bad because it is not our making.*
>
> **Focus group participant, Moron village**

According to health workers, even when a mother gives birth on the way, she is helped as soon as she arrives at the health facility. Mothers who attend ANC visits are more likely know the basic advantages of going to the health facility, even if one gives birth at home.

> *We have had mothers who deliver on the way to the health facility, but they still come for their own treatment to avoid infections, and their babies' vaccination and birth certificate. The positive part of women who have attended ANC is that even if they deliver on their way to the health facility, they still receive medical assistance*
>
> **Health facility personnel, Kotido district**

The majority of mothers in the sub-region give birth naturally[84], with few cases of caesarean births. The overwhelming number of natural births was attributed to improved ANC attendance, though some mothers also attributed this to the availability of herbs that help women produce without prolonged labour.

The majority of the babies in the visited localities selected were said to have weighed on average two to three and a half kilogrammes at birth. The overwhelming normal birth weights was attributed to attendance of ANC services at the health facilities. However, babies born at home with the help of traditional birth attendants are not weighed at birth, because the TBAs do not have the weighing equipment, though a perception of their weights was not different from a normal birth weight. In further discussion, participants noted that during the hunger season of May to July, mothers were more likely to deliver underweight babies (below two and a half kilogrammes), yet during seasons when food is in plenty (August to December), the mothers deliver normal weight babies. According to participants, overweight babies are not very common because of the food security issues at household levels. Mothers believe maternal alcohol consumption and poor feeding are responsible for children born with low birth weight.

Table 17 summarises risky behaviours associated with childbirth.

Behaviour	Perceived risk	Community justification
Avoiding hospital delivery for second child	Medium	If a mother gives birth by caesarean operation on the first born, then it is very stigmatising to go through that experience again. It is better to use herbs and be able to produce well, except if any complications arise.
Pregnant woman going to a traditional healer to ensure my baby develops well	Medium	Traditional herbalists inform mothers that the herbs help the unborn child to develop well in the womb and make the labour period easy. However, these days, herbs don't work as some mothers end up bleeding during birth and can even lose the baby.
Women giving birth at home, especially for the first baby	High	Women giving birth for the first time do not know what is involved to give birth. It is better they go to the health facility or a TBA.
Doing heavy work load when pregnant such as digging, fetching firewood, collecting grass to thatch houses, preparing meals for the family, gold mining	Low	If the women do not work, then the household may starve, including her children, hence she cannot avoid working.
Taking the newly born baby for religious blessing	Low	Every child needs a blessing from God to grow well and live longer.

Table 17: Risky behaviour associated with childbirth in Karamoja sub-region

Child illness

Discussions with community participants on disease prevalence revealed malaria as the most common disease affecting children under five years old. Community members highlighted the limited availability of insecticide treated nets (ITN), as well as the bushy environments and stagnant water around the home, especially during the rainy season, as the key causes of high malaria rates. Participants in one locality noted that in 2017, the government distributed ITNs that benefitted them, and malaria prevalence reduced. However, most of these nets are no longer suitable for use,

84 Natural childbirth is vaginal labour and delivery with limited medical intervention.

and they cannot afford to buy a new one, as each ITN costs Ugshs15,000 - 25,000.[85] After careful observation and further enquiry, it was discovered that community members intentionally leave the grass to grow around their homes as food for their livestock (goats, cows and sheep); but these bushes then become a breeding ground for mosquitoes, increasing the malaria re-infection rates.

Analysis of the FSNA data confirms fever/ malaria as the most prevalent illness in the sub-region. From the 2017 FSNA, fever/ malaria prevalence among children under five years old was 54 per cent, and barely changed in 2018, at 47 per cent. Both are a remarkable reduction in fever/ malaria prevalence from 69 per cent, registered in 2016.[9] Surprisingly, the malaria prevalence remained high despite use of ITNs, which only declined from 94 per cent in June 2017[33] to 87 per cent in January 2018.[34] Community members and key informants did not indicate why malaria infections remain high, irrespective of the high use of ITNs, but possible reasons could be children going to bed late after being bitten several times by mosquitoes.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children who experienced fever/ malaria were more likely to be wasted (2017) or stunted (2018) (Cf: Annex IV). Mosquito net use was not significantly associated with wasting, stunting, or anaemia.

According to the communities, diarrhoea is the second most common infection among the children under five years. Community discussions revealed that high diarrhoea infections are mainly due to the practice of open defecation (especially for children), children drinking unboiled water from streams and rivers, and children eating uncovered cold food. Additionally, crawling babies eat food litters and animal droppings on the compound. The FSNA surveys indicate diarrhoea as the third most common infection, after fever/malaria and acute respiratory infections. From the quantitative surveys, the proportion of under five children with diarrhoea was 30 per cent in 2017[33] and 26 per cent in 2018. [34] These findings indicate an increase in cases of diarrhoea from the 24 per cent recorded in 2016.[9]

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children who experienced diarrhoea were more likely to be wasted or stunted in both 2017 and 2018 (Cf: Annex IV).

Symptoms of Acute Respiratory Infections (ARI) are also frequent among children under five years old, especially during the cold seasons from April to September. Health workers revealed that ARIs are more common in the Western Mixed Crop Farming Zone and mountainous areas due to coldness during the rainy season. Community participants and health workers agreed that among the many symptoms of ARI, pneumonia is the most common in the sub-region. Increase in pneumonia cases is escalated by the cultural belief that buying clothes for the unborn child is a source of bad luck to the child. Unfortunately, by the time the mother gives birth, she may no longer have the money to buy these clothes, hence exposing the child to coldness.

Findings from the FSNA's indicate symptoms of ARI as the second common infection after malaria. According to the 2017 survey,[33] prevalence of symptoms of ARI was 38 per cent and only reduced to 34 per cent in 2018. [34] On the overall, there is a slight increase in children with symptoms of ARI from the 27 per cent recorded in 2016.[9]

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children who experienced ARIs were more likely to be stunted in 2018 (Cf: Annex IV).

85 $3.99- $6.64 USD.

Table 18 summarises seasonal trends in major child illnesses, as reported during qualitative inquiry.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Climate												
Dry season	+++	+++	+++				++			+	++	+++
Rainy season				++	+++	++		++	++			
Health												
Malaria	+	+	+	+++	+++	+++	++	+++	+++	+	+	+
Diarrhoea	+	+	+	+	+++	+++	+++	+++	+++	+	+	+
ARI				++	++	+++	+++	++	++			
Cholera												
Malnutrition	+	+	+	+++	+++	+++	+++	+++	++	+	+	+
Fever	++	++	++	++	++	++	++	++	++	++	++	++
Scabies	+	+	+	+	+	+	+	+	+	+	+	+

Table 18: Seasonal calendar of main child illnesses in Karamoja sub-region

Case study on handling child illness

Kaurikiakine Village

The sick child is taken to the religious leader for prayers, as this community is very passionate about prayers. When the religious leader notices no change, he encourages the family to take the patient to Iriiri health centre II. When the medical staff at the HC II realise that they cannot manage the case, they refer the patient to Matany hospital for better management. If the family can afford the trip, they proceed to the hospital; otherwise, the child is brought back home to seek advice from traditional healers.

In some cases, patients of the sick child first consult the traditional healer and then take the child to the HC II when the traditional healer fails.

Expectant mothers are often taken to the TBA. After giving birth in the TBA's home, the mother is then referred to the health centre, so that she and the newborn receive other health services like immunisation. Most often, expectant mothers are taken straight to the health facility to give birth.

Moron Village

When a child is suspected to suffer from malaria, local herbs are prepared for him/her at home. These herbs are either prepared at home or bought from the traditional herbalist. The patient is monitored for any improvements; if no positive change is noticed, formal health care is sought. As there are often no drugs at the government health centre, the preference is to directly go to the private clinic in case the condition of the child is worrying. Most often, however, the child is taken to Lokalis health centre II. In some instances, after the herbs have failed, the child is taken to the religious leader for prayers before being taken to the health centre.

When a mother is expecting, she is first taken to the TBA and then to the health centre. In fact, the mid-wives at Lokalis health centre II always instruct mothers during the antenatal visits to identify a TBA who will come with them to the health facility when they are due.

The nearest referral health centre in case the traditional healer, religious leader and Lokalis HC II fail is Karita health centre III, though some very complicated cases are referred straight to Amudat hospital.

Birth spacing and Family planning

The sizes of families in the sub-region range from eight to 12 people for large families and about three to four for small families. Some women that marry at an early age tend to give birth to many children, leading to large unsustainable families.

The use of modern family planning methods in the sub-region is still low, per discussions with community participants. According to the 2016 UDHS, use of modern contraceptives among women was estimated at 6.5 per cent. It was, however, clear from the discussions that communities embrace natural family planning methods, particularly breast-feeding children up to two years. Mothers indicated that the breast-feeding method, also regarded as natural birth spacing, has no side effects like other modern methods do. Much as this method has not been scientifically proven and there was no quantitative data to support any assertions around it, mothers insisted it is effective and was used by their great grandparents. However, many women with large families said the method had not protected them from early and unwanted conception.

Community participants alluded to beliefs that modern contraceptives are associated with growth of foreign bodies in a woman's womb, swelling of the woman's stomach, and uncontrollable bleeding. Male participants said that modern contraceptives are also responsible for blocking women's tubes, hence preventing women from having children. Those who do finally manage to conceive are most likely to give birth to deformed babies. In addition, the community associated use of contraceptives with increased urge for sex among women, which may lead to prostitution, or a converse reduction in sexual desire if the IUD is used, weight gain and impotence in men who have sexual intercourse with women that have used the pill to control pregnancy. On a positive note, further discussions with the health workers revealed an increasing adaptation to using condoms and twelve-week injections due to sensitisation at the health facilities.

B.2 FEEDING AND CARE PRACTICES

Household feeding practices

Eating habits of communities in Karamoja sub-region tend to vary according to the household's socioeconomic status and access to land. However, on average, participants said they mainly have two meals a day during the lean season and three meals a day during the early post-harvest period. The primary meals are breakfast, lunch and dinner. During both lean and post-harvest periods, breakfast is served as early as 7:00am and is prioritised for children. This is then followed by lunch, which is a year-round meal served between 2:00pm and 5:00pm. If dinner is served, it is often as late as 9:00pm.

Community participants indicated that the main breakfast meal is porridge, which is served plain or mixed with milk.[86] The main foods consumed at household level for lunch and dinner include posho[87], sorghum, millet and cassava, with the sauces comprising sukuma wiki,[88] dodo,[89] cabbage, sagaa (vegetables), beans,[90] sunflower and sweet peas leaves. Wild vegetables eaten mainly in the dry season include okra, pumpkins locally known as "seveve," and balanite[91] leaves. These foods are typically prepared with sunflower oil. Wild meat is also a delicacy for most communities in

86 Milk is served in the maize-livestock and in the sorghum-livestock zones where it is readily available for most of the year.

87 Maize flour.

88 A dish made with collard greens, known as sukuma, cooked with onions and other spices. It is mainly served in East Africa.

89 Amaranth.

90 Mainly white beans and the tepary beans.

91 A tree species belonging to the Balanitaceae tree family; sometimes referred to as the desert date or soap berry tree.

the sub-region during both the lean and post-harvest seasons. In the South-eastern Cattle Maize Zone, participants indicated that they never slaughter their animals for household consumption, only waiting for them to die to eat them.

During focus group discussions in the Sorghum and Livestock Zone, community participants informed that wild foods are an important source of food especially during the lean season. The most common wild foods mentioned were ngimongo and tamarind.[92] In the South-eastern Cattle Maize Zone, the most commonly consumed wild food is balanite[93] leaves.

Dietary diversity in the sub-region is low, per qualitative inquiry, observation, and secondary data review. Staple foods such as posho, sorghum, millet and cassava are carbohydrates; the density of vegetables and beans in sauces varies. Protein consumption is low, especially meat, despite the high ownership of livestock in some parts of the region.

The diversity of food consumed is low as most households feed on maize, sorghum and cassava, which are all carbohydrate foods. Low diversity of food consumed is reflected in the Household Dietary Diversity Score (HDDS) as shown in the table below.

	Low HDDS		Medium HDDS		High HDDS	
	2017[33]	2018[34]	2017	2018	2017	2018
Abim	39%	66%	51%	33%	10%	1%
Amudat	57%	60%	38%	38%	5%	2%
Kaabong	24%	55%	67%	42%	8%	3%
Kotido	44%	41%	43%	55%	13%	4%
Moroto	29%	52%	54%	46%	16%	2%
Nakapiripirit	36%	39%	53%	48%	11%	13%
Napak	54%	52%	37%	45%	9%	4%

Table 26: Household dietary diversity in Karamoja sub-region, FSNA[34],[33]

Basing on a seven-food group classification, 52 per cent of households in the sub-region had a low Household Dietary Diversity Score (HDDS), 44 per cent were classified with medium HDDS (four to six food groups), and only 4 per cent were classified with high HDDS.[33],[34] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that dietary diversity was protective of anaemia per 2018 data (Cf. Annex IV).

Further discussions revealed that the sub-region was generally a recipient of food aid during the period 2013-2016. During that period, the WFP and ACDI-VOCA[94] provided posho, beans, cooking oil and soya for porridge, mostly for children and lactating mothers. This aid has, however, of recent been greatly reduced as focus is now more on development initiatives, including construction of valley tanks, timely vaccination of livestock, opening fields for livestock and setting up demonstration gardens/livestock kraals.

92 A leguminous tree bearing edible fruit that is indigenous to tropical Africa. The tamarind tree produces pod-like fruit that contains a brown, edible pulp used in cuisines.

93 A tropical tree with compound leaves that grow out of the base of the spines of the tree. The leaves can be used for food or medicine or pesticide or cosmetics.

94 An international NGO, based in the US, that fosters broad-based economic growth, raises living standards, and attempts to create vibrant communities. In Uganda, they mainly operate in the Karamoja sub-region.

Focus group participants in the North-eastern Highland Apiculture & Potato Zone stated that they obtain their food from the markets, family gardens, hunting wild animals and gathering wild vegetables. Since there is occasional food scarcity in this area, NGOs and the UN have usually been a provident supplier of food to the communities throughout the year. During the planting season (April – June), much of the food is acquired through food aid, from the market, hunting of wild animals and sometimes from the granaries. Subsequent analyses of the FSNA data indicated a weak relationship between receipt of food aid and stunting in 2018; children whose households received food aid were potentially more likely to be stunted (p-val <0.10).

According to qualitative inquiry, the Turkana[95] panic communities, forcing them to withdraw from the gardens at a time they would be planting or harvesting, resulting in the disruption of food production. Cattle raiding by the Turkana also hinders the practice of hunting wild animals due to fear amongst the community members. However a positive factor in this community is the availability of wild vegetables throughout most of the year, with the peak being observed between March and October.

While pregnant women may desire to eat differently, their desires are mostly constrained by availability of and access to food. It was indeed noted that some pregnant women, especially those from low-income households, could not afford specific foods such as meat and rice. In some localities, the pregnant and lactating mothers keep taking porridge throughout the day until the main meal is prepared. According to participants, preparation of the porridge is a combination of either maize or sorghum flour with milk, if possible. However, in Moron village, milk was always added in their porridge, as the majority of households have cattle which provide them with milk for most of the year. During further discussions in Moron village, participants said that pregnant and lactating mothers prepare posho in the morning that they eat with milk and any sauce that was left from the previous night, which they believed sustains them throughout the day.

Community members said that both Christians and Muslims fast at certain times of the year. In the Christian community, born-again Christians mostly fast when they have specific problems that prayer alone cannot solve, while Catholics usually fast during the Lent period that lasts about 40 days. Born again Christians revealed that they mostly practice dry fasting for 24 or more hours. This is done to appeal to God to avert situations such as frequent illness, incurable illnesses, and poverty. According to the pastors, pregnant women are not supposed to fast, but it was revealed that some of them do for reasons aforementioned, and in search of protection during delivery. Catholics fast by foregoing the food they like most, including chicken, meat and rice. Participants informed that this group normally fast by eating vegetables, porridge and posho during the day.

Muslims practice dry fasting for 29 or 30 days every year. During the main fasting period, they eat before dawn and then break the dry fast after the sun sets in the evening. This fasting period normally ends with Eid-al-Fitr celebrations. There are no special foods recommended for eating during the fasting period. In this community, pregnant and sick women, and children are excused from fasting.

It was noted that there are significant food taboos observed among the communities. For instance, in the Western Mixed Crop Farming Zone, participants noted that pregnant women are not supposed to eat the intestines of animals and a vegetable locally known as ‘ngimug’ as eating these will lead to an immediate miscarriage. Participants also informed that lactating women do not eat ‘ngimug’ for fear of insufficient breastmilk, leading to starvation of their babies. In the South-eastern Cattle Maize

95 Turkana are Nilotic people native to the Turkana County in northwest Kenya, a semi-arid climate sub-region bordering Lake Turkana in the east, Pokot, Rendille and Samburu people to the south, Uganda to the west, and South Sudan and Ethiopia to the north. They are nomadic pastoralists as they live in the desert sub-region.

Zone, pregnant women are prohibited from eating the meat of domestic animals that died suddenly or were killed by a wild animal. It is believed that such meat is contaminated and eating it endangers the unborn baby and the pregnant mother. In the Sorghum and Livestock Zone, participants said that pregnant women do not eat some parts of the slaughtered animal including the ribs, intestines, brain, pancreas and liver. It is believed that if a pregnant woman eats these then they will give birth to a child prone to diarrhoea. Additionally, if a pregnant woman eats the ribs of any species, then they are likely to give birth to a thin child. Participants also stated that children under two years are not allowed to eat liver because this makes them defecate in the house. Children were prohibited from eating the brain of an animal for fear of being a dull child and producing a lot of mucus for about seven years. In the North-eastern Highland Apiculture & Potato Zone, participants believed that drinking alcohol is associated with Satan, so some of the participants do not drink as a way of abiding by their religious beliefs.

Subsequent analyses of FSNA data taking into account anthropometric measurements of children in the household revealed a significant association between availability of food stocks in the home and wasting, in that children whose household has food stocks available were less likely to experience wasting in 2017. (Cf. Annex IV).

Breastfeeding practices

It is widely accepted that early initiation of breast-feeding ensures the new born receives colostrum, which increases the provision of immunogenic properties to the baby thus reducing chances of illness and neonatal mortality. The health impacts of exclusive breastfeeding or even breastfeeding in general have been confirmed to be long lasting, normally lasting up to three years.[96]

During community discussions, participants noted the importance of breastfeeding within the first hour following birth. Mothers stated that colostrum is given to children immediately after birth and this is irrespective of the location of delivery either at the health facility or by a traditional birth attendant.

Mothers expressed during the focus group discussions, that they also continue breastfeeding until two years of age, noting the significance of this in enabling adequate birth spacing. The importance of exclusively breastfeeding up to six months is well known, and it is only when there are inadequate supplies of breastmilk that babies will be introduced to other fluids and solid foods from as early as three months. Inadequate breast milk is attributed to insufficient dietary intake at household level due to household food insecurity that also causes mothers to feel weak. Babies are introduced to other liquids such as juice and animal milk, or porridge, depending on availability.

Babies are usually breastfed on demand. However, when mothers are absent gaps in feeding can impact the health of the child. In the majority of localities visited, mothers highlighted that the baby is breastfed immediately they cry. However, although babies are taken to the gardens, the demands of farm work can prevent the child from being immediately breastfed. Babies are not taken to the market or to collect water since mothers do not expect to spend much time conducting these activities.

Testimonies given by mothers at community meetings do not differ from findings of the FSNA surveys previously conducted. According to the 2017 FSNA, 82 per cent of the mothers introduced their babies to breastmilk in the first hour of life, while the proportion slightly increased to 85 per

96 WHO (2004). Guiding principles for feeding infants and young children during emergencies. Available at: https://apps.who.int/iris/bitstream/handle/10665/42710/9241546069.pdf

cent in 2018. [33],[34] lowest proportion of initiation of breastfeeding in the first hour was found in Amudat district (69 per cent), the highest proportion in Kotido district (97 per cent). [33],[34]

Subsequent analyses of FSNA data taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children who were put to the breast within one hour of birth were significantly less likely to be wasted (2017) (Cf. Annex IV).

The proportion of mothers practicing exclusive breastfeeding was 94 per cent in 2017[33] and remained the same in 2018; [34] subsequent analyses of FSNA data indicated that children who were exclusively breastfed were less likely to be wasted (Cf. Annex IV). It is important that mothers are encouraged to continue this practice, in order to protect children from infections arising from the water and food that may be provided. Findings of the quantitative surveys further indicate that 90 per cent of the mothers breastfed their child up to one year of age, but this per centage gradually reduced to 65% for mothers who continue breastfeeding up to two years. [34] The lowest per centages of children breastfed up to two years were in Amudat and Abim districts, with rates of only 36 per cent and 48 per cent, respectively. [34]

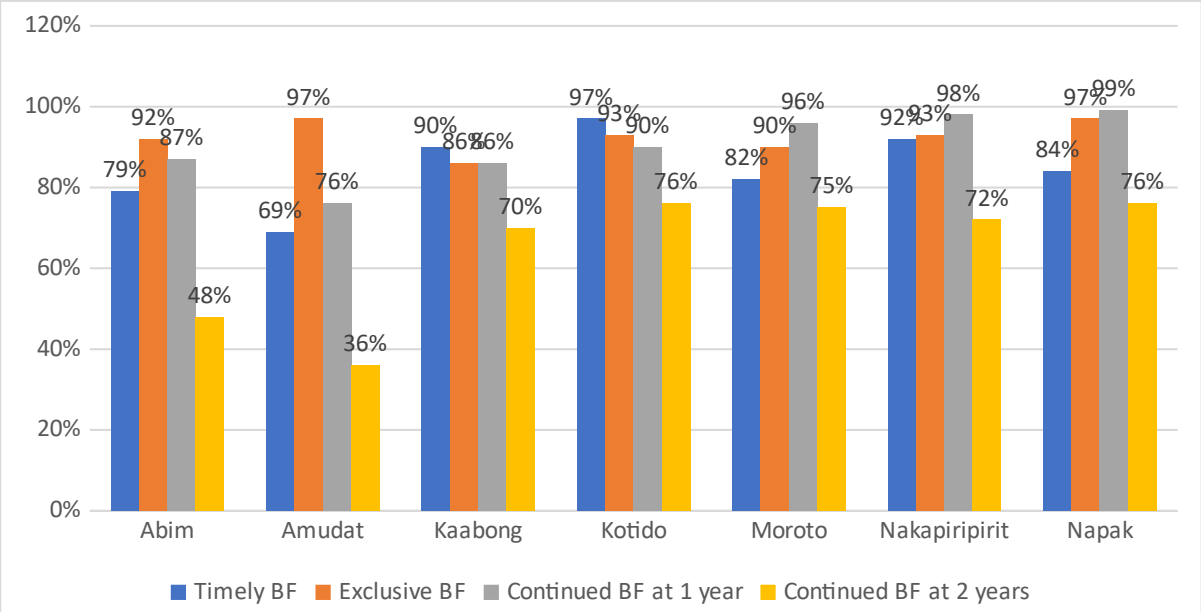


Figure 15: Breastfeeding practices in Karamoja, Jan 2018

Complementary feeding is usually initiated between six (and eight months. However, due to high workloads, mothers in the South-eastern Cattle Maize Zone begin complementary feeding from three to four months. Participants in the North-eastern Highland Apiculture & Potato Zone said they often receive assistance in form of infant foods from organisations such as CAFH[97], World Vision, World Food Program (WFP), and Mercy Corps, which they feed their children as complementary foods. Women also said they have been taught how to wash hands before touching their breasts and how to prepare a balanced diet. They, however, expressed an inability to feed their young children on a balanced diet because of the limit in variety of food they can afford to access.

According to the FSNAs, the percentage of mothers that practiced the timely introduction of complementary feeding was 74 per cent in both 2017[33] and 2018. [34]

97 CAFH – Concerned Action For Health; an NGO operating in Northern Karamoja

Young child and maternal care practices

Women are considered to be the primary caretaker and are responsible for domestic work; thus, they are the primary person engaged with the baby/ child during breastfeeding other feeding, bathing, and play time. In all four communities visited in the sub-region, participants agreed that there is limited involvement of fathers in the care of children, as the bulk of men's work is outside the home, resulting in less opportunity to interact with children. The recent increase in involvement of women in traditionally male activities such as subsistence farming, gold mining, brewing, harvesting grass for thatching, fencing, and working in the markets reduces the amount of interaction mothers have with children, as they return to work when the baby reaches three to four months.

During visits to communities, it was observed that by 8:00am, many children had had breakfast, which usually consists of milk and porridge. In the Sorghum and Livestock Zone, children are fed on local brew residue in the morning, especially during the hunger season from May to July. During the harvest season, children are fed on porridge, milk, beans and boo.[98] By 8:00am, mothers leave to work in the fields or gold mines, leaving children behind for their safety; they usually return at around 4:00pm. Young children are left with siblings who are usually under the age of seven years old, exposing babies to the risk of crawling in dirt and not being provided with sufficient food.

Mothers also attested to the fact that the diversity of food available at home constrains them from feeding the children on a balanced diet. They indicated that the only balanced diet they are sure of is that of breastmilk, for mothers who believe it is sufficient for a child less than six months old. During the discussions, mothers informed that when they introduce children to solid foods, they are given porridge in the morning and throughout the day, they eat posho[99] or sorghum with the rest of the family and take porridge in the evening before going to bed. The sauces given are usually beans, cowpeas and balanite leaves during the dry season. Mothers admitted that besides milk, they rarely give their children other animal products such as meat, liver, and kidney. Vitamin rich fruits such as apples, bananas, mangoes and oranges are only available in markets and thus, are unaffordable. Mothers in the Western Mixed Crop Farming Zone informed that they have increased production of green grams,[100] which they can prepare for their children.

Table 19 below summarizes risky behaviours associated with certain maternal and child feeding practices, per the qualitative inquiry.

Behaviour	Perceived risk	Community Justification + other information
Women going hungry as a coping strategy.	High	Women prefer to go hungry so that their husbands and children have enough food to eat, denying themselves food that would provide energy to enable them adequately take care of their children.
Pregnant women fasting	High	Women usually fast when there is recurrent illness within the household. Women recognise a risk of fasting on their pregnancy, but their religious beliefs do not permit them to do otherwise.
Breastfeeding mother not eating cow pea leaves	Low	Mothers believe these leaves are a good source of proteins, minerals and vitamins, but they also believe eating them negatively affects production of breastmilk.

98 Cowpea sauce with simsim and/or groundnuts.

99 Maize.

100 Mung beans.

Giving food to baby under six months	High	Household food insecurity reduces dietary intake of mothers, which leads to a reduction in breast milk, which cannot satisfy the baby. Mothers are however aware of the risks of feeding young children on solid food, including the risk of choking, 'burdening a stomach that is not yet ready,' and vomiting.
Young children left as care takers	High	Mothers usually have no choice but to leave the babies behind with the help of their older siblings of about six years old. Food left for the child is typically porridge or cold left overs. This exposes children to several risks, including contracting diseases.
Children depend on residues from local brew known as 'Adakai' and 'Ebutia' as food	Medium	Residues are fed to children during the seasons of scarcity (May-July), putting them at risk of a scarcity of nutritious food in favour of alcoholic residue.
Women consuming alcohol	Low	Since women make and sell alcohol, this predisposes them to its consumption. This affects the women's ability to offer adequate care for their children and households as a whole.

Table 19: Risky behaviour associated with feeding practices for mothers and children 6-23 months in Karamoja

Testimonies during qualitative inquiry do not significantly differ from findings of the FSNA's conducted in 2017 and 2018, summarised below in Table 20.

	Timely Complementary Feeding (%)		Minimum Meal Frequency (%)		Minimum Dietary Diversity (%)		Minimum Acceptable Diet (%)	
	2017[33]	2018[34]	2017	2018	2017	2018	2017	2018
Abim	71	79	20	40	4.4	4.0	3.0	2.3
Amudat	57	69	27.6	56	3.5	2.7	2.9	1.6
Kaabong	88	74	17.1	71	9.4	12.1	6.1	9.1
Kotido	82	70	18.3	51	5.4	11.2	4.5	6.7
Moroto	68	61	17.5	36	5.4	4.7	3.8	1.7
Nakapiripirit	66	81	24.2	35	8.2	14.8	6.6	8.2
Napak	86	85	14.8	30	3.7	9.5	2.1	2.8

Table 20: Feeding practices for children six to 23 months in Karamoja sub-region[33,34]

The number of children aged six to 23 months that were fed a minimum number of meals[61] increased from 20 per cent in 2017 to 45 per cent in 2018. The timing of the surveys explains the significant increase in the proportion meeting the minimum meal frequency. The 2017 survey was conducted during the lean season, whereas the 2018 survey was conducted after harvest when food availability was higher. Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators; children who met minimum meal frequency for their age were less likely to be stunted in 2017 (Cf. Annex IV).

The proportion of children meeting the minimum dietary diversity[62] increased from 5.7 per cent in 2017 to 8.5 per cent in 2018, with the increase again largely confounded by the survey timing. Children who met minimum dietary diversity may be less likely to be stunted or anaemic (p-val <0.10), per 2018 analyses (Cf. Annex IV).

The percentage of children able to eat fruits and vegetables rich in vitamins was 14 per cent in 2017 and reduced to 6 per cent in 2018[101]. During the lean season, parents purchase fruits for their children from the markets. However, after harvest the practice is to feed children on available foods at home, and purchases from markets are significantly reduced. From further analysis of the 2018 FSNA data, children who consumed Vitamin A rich fruits and vegetables were significantly less likely to be anaemic (Cf. Annex IV). Minimum acceptable diet, a composite indicator of meal frequency and dietary diversity, was not significantly associated with wasting, stunting, or anaemia in 2017.

C.2 FOOD SECURITY AND LIVELIHOODS

Food and income sources

Findings from the qualitative survey indicate differences in sources of livelihood among the population in the Karamoja sub-region. The variations are mainly related to geographical location, though neighbouring settlements also play a key role in the livelihood of particular population segments. Focus group participants in the Western Mixed Crop Farming and North-eastern Highland Apiculture & Potato Livelihood Zones mentioned small-scale farming as their main livelihood activity for both income and food. The main crops grown in these livelihood zones include sorghum, maize, beans, sunflower and Irish potatoes.[102] The other livelihood activities are livestock sales, honey harvesting and sale, gathering and selling wild vegetables (particularly during the lean season), sale of poles for fence construction, collection and sale of grass for thatching houses, charcoal burning and sale, while others offer casual labour. The community members in the Western Mixed Crop Farming Zone recently entered into a contract with WFP to supply their harvested maize at Ug. Shs 1260[103] per kilogramme.

Focus group participants in the South-eastern Cattle Maize and Sorghum and Livestock Livelihood Zones mentioned livestock keeping as their main source of income and subsistence farming as the main source of food. Further discussions demonstrated that livestock keeping is an activity exclusively performed and controlled by men,[104] while both men and women carry out other income generating activities like mining, poultry and honey sale. The main crops grown (both for food and cash income) are maize, sorghum, millet and beans. In a bid to diversify income and food sources, district leadership and other development partners have encouraged the population to also scale up poultry and honey harvesting to a commercial level. Poultry is still regarded an activity for women; men are rarely involved. In the Sorghum and Livestock Zone participants also alluded to firewood collection, brick laying, charcoal burning, stone quarrying, and local brew sale as the other sources of income. Focus group participants in the South-eastern Cattle Maize Zone believe gold mining is increasingly becoming an important source of income for household sustenance during the rainy season from April to September, as extracting and cleaning of gold is easier when there is abundant water.

According to findings from the FSNA conducted in January 2018, the main source of income in the Karamoja sub-region is sale of firewood and charcoal (29%), followed by brewing (17%), and casual agricultural wage labour (11 per cent).[34] These findings demonstrate that what communities regard as their main sources of income i.e. livestock keeping, and small-scale agriculture, are not bringing in enough income for household sustenance, hence they diversify to high risk, low reward activities

101 Secondary analyses, 2018 FSNA data.

102 Exclusively grown in the Northeastern Highland Apiculture & Potato Zone

103 $0.34 USD. Price relatively higher than the average price in the sub-region and country as a whole, but this is being done toencourage growing of maize for commercial other than subsistence purposes.

104 Male children are occasionally withdrawn from school to join their fathers in the activity

like charcoal burning. Findings from the same survey show that the main source of food across the sub-region is self-production, a result also affirmed in qualitative inquiry in 2019.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators; children whose head of household engaged in firewood/ charcoal sale were significantly more likely to be wasted in 2017. Children whose head of household was formally employed were less likely to be stunted in 2017; those whose household's main source of income came from livestock sales were significantly less likely to be stunted in 2018. (Cf. Annex IV). There was a weak association between main source of income from livestock sales and wasting in 2018 (p-val <0.10), which indicated children whose household depended on livestock sales were potentially more likely to be wasted. Head of household income was not significantly associated with anaemia.

Crop farming

Farming is the main source of food for most households in the sub-region. The Karamoja community were originally agro-pastoralists, with crop farming as the main source of food and livestock keeping as the source of family wealth, dowry and cash income.

The main crops grown across the sub-region are sorghum, millet, maize, beans, sunflower and sweet potatoes. Sorghum is still the staple food in the Sorghum and Livestock Zone and North-eastern Highland Apiculture & Potato Zone, whereas maize remains the staple food in the South-eastern Cattle Maize Zone. The main crops grown for sauce are beans and peas with the populations in the Western Mixed Crop Farming Zone and South-eastern Cattle Maize Zone also increasingly feeding on green vegetables, both home grown and wild.

Photo 2: Granary built by the Pokot in Amudat district

Irish potatoes are grown for sale in the Western Mixed Crop Farming Zone. These crops, most of which have not changed in the last 10-15 years, are grown on land ranging half an acre to two acres for poorer households and over two acres for richer households. Maize, which is a more recently adopted crop, is mostly grown in the South-eastern Cattle Maize Zone and Western Mixed Crop Farming Zone. Cassava has also been recently introduced in the Western Mixed Crop Farming Zone, particularly in Abim district. It was clear from the group discussions that households still depend on the hoe for land clearing and tilling; with the panga[105] and axe used for more bushy areas. It was noted that few households in the Western Mixed Crop Farming Zone are able to use the oxen for ploughing as hiring them is relatively more expensive, though this is not readily the case in South-eastern Cattle Maize and Sorghum and Livestock Zones where households are keeping oxen.

Most households have access to flat land with average access being at 2.2. acres, followed by upland that stands at 1.3 acres per household. According to the FSNA's, access to agricultural

105 Machete.

land declined from 88 per cent in 2017 to 81 per cent in 2018. [33],[34] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators; children whose household had access to agricultural land were less likely to be wasted and more likely to be anaemic in 2018 (Cf. Annex IV). Access to agricultural land was not associated with malnutrition outcomes in 2017.

Focus group participants in the South-eastern Cattle Maize Zone indicated that previously, more emphasis was on livestock rearing and mining, rather than crop farming. They looked at these two activities as sources of milk and income that would be used to purchase food from the nearby markets that were supplied from Kenya. Now, however, the population has adopted crop farming, specifically maize, sorghum and vegetables. Communities have learnt to construct granaries that are used to store cereals such as maize, sorghum, and millet. The presence of granaries during the community visits was observed, with some households having well maintained ones while others looked abandoned. According to the participants, the food stored in the granaries offers relief to families during times of scarcity.

Seeds for planting are mostly provided by the government under the Operation Wealth Creation programme. Community participants, however, expressed concern over the delays in supplying the seeds, which delays their agricultural seasons. While some households wish to re-plant seeds from a previous season, this is often not possible either due to a low harvest or to emergency consumption of reserved seeds, especially when the dry season is longer than expected. Poor harvests are mainly due to weather conditions, including delayed but erratic rains and long mid-season dry spells. While the overall amount of rainfall has improved by increasing over time, participants described particularly erratic weather patterns in the last 3 to 5 years.

Recently provided 'improved' seeds are reportedly more prone to pests and diseases. Pests such as Fall Army Worm[106] (locally termed "mochon") and motoo weed[107] are the recent major constraints to agricultural production. Fall Army Worm, which is a relatively new pest that affects maize and sorghum, was said to be controlled by putting ash on the crop immediately after germination. This approach was, however, discovered not to have worked well for a number of communities. The motoo weed was described as attacking maize leaves, and only noticed about three years ago. When the maize matures, it is prone to infection by worms which eat all the seeds on the cob.

An additional barrier in crop farming is reduced share of the agriculture burden by children. During focus group discussions in the Western Mixed Crop Farming Zone, parents (especially those from Napak district) said older children occasionally migrate from home to other towns and cities in search of casual labour, whereas they were hoped to stay near the home, which would alleviate stress for the parents and also provide more farm and off-farm. Since farm work is mostly left to women, utilisation of agricultural land has remained low, which affects food production.

Community participants in the localities visited expressed gratitude to the organisations involved in addressing agriculture production constraints. They mentioned organisations like Cooperation and Development (C&D), Dodoth Agro-Pastoralist Development Organization (DADO)[108] and OXFAM GB who have been involved in vegetable and food production, as well as food aid when needed.

106 The Fall Armyworm (FAW), or Spodoptera frugiperda, is an insect that is native to tropical and subtropical sub-regions of the Americas. In Uganda, the pest that started invading gardens about three years has been observed feeding on maize, sorghum, sugarcane, rice, napier grass and rhodes grass.

107 Motoo weed is the striga that steals nutrients and water from crops. Biologically it is termed "Striga hermonthica" or "Purple witch weed".

108 DADO operates and implements its activities in Kaabong district of North Karamoja with concentration in the sub counties of Lodiko, Sidok, Lolelia, Kalapata, Kaabong East, Kaabong West and Karenga.

Findings from the FSNA's in June 2017[33] and January 2018[34] findings of the qualitative inquiry done in 2019. In 2017, the most common grown crops were sorghum and maize that were cultivated by 77 per cent and 57 per cent of the sub-region's population respectively, followed by beans (35 per cent)[33]. From the 2018 survey, 77 per cent of the population cultivated sorghum, followed by maize (40 per cent) and then beans (22 per cent). [34] The slight reduction in the percentage cultivating maize and sorghum is no surprise, since by the time the data was collected in January 2018, and the last harvest of maize and beans had been in September 2017. Findings from both years show slightly over 80 per cent of the households have access to agricultural land, with drought and rainfall conditions being the main constraint to crop production, reported by 71 per cent of the population in 2017 and 61 per cent in 2018. [33],[34]

Food production in the sub-region is generally low because of the various agricultural related constraints households face. Since the main source of food is own production, low production implies limited availability and access to food leading to recurrent food security crises in the sub-region. As noted below in Figure 16: Households with food stocks in Karamoja sub-region33,34, the percentage of households with food stocks was generally highest in January 2018, with noticeable variance by district.

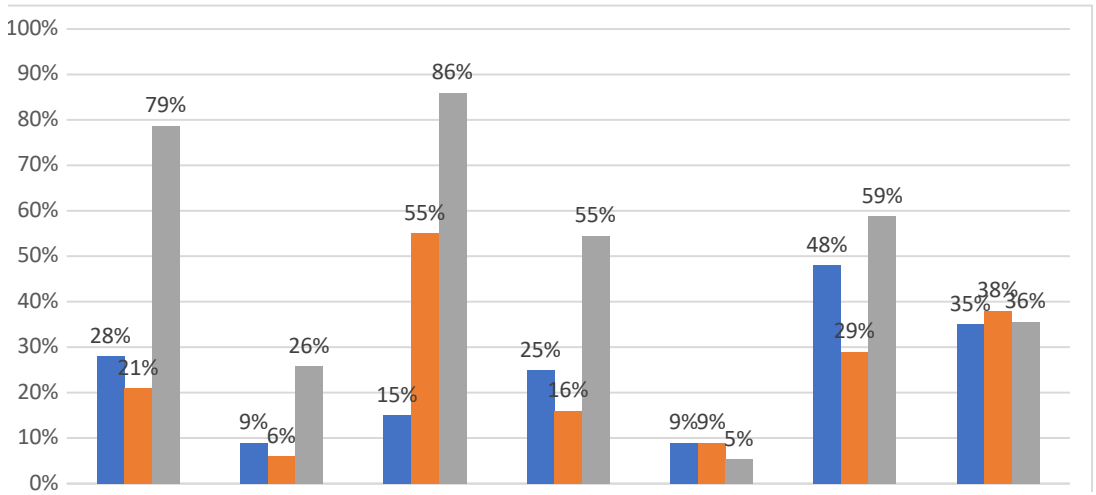


Figure 16: Households with food stocks in Karamoja sub-region[33],[34]

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children from homes with food stocks were significantly less likely to be wasted in 2017 and 2018, and more likely to be anaemic in 2018. While perhaps counter-intuitive, it is important to note that availability of food stocks does not imply availability of micronutrient dense food in the home.

Livestock keeping

The inhabitants of Karamoja have historically been, and still are, agro-pastoralists. Livestock keeping has long been regarded the source of wealth and family prestige in the sub-region with traditional emphasis on cattle rearing. However, a recent diversification to sheep, goats, donkeys, pigs and poultry has been noticed. In all the four localities visited, participants confirmed livestock rearing was initially the main economic occupation. Participants from the Western Mixed Crop Farming Zone said they were forced to concentrate on crop agriculture with minimal livestock keeping after neighbouring tribes had raided them during the 1990s to early 2000s, taking away their livestock.

Efforts by the government to restock have not yielded much to date, forcing the population to slowly abandon cattle rearing but still rear sheep, goats, pigs and poultry.

Focus group participants from the North-eastern Highland Apiculture & Potato Zone revealed restocking despite continuous raids, however the heavy raids of 2015 and 2016 by the Turkana[95] have forced them to almost completely abandon cattle rearing. Small numbers of cattle, sheep and goats are maintained, but there is a constant fear that the Turkana will raid again. These circumstances have shifted the focus to Irish potato growing and bee keeping, with a recent additional diversification to maize and beans.

Livestock keeping is still the main economic occupation in the Sorghum and Livestock and South-eastern Cattle Maize Zone, although recently there has been encouragement by the local authority for households to focus more on crop farming to promote food security. Livestock keepers in both zones still practice semi-nomadism, as rainfall is insufficient to sustain the provision of water and pasture for livestock through the year. Men often move away with the livestock during the dry months of November to March/May every year, leaving the women behind to take care of the families and do poultry keeping where possible. Poultry keeping is a newly adopted practice in this zone adopted from the neighbouring districts of the Sabiny in Uganda and Kalengin in Kenya. Participants also alluded to the simplicity of poultry keeping as opposed to other livestock, which is why it is left to women.

Focus group participants in the Sorghum and Livestock Zone stated that short-term migration is more frequent in the area than it was 10-15 years ago when they used to migrate for longer periods. They reported that they usually migrate to grazing areas in the Western Wet Belt[109] of the districts in search for water and pasture for animals. Particularly, livestock keepers in Kotido district often migrate to grazing areas of Kalesa, Kalokottido, Kapot and Moruitit. Participants stated that the grazing areas are very far away from their homes and they can spend about three to five days there. Positively, participants in this zone reported that security has greatly improved, and cattle raids are less often, except when the Turkana and people of the Karamoja from other areas come in search for water and pasture, which increases competition for resources.

An analysis of FSNA datasets from 2017[33] and 2018[34] shows that slightly over 54 per cent of the households in Karamoja sub-region own livestock, with about 38 per cent of these owning high livestock holdings. Both the 2017 and 2018 assessments show that there are higher livestock holdings in the South-eastern Cattle Maize Zone (particularly Amudat district) than in the other zones.

District	High holding		Slightly high holding		Low holding		Negligible holding	
	2017[33]	2018[34]	2017	2018	2017	2018	2017	2018
Abim	3%	2%	9%	6%	14%	14%	31%	38%
Amudat	26%	24%	26%	25%	24%	18%	9%	4%
Kaabong	8%	2%	20%	18%	18%	22%	11%	23%
Kotido	7%	5%	17%	12%	17%	17%	14%	20%
Moroto	5%	5%	8%	9%	11%	11%	11%	12%
Nakapiripirit	12%	12%	18%	18%	14%	19%	10%	11%
Napak	4%	1%	7%	4%	11%	10%	17%	19%

Table 21: Livestock ownership in Karamoja sub-region

109 This is the Western Mixed Crop Farming Zone located on the western side of Karenga, Kaabong, Kotido, Abim, Napak and Nakapiripirit districts. Grazing areas are located here due to more availability of green cover and the relatively higher rainfall received than in the Sorghum and Livestock Zone of the same districts.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children whose families owned livestock were significantly less likely to be wasted or stunted in 2017. Children whose families owned livestock were significantly more likely to be anaemic in 2018.

Livestock vectors and diseases were mentioned as the main constraint to livestock production. Common livestock diseases reported in the visited localities were Loukoi disease, which affects the bile duct,[110] Lopid disease, which affects the lungs,[111] Foot and Mouth disease (FMD), East Coast Fever (ECF) and Coccidiosis. The participants mentioned a new disease locally termed "Emitimina" which removes the skin from goats. To treat FMD (locally termed "etom"), participants said they use Aloe Vera (called "Tolkos surp") mixed with water and given to the cow.

Besides livestock vectors and diseases, participants mentioned similar constraints that were mentioned regarding agriculture: weather conditions that constrain the availability of water and pasture, cattle theft and raids, and lack of financial resources to procure veterinary services as the other constraints to livestock production.

An analysis of the major constraints to livestock production from the quantitative data shows livestock vectors and diseases to be the most common constraint reported by over 60 per cent of livestock keeping households, followed by shortage of feed reported by 10% of the households in both quantitative surveys. [33],[34]

Market access

Participants noted that they have access to seasonal markets, depending on the location of the communities, as seasonal flooding affects some communities. The distance to the nearest markets ranged from 5km to 25km, requiring two to five hours on foot. Using a motorcycle to access the markets requires about Ug.shs3500-40,000.[112] These markets, though typically once, twice or thrice a week, have most of the household requirements, including produce and livestock. Some communities depended on the larger Iriiri and Lorengechora markets (for Kaurikiakine locality), and Lokalis, Chepkararat and Karita markets (for Moron locality), which both import supplies from Kenya. The goods available in the markets include beans, maize, sorghum, sugar and livestock such as goats, cows, sheep and chicken. Products from Kenya in the markets in Karita include motorcycles, sugar, Irish potatoes, cabbage, silver fish, bananas and tomatoes.

Focus group participants indicated that availability of products in the markets depends on the seasons. Supply to food markets was reportedly higher in the months of August to December because of the harvest season. The prices in these months also drastically fall, because most households are food secure, and then rise in the months of March to July.

It was noted during the community discussions that seasonality of the roads is a major impediment to market access. Most roads are inaccessible during the rainy season, forcing suppliers to divert to other markets; furthermore, transportation costs rise. The reduced supply usually forces the prices upwards, making the poorer households who do not have sufficient food at this time of the year more vulnerable to food insecurity. As some community members are also suppliers of agricultural produce, inaccessibility of the roads limits their capacity to supply goods to the markets, which impacts their income.

110 Most likely the Acute Bovine Liver Disease or the Cholecystitis.

111 Most likely the Contagious Bovine Pleuropneumonia (CBPP) disease.

112 $0.93- $10.66 USD.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Climate												
Dry season	+++	+++	++	+			++			++	++	+++
Rainy season[113]			+	++	+++	++	+	+++	++	+		
Temperature	High	High	High	Low	Low	Low		Low	Low			High
Economic activities												
Main ag. season		Preparation		Planting	Weeding		Weeding/ early harvest		Harvest			
Demand for agric labour			++	+++	+++	+++	+++	++				
Demand for non-agric labour	+++	+++		+	+	++	++	++	++	+	++	+++
Migration[114]			+	+	+	+	+			++	++	++
Food security												
Food availability	++	+	+				+	++	++	+++	+++	+++
Food prices			High	High	High	High	High	High		Low	Low	Low
Hunger gap			++	+++	+++	+++	++	+				
Availability of financial resources	++	++	+	+	+	+	+	+	+	+++	+++	+++
Others												
Nomadism	+++	+++	+++	++	++							+++
Human and livestock competition for water	+++	+++	+++									+++

Table 22: Seasonality of food security and livelihood activities in Karamoja sub-region

Household Expenditure

In the Karamoja sub-region, households mostly spend money on food consumption, medical bills, buying clothes, and paying school fees for secondary school going children, with little left to be put aside for savings. Focus group participants in the Western Mixed Crop Farming Zone indicated that, in addition to food purchases, livestock maintenance and school fees are two major expenses. They attested that there is an increasing interest in saving especially through the VSLAs.

In the South-eastern Cattle Maize Zone, food and health care take up the largest share of the household expenditures. Health care expenses are generally for treating malaria whose prevalence is high due to the surrounding environments.

In the Sorghum and Livestock and North-eastern Highland Apiculture & Potato Zones women complained that men generally spend hard-earned incomes on non-beneficial things like alcoholism and polygamy. Participants also said the women mostly re-invest the money in brewing to redirect to essential household expenses. Women, however, attested that some responsible men in the community invest in constructing houses for rent and taking care of the welfare of household members, including buying clothes.

113 Rainy season usually sets in earlier in the Western Mixed Crop Farming Zone.

114 A common practice in Napak district as young and youthful children move to distant cities for begging /casual labour.

According to findings of the FSNA's, expenditure on alcohol is generally high, as 50 per cent of the households spend on alcohol and tobacco. [33],[34] Subsequent analyses taking into account anthropometric measurements of children revealed a significant relationship between these indicators, in that children whose households reported these purchases were more likely to be wasted in 2017, and more likely to be stunted in 2017 and 2018 (Cf. Annex IV).

Coping strategies

Due to the usually low harvests across the sub-region, households rarely have enough food to sustain them through the long lean season that runs from March to July. It is, therefore, common for most of the households to employ various food and income coping strategies to enable food access from the markets. Community participants in all the localities mentioned different coping strategies that were dependent on the location and shocks.[115] The most common food coping strategies across the sub-region include reduction in number of meals, consumption of less preferred foods, skipping meals, reduction in meal portion size, reducing adult quantities at mealtime, borrowing food, consuming seed stock and begging for food or food aid. Income coping strategies include sale of household assets/goods, sale of more animals than usual, purchasing food on credit, borrowing money to buy food, withdrawal of children from school, reducing expenses on health, harvesting of immature crops for sale, begging and increased engagement in low value livelihood strategies.

Focus group participants in the Western Mixed Crop Farming Zone confirmed that the months of March to July are very difficult months as they face food shortages of varying magnitude across the community. They informed that this period is usually a period for preparing the gardens, planting and weeding; due to low harvest, most households do not have food to sustain them for the whole day. Households resort to surviving on wild vegetables, though home grown vegetables are also available in April and May when the rains start. Food rationing at household level and reducing the number of meals are the other possible strategies available to households, with feeding priority often given to young children and breast-feeding mothers. To boost market food access, women resort to collecting grass for thatching houses, which they can sell for Ug. Shs 5,000[116] for every bunch, and poles for fencing sold for Ug. Shs 3,000[117] per pole. During the same period, men increase offer for daily casual farm labour from which they earn about Ug. Shs 3,000 for every day worked from 8:00am to 1:00pm. Participants also said that quite often household members (mostly those from Napak District) migrate to other towns in search of casual labour and begging opportunities.

Focus group participants from the Sorghum and Livestock Livelihood Zone said they practice food rationing in times of scarcity, which helps them ensure adequate food for the youngest children. In some households, small children are left to depend on sorghum residues of a local sorghum brew locally known as 'Adakai' when food in the home is not sufficient. The most vulnerable groups during food scarcity are believed to be the fathers, as they are left to go hungry or hunt for a wild food fruit such as Tamarind, which they take with water to sustain themselves for the day. There is increased gathering of wild vegetables for both food and sale; yet some household members migrate to areas where they can offer casual labour in gold mines and stone quarrying sites to obtain income and purchase food. Brick laying, burning of charcoal for sale, fetching firewood for sale and asking for food assistance are the other coping strategies in this zone. Households most vulnerable to food security crises in this zone are those with orphaned children and the elderly who do not have children or grandchildren to take care of them. Female-headed households

115 There are noticeable similarities in the climatic shocks experienced across the sub-region. Only the North-eastern Highland Apiculture & Potato Zone suffers from seasonal attacks by the Turkana of Kenya.

116 $1.33 USD.

117 $0.80 USD.

and households considered to have unhelpful parents were amongst those categorised as being vulnerable to food insecurity.

Community participants in the North-eastern Highland Apiculture & Potato Zone noted that they ration food (in form of mealtime portion size and meal number reduction), with priority given to the young children to protect them from illnesses and malnutrition. As the food security crisis intensifies, the immediate option cited is to write to UN agencies and NGOs for food assistance; this appeal is typically managed at community level. The other coping strategies often employed in this zone include selling wild vegetables, harvesting and selling honey for income and to purchase food from Kaabong Town Council markets. Other community members exchange animals and grass for food, whilst others beg for food from the neighbouring Turkana community. Offering casual labour to the Turkana community in Kenya is another strategy employed by the households in this zone.

According to the 2017 and 2018 FSNA's, the mostly applied coping strategies in the sub-region are consuming less preferred food, borrowing food, reducing number of meals, reducing portion size at mealtime, and reducing adult quantities.[33],[34] Analysis of the coping mechanisms using the reduced Coping Strategies Index (rCSI) shows that 16 per cent of the households in the sub-region had high food consumption coping in 2017; this percentage reduced to 9per cent in 2018 after the harvest.[33],[34]

	Low coping		Medium coping		High coping	
	2017[33]	2018[34]	2017	2018	2017	2018
Abim	91%	82%	7%	8%	3%	10%
Amudat	85%	81%	13%	11%	2%	8%
Kaabong	41%	56%	41%	24%	17%	20%
Kotido	54%	80%	21%	19%	24%	1%
Moroto	44%	67%	37%	20%	20%	13%
Nakapiripirit	46%	74%	19%	22%	35%	4%
Napak	60%	62%	30%	28%	11%	10%

Table 23: Household food consumption coping in Karamoja, according to the rCSI

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant relationship between these indicators; children whose household engaged in high coping strategies were more likely to be stunted in 2017, and more likely to be wasted in 2018. Anaemia was less influenced by coping strategies in 2018, as children in high coping strategy households were more likely to be anaemic than those in low coping strategy households.

To enhance resilience at household level, participants indicated they had started Village Savings and Loans Associations (VSLA). In the Western Mixed Crop Farming Zone, the International Institute of Rural Reconstruction (IIRR) and WFP provided training on operation of VSLA, while in the South-eastern Cattle Maize Zone, Mercy Corps provided the training. In the VSLA arrangement, members drawn from villages save agreed upon amounts of money every week and the pooled savings are loaned to members or used in group income generating activities. The loans are given at a relatively small interest rate of 5 per cent charged on the principle amount. For VSLA in which membership is exclusively for men, individual weekly contribution is Shs.10,000 – 20,000[118] while for those where membership is exclusively for women, weekly contribution ranges from Shs.3,500 to Shs.5,000[119].

118 $2.67- $5.33 USD.

119 $0.93- $1.33 USD.

Members who accessed individual loans have been able to start small businesses that they attested are slowly growing while providing the much-needed daily household income.

> *I borrowed Shs.500,000 that I used to buy an ox. This ox is now grown, and I hire it out for between Shs.17,000 – Shs.25,000 depending on the size and terrain of the land.*
>
> **VSLA group member, Iriiri**

D.2 WATER, SANITATION AND HYGIENE

In Karamoja sub-region, safe water coverage was estimated to be over 70% as of June 2019.[64] The functionality of the water sources stood at above 75% for Karenga district, between 70-75 per cent for Amudat, Kaabong, Moroto, Nakapiripirit and Napak districts; and slightly above 60 per cent for Abim and Kotido districts. The lowest safe water coverage was noted in Nabilatuk district where it stood at below 60%. Most of the water supply in the sub-region is basic water supply services.[120]

To improve water access in the sub-region, two water supply projects (Kacheri-Lokona and Amudat) were constructed to completion in the sub-region in 2018 under the Water and Sanitation Development Facility (WSDF)[121] for Karamoja, and 298 water connections added in the same year under the Urban Water Supply project. Fourteen (14) windmill powered watering Supply Systems were also constructed to completion in the sub-region and distributed across the seven original districts.[122]

During the qualitative inquiry, participants from visited localities listed main water sources as boreholes, seasonal streams, open wells and rainwater. In an exceptional case, focus group participants in Loodoi village reported access to tap water.

During the rainy season, water is typically readily accessible. Physical accessibility is, however, a major issue during the dry season; often, humans and livestock have to access water from the same water points. Time taken to fetch water was estimated from one and a half to two hours, including waiting time, though this varied. For instance, in the Western Mixed Crop Farming Zone participants reported they waited for about an hour as the boreholes serve a relatively big population, yet in the North-eastern Highland Apiculture & Potato Zone participants reported waiting less than 20 minutes at the source.

Boreholes often break down due to overuse, as they serve a large population, leaving households with no option but to access water from open streams and open wells. At the time of the qualitative inquiry, all the four boreholes in Moron village in the Maize, Livestock zone had broken down. Thus, despite four built water points, households were getting water from the distant "Greek" river and some seasonal streams. The quality of the water from these two sources is poor, as households practice open defecation, and faecal matter contaminates the water. These water points are also used by livestock, which enter the water. Unhygienic conditions are further exacerbated by women washing clothes from the streams and bathing, further contaminating the source.

120 Basic water supply services refers to supply through an improved water source that is not on premises as opposed to safely managed refers to the higher service levels of supply including piped systems.

121 Sub-regional WSDFs are MWE's deconcentrated structures for implementation of water and sanitation interventions in small towns (STs) and rural growth centres.

122 Amudat (2), Abim (2), Kaabong (2), Kotido (2), Moroto (2), Napak (2) and Nakapiripirit (2).

Photo 3: Water stream from which households fetch water in Moron village, Amudat district

In Loodoi village, tap water was found to be relatively accessible, costing Ug. Shs 200[123] for a 20 litre jerry can, and the taps found within the community. As water sellers clean the taps and the boreholes are well managed through a community maintenance arrangement, water from these two sources was perceived to be safer than that from the open wells and dams. They, therefore, did not find it necessary to boil water from these two sources before drinking it, as long as the container used was clean. Community members who cannot afford to buy tap water and are a distance away from the nearest functional borehole only access water from open wells and dams, where they share the water with livestock. Community members perceived the practice of sharing water with livestock as being unsafe and attested that those who use that water are likely to get diarrhoea and cough. During the dry seasons, participants said humans and animals have to compete for borehole and stream water.

Physical access to water to water in Napak District is also deemed problematic. The only borehole in this community is said to serve about 1000 community members, yet there are no visible running streams. Wells and ponds are visibly neglected. Women walk an average distance of 2km to reach the borehole, and the waiting time at the source is approximately one and a half hours due the long queues. The same borehole water is shared with livestock and used for small-scale irrigation purposes during the dry season, increasing competition. A community committee ensures safety and cleanliness at the borehole and households contribute about Ug. Shs 5,000[124] per month for this purpose. Fortunately, those who cannot afford this are allowed to contribute in instalments for a period of about six months. In this community, drinking water is kept separately from the other water designated for home use. It was ascertained during the interactions with community members that for most households, drinking water is kept in pots and closed containers, and water for other uses is kept in jerry-cans. As water from the borehole is deemed safe from a community perspective, drinking water is not usually boiled or treated before use, a practice that compromises its quality.

The situation in the North-eastern Highland Apiculture & Potato Zone does not seem different from the other livelihood zones. In the locality visited, the available boreholes were relatively distant from the households, taking about one hour to walk to the nearest functional borehole. The waiting time is shorter than in the other zones, averaging about five to 15 minutes due to the sparse population. Like elsewhere in the sub-region, community participants in this area regarded borehole water as being very safe for use and required no further treatment.

123 $0.05 USD.

124 $1.77 USD.

Boreholes are more convenient and safer, but mostly used during the rainy season and not in the dry season while unsafe stream water is used when boreholes break down during the dry season

Focus group participants

Findings from FSNAs conducted in 2017 and 2018 demonstrate strong similarities with the qualitative survey. From both quantitative surveys, the main water sources are boreholes fitted with hand pumps, springs (protected and unprotected), piped tap water and surface water. Safe water coverage was estimated at about 90 per cent, but competition for this water drastically increases during the dry season, when livestock and humans have to compete for the same water. [34]

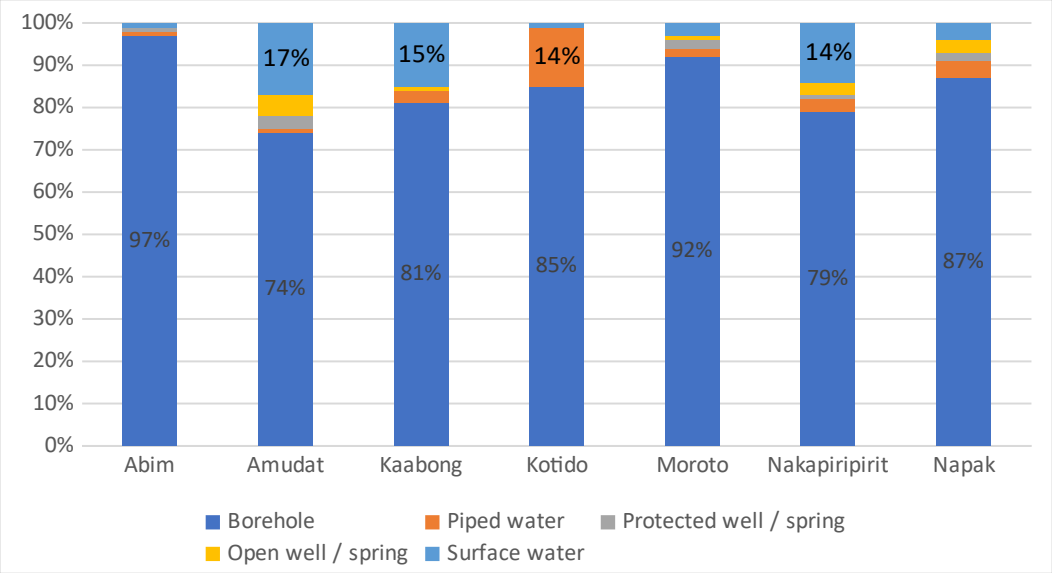


Figure 17: Reported main sources of household water in Karamoja, Jan 2018[34]

Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any significant association between water source and undernutrition outcomes (Cf. Annex IV).

As some communities are using water from surface and subsurface sources like streams and wells, yield proportion decreases during the dry season. Even for those communities using boreholes as the most available source, there is competition with livestock for the same water during the dry seasons. Focus group participants indicated that the dry months are usually December to March, with this period extending to early May in the South-eastern Cattle Maize Zone. They reported, on average, households are limited to about two to three jerry-cans (40 – 60 litres) of water, for an average household size of five persons. According to findings of the FSNAs, only 15 per cent of the population were utilising 15 or more litres of water per person per day in 2017, with this percentage increasing to 39% in 2018. 33,34

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators; children in households with 15 or more litres of water per person per day in June 2017 were significantly less likely to be stunted, and potentially less likely to be wasted (p-val <0.10) (Cf. Annex IV).

Households in the area also do not boil drinking water. They reported that collected water is left in a jerry can to settle before being used for drinking and cooking. Community participants revealed that trachoma, acute stomach pains and diarrhoea are diseases they contract when they use water

from the river; some community members have reportedly died due to inadequate treatment of the diseases.

While the water quality at the source is certainly important, water handling during transportation and storage until consumption also plays a key role in potential contamination pathways leading to water-borne diseases. Results of the FSNAs indicate a concerning rate of water treatment across the sub-region. In 2017, only 10 per cent of the households reported to have treated their water before use[33], especially drinking water with a slight improvement of this rate to 11 per cent in 2018. [34] A further analysis revealed that of the 11 per cent treating their water, over 40 per cent treated it by leaving it stand to settle, a practice that makes it safe for cooking and washing but not drinking. [34] All these findings point to the fact that a big population in the sub-region still drink unsafe water, which exposes the children to diarrhoea and other infections.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a weak relationship between wasting and water treatment in 2018, in that water treatment was possibly protecting of wasting (p-val <0.10) (Cf. Annex IV).

Table 24 summarises perceived risks associated with water use in the sub-region.

Behaviour	Perceived risk	Community justification + other information
Drinking water from the streams, river	High	Being cattle keepers, the community highlight that they need to drink water wherever there is water together with their livestock. Due to the distances travelled, it is hard for them to keep carrying drinking water along with them in containers.
Water in the community makes children sick	High	Protected water sources are boreholes and taps and, streams, wells, dams and river are not protected. Contamination by both human and animal wastes lead to diseases such as diarrhoea among children, when water is taken from unprotected sources.
Drinking rainwater	Low	Community members consider rain water safer than stream water in situations that the boreholes are not functional; they do not boil it before drinking.
Leaving jerry cans open	Medium	The jerry cans are left open because it is usually the same source of water used for both drinking and other domestic work.
Behaviour	Courage to change	Community justification + other information
Fetching water	Difficult	Women have to walk long distances of approximately 2-5kms to access water from the boreholes, streams and the river. In one community, bees threaten women as they fetch water from the stream during the dry season. Wells, dams and boreholes are shared by animals making waiting times long.
Water treatment	Difficult	There are no water treatment options within the communities. Water is not boiled irrespective of the water sources, only borehole water is considered safe for drinking even without any form of treatment. Stream and river water taste is said to be more preferable when it is not boiled

Table 24: Risky behaviour associated with water use in Karamoja sub-region

Sanitation and Hygiene

Latrines were not visibly present in the localities visited during qualitative inquiry. In the South-eastern Cattle Maize and Western Mixed Crop Farming Livelihood Zones, community members informed us they mostly practice "cat defecation,"[125] though open defecation was also very visible in the community. In their perception, communities believe this is a safe way of disposing of faecal matter as it will eventually be covered. From observation, during the day, defecation is done about 100 or more metres away from the residence. This cannot be practiced at night. Young children often end up practicing open defecation, and mothers do not dig up holes to cover this faecal matter. It was also observed that during the rains faecal matter (whether in the shallow holes or not) is washed away into the streams from where households again collect water for domestic use. As earlier noted, this water is not treated before use, exposing the population to recurrent intestinal and diarrhoea infections.

> *Faeces of our young children are washed in the clothes, and the water poured in the compound if this is done at home or in the streams if we wash from there.*
>
> **Focus group participants, Kaurikiakine and Moron villages**

In the Sorghum and Livestock and North-eastern Highland Apiculture & Potato Zones, community members reported that about five in 10 households have latrines, though this was not observed. In Loodoi village, only 2 covered latrines with no wall construction and 1 latrine constructed by Mercy Corps organisation were seen, yet there were no signs of the Mercy Corps latrine being used by the community. In Lochoto village, some covered pit latrines with no wall construction were observed. On further discussion, community members admitted they mostly practice open defecation and alluded to the fact that this is communally acceptable. It was reported that all faecal matter of babies is put in holes and covered.

During the focus group discussions, participants advanced several reasons for practicing cat and open defecation, ranging from communal acceptance to economic value.

> *We are pastoralists who are ever shifting homesteads, so (there is) no economic value in constructing permanent latrines. Secondly, even if we wanted to do so, our soil texture is so bad that the latrines will be washed away by rainwater.*
>
> **Focus group participants, Moron village**

Results from the FSNAs of 2017 and 2018 confirm the qualitative inquiry findings. From the 2017 survey, availability of toilets in the sub-region was reported in 58 per cent of the households and this proportion drastically reduced to 33 per cent in January 2018. [33],[34] The availability of toilets in the sub-region was reported lowest in Amudat district (16 per cent in 2017 and 11 per cent in 2018), which is one of the districts selected for the qualitative survey. [33],[34]

125 A practice in which a person digs a shallow hole whenever they wish to ease themselves and covers it after defecation.

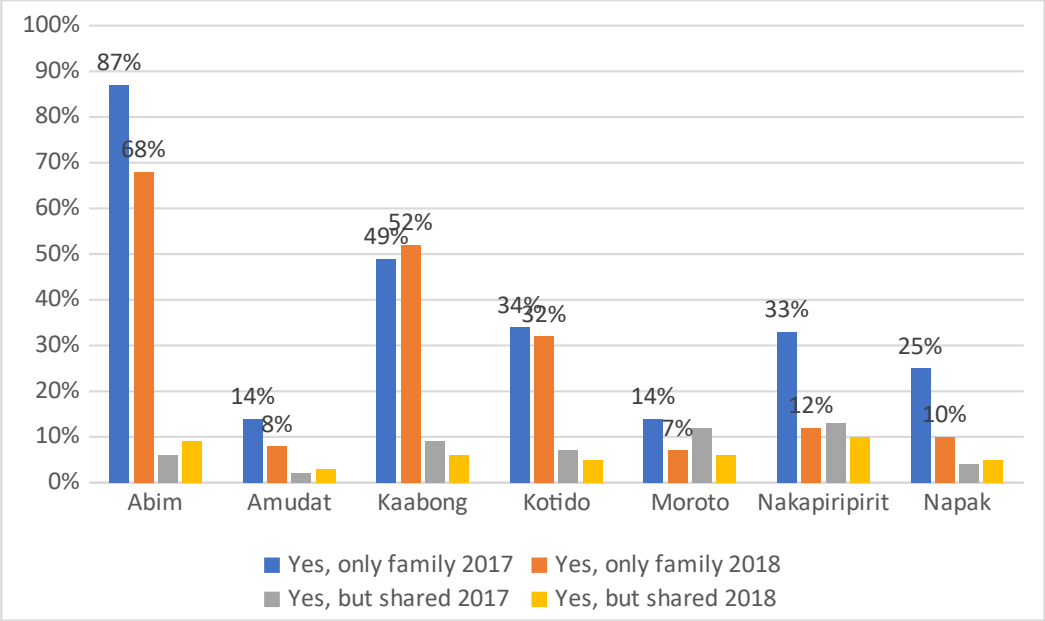


Figure 18: Toilet facility availability in Karamoja sub-region[33],[34]

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that children in households with access to toilets were significantly less likely to be wasted or stunted in 2017 and 2018 (Cf. Annex IV). Access to toilets was not significantly associated with anaemia.

Focus group discussions demonstrated that women often bathe from home; when water is available, this is done twice a day. In rare instances, the women can bathe from the streams, but this is not common in all the localities visited. The women also reported that they ensure their babies bathe regularly to keep them clean. On the other hand, it is very uncommon for men to bathe from home as they reported that they bathe from wherever they find water, whether a stream, boreholes, ponds or wells. It was unclear if men use soap when bathing. The practice of bathing babies and young children at home ensures their hygiene but the water used is often not safe. Men bathing in water sources contaminates the water at the source, especially which from open surface sources as it is possible they dispose dirty water and faecal matter and urine into the source. This then contaminates the water used to bathe the babies and young children.

Washing hands before feeding babies and young children and food preparation is common practice across all localities visited, especially when mothers return from the garden. Women had been sensitised on this practice by VHTs, from the health centres and by organisations like Mercy Corps, World Vision, among others. Community members also generally agreed that it was a good practice to wash hands before eating and they do so whenever water is available. While washing hands before eating and cooking is common practice, community members admitted this is rare after defecation or visiting the toilet. They said since most times defecation is never done at the same place, it is not easy to have a common hand washing place for this purpose. They also reported that the little available water is reserved for other purposes including washing hands before eating, so it would be costly for them to wash hands after visit to the toilet. From observation, there were no hand washing facilities in households that had taken the initiative to construct latrines. Participants said due to limited water access, households optimise the use of water, so it is not possible to put up hand washing facilities.

Mothers are highly sensitised to the importance of keeping the hygiene of their young ones. The availability of water and the presence of an older caretaker was key to ensuring that this hygiene

is observed. The mothers also said that the faeces of the infants are washed in water and poured around the compound; others wrap children's faeces and wash their clothes at the water streams or riverbanks, while the clothes of the older children are washed at the water sources. In one of the visited localities, participants admitted to using mainly tree leaves or sometimes papers after defecation. They clean their hands after cleaning a child's bottom, but it was observed that some mothers did not wash their hands after cleaning a child's bottom and the babies' faecal matter was thrown into the bush. Mothers also practice hand washing before feeding the baby. Often at times, soap and water is used to clean the child's container.

The season of study in the selected communities was a harvest season and so there was plenty of crop litter in the compounds. Most common were groundnut husks and maize cobs. Compounds were also littered with animal faeces, especially chicken, goat and cow dung.

From the visited localities, the habit of sharing shelter with livestock varied from community to community. From observation, it was clear that the community members kept animals within their homes, ranging from chicken, ducks and goats to sheep. The participants said they do not share living shelter with animals, though in one of the localities participants admitted sharing shelter with the kids (young goats) and chicken. They said this was done to protect the animals from heavy rains and thieves. Semi-structures and kraals are built for animals such as goats, sheep and cows within some of the communities.

Behaviour	Perceived risk	Community justification + additional information
Defecating around the house	High	The community practices both cat and open defecation and participants revealed that during the night, household members do not ease themselves far from the home.
Not washing hands after defecation	High	Since the community practices open and cat defecation, which is usually in the nearby bushes, hand washing facilities are not available because there are no toilet facilities. Limited water also contributes to not washing hands.
Baby playing in dirt	High	Babies are left to play in the compound, sometimes without supervision of the mother or older caretaker. This enables them to play in dirt such as animal droppings, crop litters, mud during the rainy season, which could expose them to diseases such as diarrhoea and stomach-ache.
Not cleaning toilets well	Low	The few participants that have toilets said they use ash to keep flies off the toilets.
Men not bathing at home	Medium	Men traditionally do not bathe at home since they are pastoralists. From the discussions, men said they bathe in any open source of water like ponds, streams, boreholes, rivers or even at the wells
Behaviour	Courage to change	Community justification + additional information
Washing clothes	Difficult	During the focus group discussions, women told us that due to the distance the water streams and rivers, it is hard to keep the children clean all the time including washing their clothes.
Infrequent hand washing	Difficult	Community participants said they mainly wash their hands before and after having a meal besides that, due to limited household water, frequent hand washing is not practiced and soap is quite expensive as well.

Table 25: Risky behaviour associated with sanitation and hygiene practices in Karamoja sub-region

E.2 GENDER

Marriage and Decision-making

According to community participants, girls are supposed to marry at 18 years and boys at 25 years. Lately, however, there have been cases of early marriage due to increased pressure from parents for dowry and early school dropout. Marriage is typically preceded by a romantic interest between the partners, and then dowry paid. Participants informed that the dowry is usually between 10 and 20 head of cattle and about 10 goats for a young woman who has not yet had intercourse, but this may differ for older women. Where a young couple is not able to pay off the dowry at once, they are allowed to pay in instalments. In this case, the wife and children are deemed not to belong to the man until he completes all the dowry commitments.

It is societally acceptable for a girl to be married once she begins her menstrual periods because she is now considered a woman able to start childbearing; if she is not enrolled in school, it is more acceptable for her to be married off early. Participants, highlighted, however, that girls who get married before 18 years of age are more likely to be neglected and rejected by their husbands because they are not physically and emotionally prepared for marriage. They are also not naturally prepared to give birth and are more likely to have complications when giving birth. It is thought such girls are also not ready to carry out household chores and any other duties including the upbringing of children except with the help of an elder. Due to recent society dynamics, girls have been married off before the age of 18 years, a practice that is still deemed unacceptable in most of the localities visited.

> *I was in primary five and my father stopped me from going to school and married me off because he needed additional livestock that was paid as dowry (20 cows and 10 goats).*
>
> **Focus group participant, Moron village**

During further discussions focussing on increased cases of early marriage, participants revealed that girls that drop out of school early become vulnerable to early sexual activities and relationships. Once a girl gets into a sexual relationship, it is expected that she should marry that individual, whether old or young, and thus girls are forced into early marriages. Some participants alluded to home conflicts as another striking cause of recent early marriages. Disagreements between the mother and father may lead one of the parents to organise to have their daughter married off early before any divorce occurs. In other instances, mothers cited increased resistance from teenage girls to engage in household work. The solution then is to force them out of home and the ultimate destination for them is marriage. It is an increasing understanding among girls that when married, they have the freedom to make independent decisions, especially in communities where the husbands are not involved in the day-to-day management of home affairs but rather concentrate more on their livestock.

During discussions in most of the visited localities, women attested to being married to men they were not interested in as one of the major sources of stress in marriage. Women say they felt pressured into marriage at a young age. Despite the discomfort, women still have to stay in the marriage because they do not want to disappoint their parents, who will have consented to it and received the dowry. Women felt very unconvinced by the apparent decisions made by men to marry off school going girls in pursuit of dowry gains.

> *My father forced me out of school in order to get more wealth from cattle. My dowry payment was 20 cows and 10 goats.*
>
> **Teenage mother, Moron village**

There are increasing cases of polygamous marriages in the sub-region; according to male community participants, this is acceptable. In further discussions, men associated additional wives with prestige and manliness. On the other hand, female participants seemed very uncomfortable conforming to this societal standard. They said they are never happy with their partners taking a second or third wife, because they are not taken care of once another woman is married into the family. Others said they are not happy because they think that the dowry paid for another woman should have been used in family investment and to look after the current family better. According to the women, the presence of livestock in particular communities encourages men to marry many women. As long as a man is able to pay dowry, no one disputes a man's total number of wives. Women insisted that men marry another woman without consulting them, which is hurtful.

> *Sometimes men keep the presence of a second wife a secret for fear of violence from the current wife and try their best to balance the care*
>
> **Male Focus group participant**

According to the FSNA conducted in 2018, about 49 per cent of the marriage relationship are polygamous. Polygamy is practiced equally across the region except in Abim district where only about 24 per cent of the relationship were polygamous. [34]

In further discussions, women narrated the extreme care they take to relate well with their husbands. According to them, when a woman is married and the husband suspects her of having an extra marital affair, her husband can decide to take her back to her parent's home and claim back the dowry he paid from the parents of the woman. Much as this is a culturally accepted practice, it deprives the woman's family of the wealth they had gained in form of dowry. Sometimes the family will have to incur extra unusual expenses if they had used the dowry for other purposes including paying fees or dowry for their male children.

Domain	Bearer of decision	Community Justification
Marriage	Man	According to Ugandan laws, when a girl reaches the age of consent (18 years), she can decide to get married with guidance from her parents. However, in some of the localities in Karamoja, girls are married off very early due to interest in obtaining wealth in the form of bride price by the parents of the girl. In such circumstances, the young girl has no say as the father makes the final decision to give her away in marriage.
Family size	Woman and man jointly or man alone	For most households in the visited localities, the decision concerning the number of children to have is made by the man. However, there are households where both spouses agree on the number of children to have. In one of the visited localities, women said they are threatened with violence if they do not agree on the number of children the man wants. Some men even move out and decide to marry another woman who is willing to bear children.

Family planning	Man	In all visited localities, women said that the decision to start utilising modern family planning services was very dependent on the man. Women have to seek consent from their husbands to use the services. Despite the restriction, few women go ahead and use the methods without seeking the man's approval.
Schooling	Woman and man jointly or man	In most of the localities, both partners decide and contribute towards the education of the child. Whenever a mother gives birth and is in need of assistance, the girl child is asked to stay home during school days to help with house chores and any other assistance required by her mother. However, in one of the localities participants reported that intelligent sons are usually pulled out of school to take care of livestock. The community believes that his intelligence will help him better protect the livestock especially in times of danger and this decision is consented upon by both husband and wife
Treatment of illnesses	Woman and man jointly or man	The men usually have a say about treatment of illnesses because the financial support is from them. However, in situations when the man is not at home, the women take the decision to treat the child, including the treatment option to use.
Household expenses	Woman and man jointly	Participants said household expenses are discussed jointly. Men provide their income to cater for household needs even though some of the income is usually spared for alcohol consumption and getting a second or third wife. Men and women's expenditures are usually on different items; for men expenditures are on food, purchase of livestock, paying school fees, alcohol and health while for women, their expenditure is on food, health, clothes for children and themselves, providing for relatives and friends.
Household nutrition	Woman	It was very evident during the discussions that women were the custodians of the kitchen. Therefore, the woman determines the type, quality and quantity of food that is prepared in a household. When food is prepared, the woman knows that the children and her husband have to receive the best share before any other household members. This mainly occurs in times of scarcity. Women are usually conscious of foods and their nutritional value as they prepare meals for their family. During discussion, some women said that silver fish is very good in protecting their children from diseases.
Daily activities	Woman	Concerning domestic work, the woman decides on what to do and how to do it because she is in charge and usually the one at home every day. When to go to the garden or market are all decisions she has to make as a woman. According to the women how you plan your activities will determine whether you will have rest during the day or not, because you have no choice but to ensure that your household activities are done.
Sale of livestock	Man and woman	A woman can by no means carry out the sale of livestock such as cows, goats and sheep. According to the participants, if a woman wants to sell any livestock and the husband is away, she has to seek the consent of her in-laws first. It is, however, not obvious that they will usually agree with the suggestion. Women are only allowed to sell smaller livestock like chicken or turkeys.

Table 26: Decision making in Karamoja sub-region

Some women stated that the decision-making power changes when the husband goes away, however, one still has to consult the brother in-law or other relatives before taking action, especially if the decision involves issues of land, critical health and sale and buying of livestock. Only a few

female participants said they could make a decision when the husband is away without consulting their in-laws.

Community participants said decisions regarding land use and access are handled first by community elders and then the men in the community. Women said they only access land through their partners. In some localities, joint decisions are made concerning where to take children for school, and meal composition, but fathers make decisions on marriage of the daughter and just inform the mother. Quite often should the daughter and mother decide on where to get married without consent of the father, fathers decide to curse the daughter not to have a happy life in marriage or even to be barren. Such curses are taken seriously as bearing spiritual power.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a relationship between decision-making and child undernutrition outcomes. Per 2017 analyses, children whose parents jointly made the decision regarding livestock production were less likely to be stunted. In 2018, children whose parents jointly made the decision were less likely to be wasted, and less likely to be stunted if the woman made the decision.

Women's workload

Maternal workload influences care behaviours that might include breastfeeding, complementary feeding, child spacing, and income to purchase food, as well as preparation and storage of food. In focus group discussions, women indicated heavy workload due to the large family size is their primary source of stress. Men often leave the burden of looking after households to the women, and these women have to handle both household and farm work since the men claim their major role is to look after livestock. Too much work leaves women with less time for them to effectively take care of their young babies and children.

In Karamoja sub-region, the woman's typical day starts at 6:00 am with prayers[126], washing faces and helping the young ones to do so, sweeping the compound, after which she prepares breakfast. In some instances, the woman may be involved in milking livestock to have milk to mix in the porridge. In families with no older female children, the woman washes utensils as she prepares porridge to be served to the entire family. After breakfast, the woman leaves for farm work at about 8:00am and stays in the garden up to 12:00 noon. Some mothers go with their babies and infants to the garden, while others leave them in the care of grown up siblings and grandparents. While in the garden, the woman also looks for some food and vegetables that she returns with at noon to prepare for lunch. She then prepares lunch that is served to the whole family, except those who might have gone for livestock rearing. She then returns to the garden at about 4:00pm to finish off farm work started in the morning and returns home at about 6:00pm. If there are any sick children at home, she takes them to the health facility or prepares herbs for them before returning to the garden. After 6:00pm, she bathes the children, prepares dinner in case the family is to have two hot meals, otherwise children will just feed on the leftovers of lunch. During a busy agricultural season, the woman stays in the garden until 4:00pm during which time the children left at home will have to feed on the porridge prepared for them in the morning. In the Sorghum and Livestock and Western Mixed Crop Farming Zone, at times the woman goes to sell local sorghum brew (kwete or ebutye) to get some income for the family yet in the South-eastern Cattle Maize Zone she has to go to the gold mines to involve herself in artisanal mining to earn some income for the family. On a typical day, the woman prepares children for bed at 8:00pm, after which she can also rest from the day's heavy work schedule.

126 Not a usual practice in the sorghum-livestock and Northeastern Highland Apiculture & Potato Zones.

Focus group participants reported that women are overwhelmed with work and this limits time for effective self-care and other infant and young child caring practices. They particularly expressed concern over the increasing workload that includes feeding babies and infants, taking them to hospital when sick, bathing them and ensuring that they are clothed, collecting grass for thatching houses during dry seasons, preparing the gardens for next farming season, planting seeds, carrying out crop weeding, and harvesting the produce. In addition, they collect poles for fencing their homesteads and are heavily involved in the construction of family houses. They also construct household granaries in addition to working in gold mines including when pregnant. Occasionally, women make local brew for sale, grind grains, cut wood for building houses and some rear cattle in situations where one is a widow or has sent her children to school.

Women believe their workload has increased in comparison to what their mothers and grandmothers would do. They said there was no garden work in the past and women just stayed home to take care of children, including carrying out general household chores. The limited working hours then availed the woman adequate time to take care of herself and the children at home. According to both female and male community members, the one main reason why women in these selected communities are left to carry out the many tasks is due to the form of dowry paid to their parents.

> *The heavy workload is a kind of pay back for what was given to my parents in form of dowry and there is nothing you can do about it. It is our culture and we have to respect it*
>
> **Female focus group participant**

Most women felt obliged to do work irrespective of their situation / status, as it seemed the only way out. They indicated that they usually have to wake up and start helping their children in terms of daily provision, irrespective of the situation in which the woman is.

Men's workload

On a typical day, the man wakes up by 6:30am and ensures his family slept well. He washes his face and waits for breakfast prepared by his wife. Some men then take the livestock to the fields and return to sweep the compound, yet others go to the garden early and their spouse delivers breakfast to them. One of the daily routines of most men when they are at home is to ensure the compound is clean and safe for children's play and adult rest. While in the garden, depending on the season, the man will do the agricultural activities that include preparing the garden, planting, weeding and harvesting. These are in most cases done with the wife. After the early morning farm work, the man returns home at about noon to have lunch; in the lean season, when the family has one main meal a day, he will just return after 4:00pm. In livestock keeping communities, the man will go with the livestock with male children and only return in the evening. The man supervises all the other activities being carried out at home.

Men who work in the gold mines will usually leave home at 8:00am after breakfast and stay there the whole day. During the harvest season, the man looks for market for the produce while some men just go to trading centres to attend to their retail outlets. In most of the localities visited, men usually have their day's main meal at 9:00pm just before going to bed. Prior to that, however, most of them go to nearby trading centres to socialise with friends and drink local brew.

Since the majority of men are pastoralists, from January to April, which is also the dry season, many leave their homes with the livestock in search of water and pasture. When the man starts ageing, he will usually hire shepherd boys to take charge of the livestock rearing and only do the supervisory role.

Besides the routine work, there are seasonal activities that men carry out in the different communities visited. These may include digging pit latrines in the local area and towns, thatching houses and sometimes caring for children in the absence of their mothers. Others burn charcoal and lay bricks for sale; they are also very involved in construction of temporary shelters at home and in places where they migrate in search for water and pasture for the livestock. Men also roof the granaries and cut wood for building houses and fences. However, women carry out the actual fencing in other communities such as the Western Mixed Crop Farming Zone. Men also go hunting for wild animals as source of food and this is most common in the dry seasons. Men are also involved in honey harvesting as a source of household income.

F.2 UNDERNUTRITION AND ANAEMIA IN KARAMOJA

According to the Karamoja Anthropometric survey data, wasting (based on weight-for-height z-scores) in the sub-region was estimated at 13.8 per cent in 2017[33] and reduced to 10.4 per cent in January 2018. [34] However, both figures are higher than the 10 per cent prevalence registered in 2016.[9] The prevalence of severe acute malnutrition (SAM) was estimated at 3.0% in 2017 and 2.5% in 2018. The slight reduction in the wasting rates between June 2017 and January 2018 can be attributed to the increased availability of food after the harvest of September – November 2017. Irrespective of the slight reduction registered, the acute malnutrition levels remain high and need to be addressed to avert any more severe consequences, including mortality.

Findings from the same survey indicate the prevalence of stunting at 32.6 per cent in 2017[33], which increased to 34% in 2018. [34] The prevalence of severe stunting reduced from 12.7 per cent in 2017 to 11.1 per cent in 2018. These results show a slight reduction from the 35 per cent stunting rate registered in 2016.[9] Overall, stunting levels among children under five years of age have remained very high and there is a need for pragmatic response to avert any looming stunted growth and development crisis in the sub-region.

The prevalence of underweight among children under five years of age was 28.6 per cent in 2017 and reduced to 23.3 per cent in 2018 after the harvest. Anaemia levels are concerningly high in the sub-region, hitting a high 59 per cent in January 2018, which is a reduction from the 68 per cent recorded in 2016.[9]

Comparing boys to girls, results from the anthropometric survey data show that boys were more malnourished than girls across the Karamoja sub-region. According to secondary analyses, children from the South-eastern Cattle Maize Zone were more acutely malnourished than those from the other livelihood zones, yet those from the Sorghum and Livestock Zone are more chronically malnourished than children from the other livelihood zones. (Cf. Annex IV).

Historical and seasonal trends of undernutrition

Disaggregated nutritional data for Karamoja shows that there has been slow progress in improving the nutritional status of children in the last 18 years. For instance, wasting worsened from 3.8 per cent in 2001 to 10.4 per cent in 2018 and has been high since 2006 (2006 – 10.5%, 2011 – 7.9%, 2016 – 10%).[127] According to the UDHS reports, the prevalence of stunting only improved from 36.9 per cent in 2001 to 35.2 per cent in 2016 and recently to 34 per cent in 2018.

Further view at seasonal trends of malnutrition in the sub-region shows that the stunting improved only from 35.3 per cent in January 2013 to 34 per cent in January 2018, and there has been no

127 UDHS reports 2001, 2006, 2011, and 2016.

marked difference between the lean season stunting rates and those recorded during the harvest season. During the same period, wasting rates only improved from 12.5 per cent in January 2013 to 10.4 per cent in January 2018, and there has been no noticeable difference between the wasting rates recorded in the lean and harvest seasons (see Table 31, figure 21, figure 23). Even though wasting and stunting are linked to food availability and diversity in the sub-region, there is usually no significant difference in the feeding patterns for children in the lean and harvest periods. Generally, their consumption is low with limited food diversity throughout the year, with a markedly low consumption of livestock products and iron rich fruits and vegetables.

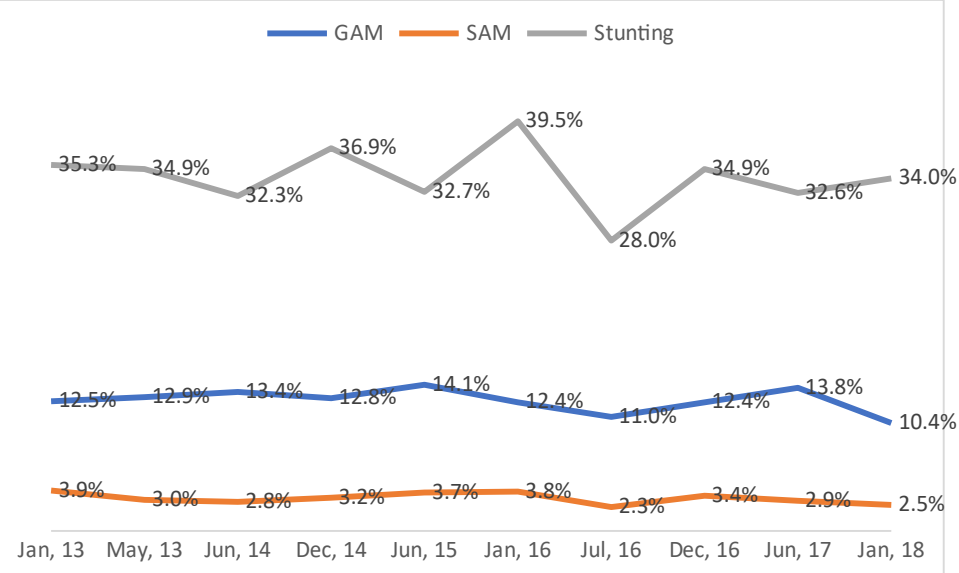


Figure 19: Trends of GAM and SAM in Karamoja sub-region.

In a similar vein, there has been no improvement in anaemia rates in the sub-region during the 18-year period. Anaemia levels improved from 66 per cent in 2001 to 59 per cent in 2018, reaching a record high of 82 per cent in 2006. The very high anaemia rates are linked to high disease prevalence, and low consumption of iron rich foods.

G.2 COMMUNITY PERCEPTION OF UNDERNUTRITION AND THERAPEUTIC ITINERARY

Community perception of undernutrition

During the qualitative inquiry, focus group participants described a healthy child as one who eats or breastfeeds well, is always looking happy and does not look weak. According to them, malnutrition has existed in their milieu for a long time. Much as they feel that the cases have reduced, participants believed that the number of children having signs of malnutrition is still high, usually four malnourished children in every 10 households. Participants described a malnourished child as one who is thin with visible ribs and a sleepy appearance. They said that such children did not eat well and frequently suffered from diarrhoea. Communities had quite diverse perceptions on what exactly causes malnutrition, ranging from poor feeding to improper care from alcoholic parents to a child being born by a young mother who has no experience in caring for young children. Participants also said households where mothers do not space their births well are very likely to have malnourished children. It was established during the community discussions that different local names are given to the different conditions of malnutrition. Moreover, the local names differed in every locality visited, which also dictated the understanding and perception of the communities on how to handle the different cases.

Community participants described oedema (locally termed "Dotok") as a condition resulting from a lack of good food, lack of enough breastfeeding, poor childbirth spacing, and lack of food variety. Traditional beliefs associated with oedema concern the side of the jaw from which teeth will grow first. Therefore, a child with kwashiorkor will start having the milk teeth from the left side of the mouth. Other participants believed that a cord prolapse at the time of birth or even over bleeding after cutting the umbilical cord are all potential causes of oedema in a child.

> *I got pregnant when still breastfeeding and my child became sick with a swollen stomach, swollen cheeks and brown hair. I took her to the herbalist after failing from the health centre and then she got well. At the health centre they said my child does not have enough variety of food to eat.*
>
> **Focus group participant, Loodoi village**

Interactions with the health personnel revealed existence of malnourished children in the visited localities. They informed that the main cause of malnutrition are poor feeding practices and poor hygiene practices. According to the personnel, increased malaria incidence, with the parents delaying taking children for treatment, has also often resulted in anaemia and complete slow growth.

Community therapeutic itineraries

Focus group participants attested that even though there is a strong belief in herbs to cure several child illnesses, they encourage all mothers to take children who present with malnutrition conditions to the health facilities. Those who cannot go to the health facilities consult VHTs before deciding the next step. Besides health facilities, children can be taken to traditional healers and religious leaders for prayer.

According to community participants, when they take malnourished children to the health facilities, they are given nutrition food called "PlumpyNut"[45] which they take home and give to a malnourished child, as indicated. Children who cannot eat PlumpyNut, are retained in the hospital until they recommence eating. Parents attested that malnourished children are usually put on PlumpyNut for three months, after which a decision is taken on whether to continue or not. Some mothers attested that there are instances when the health facility fails to correct the problem and the next option is to take the child to an herbalist or traditional doctor. It was not clear from the discussions why health facilities fail in some cases, but some mothers attributed this to parents who take the PlumpyNut and allow other siblings to eat it, which further cripples the malnourished child as he/she is not being fed as per the prescription. Others indicated that some cases arise purely out of witchcraft and cannot be corrected by conventional medication at the health facilities.

> *I have twins and one of the twins was short for her age. She had a big stomach; she couldn't eat and she could just ask for local brew. She had brown hair and big cheeks. I took her to the hospital and the treatment did not work. I took her to the witchdoctor who performed rituals using local brew, a goat and chicken to rub all over the child's body. The witchdoctor then told me to take her to the father and we celebrate by eating together as a family. The child got healed and in three months she had started growing tall and fat.*
>
> **Focus group participant, Loodoi village**

> *We take children with oedema to the health centre; but when they fail at the health centre we have to go for treatment from the witchdoctor's shrine. If the witchdoctor fails, then we have no more to do but to just leave the child to die at home.*
>
> **Focus group participant**[46]

In one of the localities visited, participants explained how they perform rituals on malnourished children.

> *A wasted child's treatment starts from home, whereby we perform rituals and when the sickness persists, the child is taken to the hospital. To perform the rituals, we get a sheep and an old woman holds it and they slaughter it. We cut the intestines and tie the intestines around the child's waist. The mutton is then cooked on condition that the soup should not drop in the fire. Bones of the sheep and waste are mixed and smeared on the body of the child, and the head of the sheep is hanged on one of the doors until the next day when it is removed. If the ritual is not performed well, the child will not be healed and may even die.*
>
> **Focus group participants, Loodoi village**

According to the health workers, it is not easy to pre-determine what steps a mother takes when a child gets malnourished. While most mothers would prefer to take malnourished children to a health facility, a strong belief still prevails that the use of herbs and other traditional treatments are more beneficial.

Health workers expressed fear that there are many malnourished children within the communities who are not brought to health facilities due to the lack of transport, fear of being stigmatised and community belief in herbs. Long waiting times for patients at health facilities sometimes force the community members to resort to alternative means of treatment. When on certain occasions health centre staff attend seminars and workshops, community members deem it that the facility has no more time to handle their children and they do not come back for further treatment.

According to the health workers, mothers whose children have been on nutritional programmes do not follow up on the appointments, which makes children prone to severe malnutrition. They revealed that some of the clients who have been on a programme for three months do not change, and it is assumed that some parents share out the supplied rations to another child at home or might be selling the nutrition supplements given to the malnourished child. This information was confirmed by some of the community participants who attested that it is common for some families to use the PlumpyNut to paste[128] their household food instead of feeding the child as prescribed.

H.2 COMMUNITY PERCEPTIONS OF CAUSAL MECHANISMS OF UNDERNUTRITION

The qualitative inquiry in Karamoja region included over 60 independent exchanges with more than 600 participants. Their detailed and complementary testimonies helped to define a causal pathway for undernutrition in the region, which served as a basis for the triangulation with the available secondary data, particularly 2017 and 2018 FSNA data sets.

128 Create a sauce with, instead of groundnuts.

Similarly to West Nile region, the community in Karamoja identified inadequate care practices and inadequate infant and young child practices as key risk factors for wasting while both are linked with heavy women's workload. Mother's multiple household occupations, often complemented by her income-generating responsibilities do not leave a lot of time for proper child care, which also manifests in inadequate utilisation of health services, increasing child's vulnerability to illness and/or chronic illness due to a delayed treatment. The community particularly suffers from high rates of diarrhoea and malaria, repetitive episodes of which may negatively impact child's nutritional status in the short or long term.

In addition, young mothers do not tend to have sufficient knowledge of basic childcare practices, which in combination with childcare by another family member, may result in an increased risk of infection and/or inadequate food intake. Mothers admitted to struggling with breastfeeding and child feeding as their heavy workload prevents them from being able to breastfeed and/or prepare multiple meals a day. Secondly, due to poverty, children rarely eat balanced and diversified meals. Even in localities with high livestock holding, consumption of livestock products like meat, milk and eggs is very low. Low household economic power and early marriages were identified as triggers of undernutrition, extending a vicious cycle to the next generation. The scarcity of income was described as an outcome of low crop production due to inadequate farm inputs, erratic rainfall, insufficient farm labour, low soil fertility, and pests and diseases. This often translates into households deploying a number of coping mechanisms to survive, some of which might be detrimental for child's health.

According to the community, key risk factors for stunting reflect those for wasting while inadequate hygiene and sanitation practices also play a role. As latrines are scarce and open defecation is still practiced, contamination at ingestion is very likely for children playing in unsafe play areas and/or if a household uses an improved water source close to open defecation sites. The communities admitted limited access to water, both in quality and quantity, which then compromises their food preparation, handwashing practices as well as body and clothes hygiene.

I.2 SUMMARY OF FINDINGS AND CATEGORISATION OF RISK FACTORS

In order to understand how participating communities perceive the severity of risk factors to undernutrition, a prioritisation exercise was conducted in each of four localities at the end of the qualitative data collection period. All risk factors identified by community members over the course of this study were presented back to them with the use of flashcards, portraying each discussed risk factor. After a recapitulation of survey findings by the qualitative data collection team, participants were invited to validate the interpretation of results and suggest modifications, if necessary. Subsequently, they were requested to divide risk factors into three categories (major, important, minor), depending on their impact on child undernutrition. The results of this exercise are presented in the table below. Risk factors perceived as having a major impact on undernutrition are highlighted in red, important factors are marked in orange while risk factors with minor impact are coloured green. White cells marked "N/A" signify that a respective community did not identify that risk factor as a cause of undernutrition in their milieu.

	Risk factor	Kaurikiakine	Loodoi	Lochoto	Moron	Overall
A	Limited access to quality health services	+++	+	+++	+++	+++
B	Limited use of health services	++	+	++	+++	++
C	Low birth spacing/unwanted pregnancies	+	++	+	++	++
D	Non-optimal breastfeeding practices	+	N/A	N/A	+	+
E	Non-optimal infant and young child feeding practices	++	+++	+	++	++
F	Low quality of interactions between a child and caregiver	+	N/A	N/A	+	+
G	Low access to food	+++	++	+++	+	++
H	Low dietary diversity	+++	++	+++	+++	+++
I	Use of household income non-beneficial to nutrition status of mothers and children	+	++	++	+	++
J	Low diversity, access and availability of income sources for households	+	N/A	N/A	++	+
K	Low coping capacities/ resilience	++	+	+	+	+
L	Low access and availability of water (quality and quantity)	+++	++	++	+++	+++
M	Poor sanitation practices	+++	+	++	+++	++
N	Poor hygiene practices	++	++	++	+	++
O	Heavy workload	+	+++	+	++	+
P	Low social support for women or households	+	N/A	N/A	+	+
Q	Early marriage and / or Early pregnancy	++	++	+++	+	++
R	Low nutritional status of women	+	N/A	N/A	++	+

*N/A - respective community did not identify that risk factor as a cause of undernutrition

Table 38: Summary of results of community rating exercise for Karamoja sub-region

After the completion of both qualitative data collection and secondary quantitative data analysis, Link NCA Analyst triangulated all available data sets, compared correlations for each risk factor and determined the strength of its association with undernutrition. The ratings for each hypothesised risk factor are summarised in the table below.

	Risk factor	Strength of association with under-nutrition from scientific literature	Prevalence of risk factor according to secondary data (literature review)	Statistical associations from secondary data				Seasonal and historical associations with under-nutrition	Findings from the qualitative study	Community rating exercise	Interpretation/ Impact of risk factor
				W	S	A	O				
A	Limited access to quality health services	++	++	N/A				++	++	+++	Important
B	Limited use of health services	++	++					++	++	++	Important+
C	Low birth spacing/ unwanted pregnancies	++	++	N/A				-	++	++	Important
D	Non-optimal breastfeeding practices	+++	+					+	+	+	Minor
E	Non-optimal IYCF practices	+++	+++					++	+++	++	Major
F	Low quality of interactions between a child and caregiver	++	+++	N/A				+	++	+	Important
G	Low access to food	++	++					++	++	++	Important
H	Low dietary diversity	++	++					++	+++	+++	Important
I	Use of household income non-beneficial to nutrition status of mothers and children	++	N/A					+	++	++	Important
J	Low diversity, access and availability of income sources for households	++	++					+++	+	+	Important
K	Low coping capacities/ resilience	+++	++					++	+	+	Important
L	Low access and availability of water (quality and quantity)	+++	+++					+++	+++	+++	Major

M	Poor sanitation practices	++	++		+	++	++	Important
N	Poor hygiene practices	++	++	N/A	+	++	++	Important
O	Heavy workload	++	N/A	N/A	++	+++	+	Minor
P	Low social support for women or households	++	++	N/A	+	++	+	Important
Q	Early marriage and/or Early pregnancy	+	+	N/A	+	++	++	Minor
R	Low nutritional status of women	+++	+		+	++	+	Minor

The weight of each risk factor was determined in line with the rating grid presented in Table 17.

Table 39: Summary of categorisation of risk factors for Karamoja sub-region

At the same time, Link NCA Analyst revisited causal pathways of undernutrition, as developed with communities during the qualitative inquiry, and developed two simplified outlines, likely to explain a majority of cases of undernutrition (wasting and stunting) and anaemia in Karamoja region.

Figure 20 below depicts a causal mechanism for undernutrition, highlighting the risk factors with a significant statistical association with wasting and/or stunting. The most vulnerable group to acute or chronic malnutrition were children from female-headed households and/or extremely vulnerable households. While no child age or gender vulnerability was detected for wasting, the most vulnerable group to chronic malnutrition were boys.

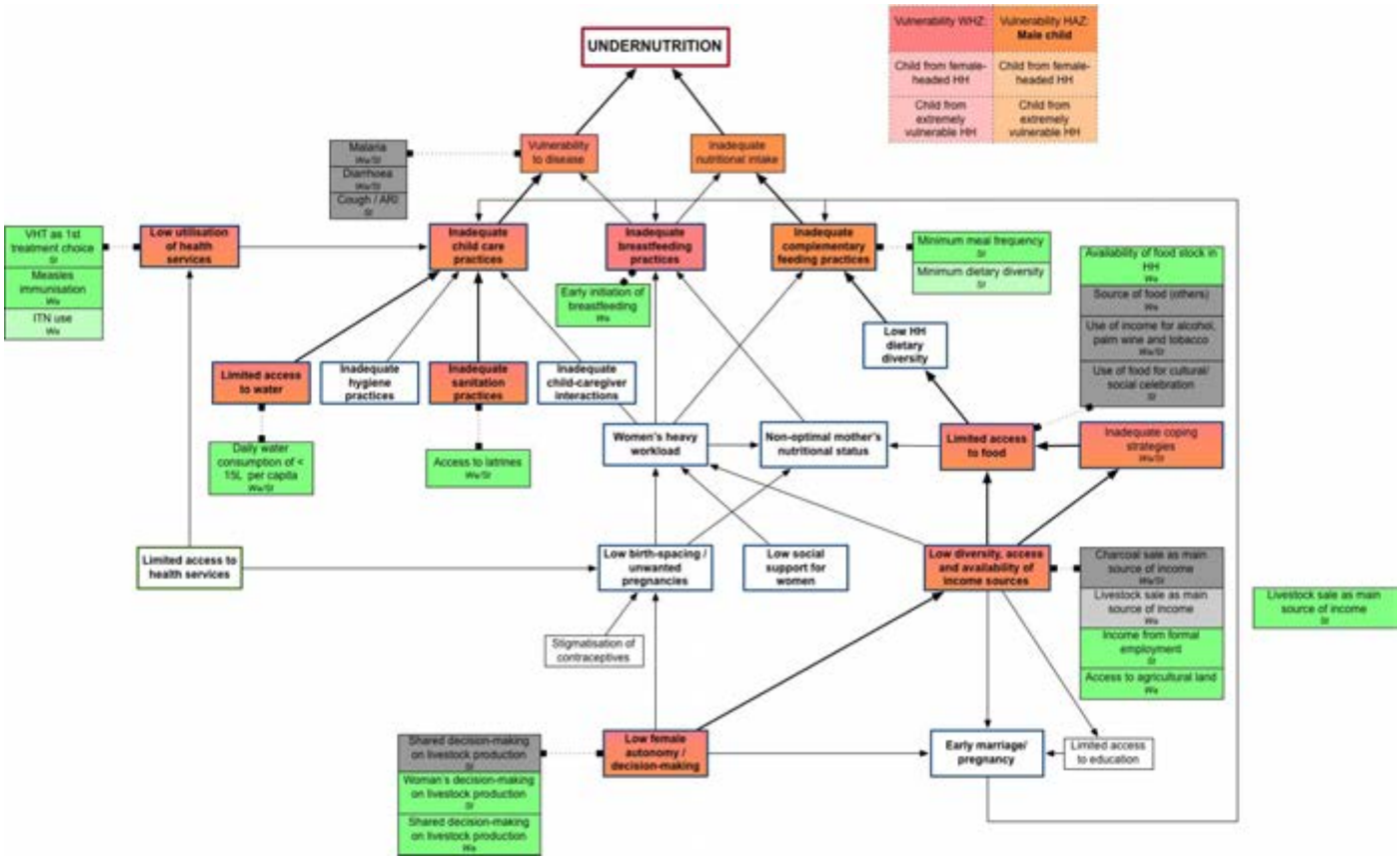


Figure 20: Simplified causal pathway for undernutrition (wasting and stunting) in Karamoja Region:[129]

Similarly to West Nile, a dominant pathway to undernutrition in Karamoja region appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate access to sanitation facilities exposes a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. A child with an access to a latrine was less susceptible to wasting and stunting and the same applied to a child living in a household using more than 15 litres of water per capita. This highlights the effect of limited water access on the incidence of undernutrition, which most likely accentuates the impact of inadequate access to sanitation facilities.

On a health-seeking side, access to village health teams as the first treatment choice seemed to decrease a child's odds of stunting while a positive effect of measles vaccination was observed in relation to wasting. Children suffering from malaria and diarrhoea had higher odds of being wasted or stunted while children suffering from cough or acute respiratory infection were more likely to be stunted.

A complementary pathway to undernutrition seems to take it roots in low female decision-making powers, which influence a household's access to a variety of income sources and eventually its access to food. This translates into an inadequate food intake of children under five years of age and consequently into a stunted growth and development. A child living in a household, in which a woman took decisions on livestock production, was less likely to be stunted while a child in the

129 Dark red cells represent risk factors presenting a significant statistical association with acute malnutrition while dark orange cells represent risk factors presenting a significant statistical association with chronic malnutrition. Cells in a mix of dark red and dark orange represent risk factors presenting a significant statistical association with both acute and chronic malnutrition (p 0.05) (See Annex 4). Cells highlighted in light red and light orange signify risk factors with a potential link to acute and chronic malnutrition, respectively (p <0.1) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with acute and chronic malnutrition.

same region, living in a household, where this decision was shared between husband and wife, was more likely to be chronically malnourished.

At the level of limited access to income, a child living in a household with a charcoal sale as primary source of income had higher odds of wasting or stunting. A child living in a household with livestock sale as primary source of income had potentially higher odds of wasting but significantly lower odds of stunting. The latter also applied to formal employment as a primary source of income while a child whose family had an access to agricultural land was less likely to suffer from acute malnutrition. This could eventually translate into a higher availability of food in the household, which also decreased odds of wasting. A child living in the household which did not access food from own production or at the market was more likely to be wasted as well as a child living in the household, which uses income for the purchase of alcohol and tobacco, thus suggesting the non-beneficial use of income for child development. In this respect, it is important to note that the minimum meal frequency was observed as a protective factor against stunting, thus possibly implying that an adequate use of income for optimal infant and young child feeding is beneficial in this context.

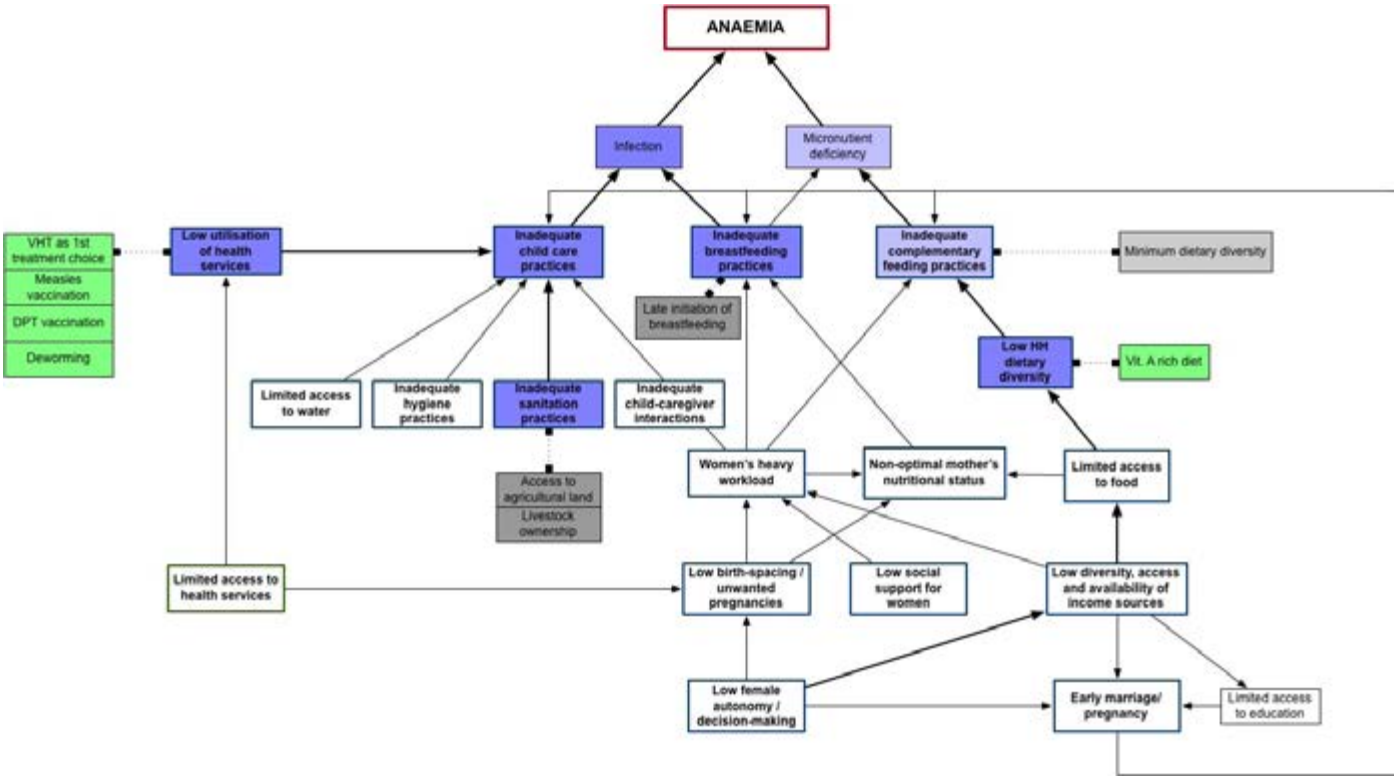


Figure 21: Simplified causal pathway for anaemia in Karamoja Region.[130]

Similarly to wasting and stunting, a dominant pathway to anaemia appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate sanitation practices expose a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. In Karamoja region, inadequate sanitation practices appeared to be linked with the livestock ownership and access to agricultural land. While this may appear counter-intuitive from

130 Dark purple cells represent risk factors presenting a significant statistical association with anaemia (See Annex 4). Cells highlighted in light purple signify risk factors with a potential link to anaemia, respectively ($p < 0.1$) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with anaemia.

a food security perspective, it is likely that children living in households dependent on agricultural production are more exposed to environmental contamination through the proximity with animals, which may lead to (repetitive) infections. On a health-seeking side, access to village health teams as the first treatment choice, measles and DPT vaccinations as well as deworming demonstrated a protective relationship against anaemia.

A complementary risk factor to anaemia seems to be linked with dietary diversity as children eating a Vitamin A rich diet presented lower odds of anaemia. In addition, the minimum dietary diversity was also observed as a protective factor against anaemia, thus possibly implying that an adequate use of income for optimal infant and young child feeding is beneficial in this context.

III -MID-NORTH SUB-REGION

A.3 HEALTH

Health services in Mid-north sub-region are provided through a six-tier health care delivery system beginning from Health centre I (VHT), Health centre II (H/C II), Health Centre III (H/C III), Health centre IV (H/C IV), district general hospital and two Regional Referral Hospitals (RRH) based in Lira and Gulu districts.[42] In 2000, the Government of Uganda introduced a new layer in the provision of health care services to the population, in which volunteers are trained to serve rural communities. These volunteers are referred to as Village Health Teams (VHT) and they are generally designed to help increase uptake of health services in communities. They are now officially categorised as Health Centre I, and teams should be situated at every village. The H/C II is situated at parish level, H/C III at sub-county level, H/C IV at county (in some cases district), general hospital at the district and RRH at a district with adequate proximity to other district hospitals within the sub-region.

The Ministry of Health indicates that by 2018, the mid-north sub-region had 566 health facilities with two (2) regional referral hospitals at Lira municipality, Lira district and Gulu municipality, Gulu district. The 564 health facilities included 307 HC II (230 government and 77 private), 147 HC III (112 government and 35 private), 18 HC IV (17 government and 1 private), 13 general hospitals (five government and eight private), 78 private clinics and one special HIV/AIDS clinic.[42]

Access to and utilisation of health services

The geographical accessibility of health facilities in the mid-northern sub region varies according to district and village. From observations made during the qualitative enquiry, it was noted that there are several government aided health facilities within each of the districts and localities visited. Community participants, however, mentioned distance to the nearest reliable health centre as one of the major constraints to accessing health services kilometres. For instance, the participants of Apoke village in Otuke district said they have to travel about 15kms to access Ogwete health centre II, and sometimes by walking due to difficulties in securing transport. According to community participants, transport costs range Ug. shs3,000- 15,000[131] for a one-way trip which is expensive to them, considering the low-income levels of most households within these communities. This further constrains the accessibility and use of available health services in the sub-region.

Community participants mentioned inaccessible and seasonal roads as another barrier to accessing health care. During the rainy seasons (April-October), floods sweep away murram roads and others become too slippery to use. This makes it very difficult to take pregnant women to the health facilities for delivery, forcing some of them to deliver from home or beside the road as they attempt to reach the reliable health facilities.

131 $0.80- $3.99 USD.

Participants informed that most health facilities open between 8:00am and 8:30am and closure is dependent on individual health facilities, with some HC IIs closing as early as 2:00pm, while most of the HC IIIs remain open until 5:00pm. HC IVs and general hospitals never close as they handle emergency cases from the localities, though there are times when the health personnel are not readily available to help in case of emergency.

Recurrent unavailability of medical supplies at the government health facilities continues to push community members to seek treatment from alternative options such as private clinics, religious clergy, witchdoctors and local herbalists. Community participants expressed dissatisfaction with frequent stock outs of antimalarial drugs, and lack of ANC supplies such as mama kits[55] and placenta pita, which increases the number of home deliveries with the help of TBAs. According to the health workers, facilities fail to secure transport to pick drugs and other medical supplies from the district headquarters. Some health facilities do not handle cases of malnutrition, only identifying and referring them (through observation due to a lack of nutrition assessment tools) to other health facilities that offer the service. In some localities, health workers reported congestion during some seasons, forcing them to make referrals of cases they are able to handle. Community participants and health personnel spoke of limited electricity power supply as a hindrance to managing emergency cases, forcing some of the workers to work under dim light provided by lanterns and patient mobile phones.

Generally, the health personnel staffing was low for almost all communities visited during the study. According to the medical staff, one individual attends to 80-100 clients per day and over 1,700 clients per month. This exposes them to stress and fatigue that translates into poor attitude towards clients. Poor facilitation for medical staff and inadequate health facility infrastructure has contributed to their demotivation hence affecting their availability and quality of service offered to community members.

It is important to note that the existence of social cultural barriers, such as the presence of traditional herbalists within the community limits the use of the existing health services. In all localities visited, participants discussed the existence of traditional herbalists and other healers (such as witchdoctors) who convince them that they can cure particular illnesses. Some participants attested that they have utilised services offered by traditional healers and their children have got better. The use of religious leaders to manage some illnesses through prayer is also increasing. It was discovered during the discussions that over time, community participants have developed negative attitudes against some health providing facilities, forcing them to think of alternative care. Some of the illnesses that community participants believed can be handled by traditional healers include syphilis, pain, hernia, elephantiasis, stiffness of the waist and lower limbs, and abnormal stomach swellings. They also mentioned the use of herbs to control excessive bleeding after a miscarriage.

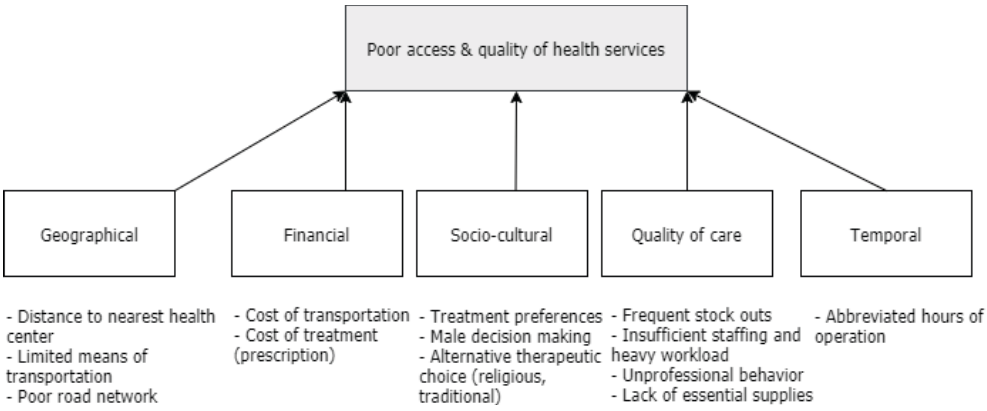


Figure 22: Summary of key barriers to healthcare in Mid-North sub-region

Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between these indicators, meaning that children who last were treated by a VHT or other facility were no more or less likely to be wasted, stunted, or anaemic than those treated in a government facility (Cf: Annex IV).

Immunisation, Deworming, and Vitamin A

Mothers interviewed during the community discussions are accepting of immunisation for their children. According to community participants, immunisation is not only done at the health facilities during pregnancy and after delivery, but also through mass immunisations conducted by the government for all children between one year and 15 years of age. They mentioned that their children are immunised against measles, polio, cough, cervical cancer, and pneumonia. At the time of the qualitative survey, the government had announced that it was preparing for a country-wide measles-rubella immunisation.

The FSNA conducted in 2019 shows that measles vaccination in the sub-region stands at 91.5 per cent.[132] Subsequent analyses taking into account the anthropometric measurements of children revealed a significant association between the indicators; children who received a measles vaccination were significantly less likely to be anaemic.

The same survey shows that deworming in the sub-region stands at 84 per cent (Acholi 93 per cent; Lango 80 per cent) and is not significantly associated with wasting, stunting and anaemia; whereas DPT vaccination stands at 94 per cent and is likewise not statistically associated with undernutrition and anaemia.[35] Further analysis showed Vitamin A supplementation to stand at 89 per cent (Acholi 95 per cent; Lango 87 per cent) [35], again with no statistical association with undernutrition and anaemia.

Antenatal care and Childbirth

During the discussions, community participants demonstrated knowledge of maternal and child health care practices. In order for mothers to have a healthy baby, they must attend ANC at a reputable clinic, feed well, take Iron folate tablets, sleep under an insecticide treated mosquito net and avoid over working during pregnancy. Without following this guidance, participants deemed mothers to be at a higher risk of miscarriage or death, and are unlikely to know the health status of themselves and the child. They could also end up delivering at home as they may be reticent to attend the health centre as they will lack an ANC card.

Participants suggested that a pregnant woman should begin attending ANC at two months of pregnancy and attend at least three times. However it is well known that some mothers do not attend ANC. This failure to attend ANC was attributed to long distances to the nearest reliable health facility, unprofessional behaviour by some health workers, and failure to procure maternity wear which is required at every visit to the government health facility.

Testimonies of the community participants are not significantly different from results of the FSNA conducted in May 2019. According this survey, 96.8 per cent of the pregnant women in the sub-region attended ANC once, with 60.8 per cent attending four or more times.[133] This good attendance rate is attributed to sensitisation and the health benefits that mothers get from attending ANC. According to the health personnel, at the ANC visits mothers are examined and advised on the

132 Weighted prevalence of four districts of Mid-North sub-region; mother recall or card confirmation.

133 Weighted prevalence, four districts of Mid-North sub-region. Uganda Bureau of Statistics (UBOS), Makerere University School of Public Health (MakSPH) and UNICEF (2020). Situation of Food Security and Nutrition Assessment in Northern Uganda 2019. Kampala, Uganda

status of the un-born baby and the mother, they are advised on proper feeding practices and given free medication in case of any looming problems. Additionally, referrals to the general hospital are made early enough to avoid any complications at the time of giving birth. Further analysis of the FSNA data shows that 13.3 per cent of the pregnant women seek ANC advice from Medical Officers yet another 82.9 per cent seek help from qualified nurses and mid-wives.[133] Though it is probable some mothers still seek ANC advice from TBAs, there was no evidence on the same in Otuke and Omoro districts, yet the proportions of those doing so in Pader and Kole were 0.4 per cent and 0.3 per cent respectively.[35]

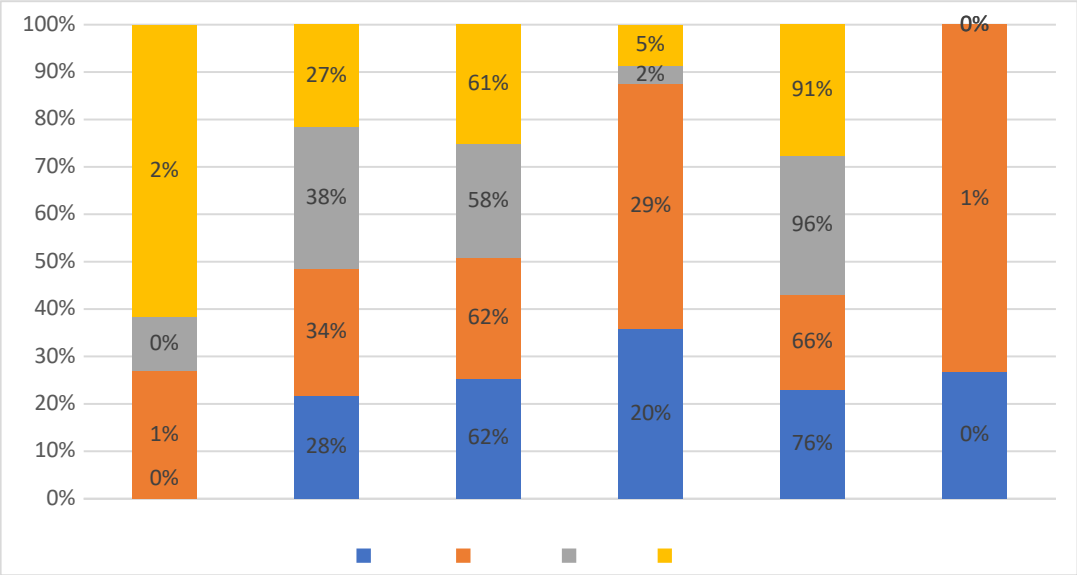


Figure 23: Attendance and provision of ANC in Mid-North sub-region, 2019

According to participants in the visited localities, girls start giving birth at 15 years, though generally the average age at first birth is 18 to 20 years. When a girl gives birth after 18 years of age, they are deemed mature enough by the community to make informed decisions. Mothers should usually go to the health centres when in labour to minimize complications such as bleeding while giving birth or in case they need a caesarean section. However, according to the health workers, some mothers still give birth in non-recognised private clinics, at home and from the homes of TBAs due to access issues at health centres. Although both community participants and health workers agreed that most women in the communities give birth from government health facilities, there was no recent quantitative data to confirm the approximate proportion of deliveries from the health facilities.

From the community discussions, it was clear that some mothers still deliver alone, at home, especially if they are able to cut the umbilical cord by themselves. Others attested to giving birth with the help of experienced TBAs, who they said seldom make mistakes except when a complication arises that cannot be solved with the use of local herbs.

> *Giving birth from home is not good. If a mother is HIV positive, there can be transmission to the child. It is possible for the mother to die when giving birth in case there is over bleeding or failure to push the baby*
>
> **Focus group participant, Apoke village**

Mothers attested to a number of challenges they face when they go to give birth at the health facilities. According to the mothers, government health facilities still lack basic delivery equipment and materials like mama kits. Health workers advise the mothers to come with their own kits, a challenge given their low incomes. Mothers said they then mostly resort to buying a single polythene

bag (delivery plastic bag) and two pairs of gloves, which health workers complain are insufficient. The other challenge mothers face at the health facilities are long waiting times, especially when the number of deliveries overwhelms the available medical workers. This can result in late referrals, risking the unborn baby and sometimes the mother. Due to heavy workloads, medical personnel at the HC IIIs face fatigue, causing them to have a negative attitude towards any new admissions for delivery. Mothers said that after birth, they are advised to procure vaccines for both the baby and themselves, yet these are only available at government facilities. Lower level health facilities visited during the qualitative enquiry did not have well gazetted placenta pits and other medical waste disposal places, which compromises the hygiene at these facilities.

Participants did not mention witnessing many low birth weights in the visited localities, and findings from the 2019 FSNA show 8.1 per cent of the children are born with a weight below 2.5kg[134], with the highest percentage of low birth weight being in Omoro district.[35] From the community perspective, low birth weight is a result of maternal nutritional problems arising out of poor feeding during pregnancy and poorly treated maternal illnesses like “malaria in pregnancy”.

Child illness

During the focus group discussions and key informant interviews, it was described that the most common infections in the sub-region are malaria, convulsions due to the nodding syndrome, coughs, diarrhoea, and skin diseases. Malaria was singled out as the disease that causes anaemia among children and pregnant women and can be fatal if not treated on time.

Malaria and Fever

Focus group participants mentioned malaria (and/or fever) as the most prevalent infection to children under five and pregnant mothers. They revealed that malaria affects them throughout the year but is more prevalent during the months of April to September. Community participants said that children and mothers not sleeping under Insecticide Treated Nets (ITNs) suffer most as they are more exposed to mosquito bites. The last government distribution of nets was in 2016, and so currently, many households do not have mosquito nets. The second risk factor mentioned was the bushes around or near the households that are a breeding ground for mosquitoes.

Participants in some of the visited localities described improper use of nets by some households. They expressed fear that some households end up using the nets for fishing purposes. They also said that some children are put to bed late, and so by the time they are put under nets, mosquitoes have already bitten them.

Health workers in the visited localities confirmed that malaria is more prevalent during the wet seasons and frequent stock outs of antimalarial drugs at the facilities complicates treatment of even non-complicated malaria cases. They expressed willingness to continue sensitising mothers on the use of nets but also expressed fear that most households are not willing to buy nets as they expect the government to provide these free of charge. On a positive note, health workers confirmed that most health facilities are fitted with mosquito nets, especially the maternity and children’s wards.

Findings from the FSNA confirm malaria as the most prevalent infection in the sub-region at a prevalence rate of 30 per cent, which is a significant decrease from the 62 per cent recorded in 2016.[9] There was no evidence of any difference in the malaria prevalence between the Acholi and Lango populations; results for the survey show that in 2019 malaria prevalence in Acholi was 31 per cent whereas it was 30 per cent in Lango. The high malaria prevalence is most likely a result of

134 Weighted prevalence, by card or by recall, four districts of Mid-North sub-region.

the reportedly reduced use of ITNs in the sub-region and delayed treatment leading to outspread infection levels in the same household.

Diarrhoea

From the focus group discussions, diarrhoea was reported as the second most common infection after malaria. According to the participants, sources of the diarrhoea infection include children drinking dirty water, eating leftover food as the parents go to the gardens early in the morning, leaving the young ones with no option for hot or warm food, and not washing hands before eating.

Findings from the 2019 FSNA confirm diarrhoea as the second most reported illness across the sub-region with a prevalence of 2.8 per cent.[133] There is a slightly higher number of children infected with diarrhoea in Lango (3.6 per cent) than in Acholi (2 per cent).[35] Overall, there is marked reduction in the diarrhoea cases from 22 per cent recorded in 2016.[9]

Acute Respiratory Infections (ARIs)

Focus group participants informed that there are few cases of symptoms of ARI in the visited localities. Common ARIs identified included cough, flu, and pneumonia that are most common during the rainy season of April to September.

Results from the 2019 FSNA show symptoms of ARI as the third most prevalent child illness in the sub-region, after diarrhoea. The prevalence in 2019 stood at 2 per cent, a significant decline from the 17.6 per cent (Lango) and 9 per cent (Acholi) recorded in 2016.[9] According to the 2019 survey, symptoms of ARI that include rapid short breathing, chest pain, and cough are equally prevalent in Lango (2 per cent) as in Acholi (2 per cent).

Scabies

During the qualitative inquiry, skin infections were mentioned as the third most prevalent infection after diarrhoea. According to participants, skin infections arise from general poor sanitation and hygiene practices.

Nodding syndrome

The nodding syndrome, that causes children to suffer stunted growth and development (stunting) and characteristic nodding of the head, was reported in Lapul-Ocwida and Aromo localities. According to the community participants and interviewed health personnel, the causes of the syndrome have not been established, despite its existence in the areas for the last 10 years.

During the discussions, most mothers indicated that they take care of their children, except in some circumstances when they leave them under the care of house helps or other relatives (including siblings) when the mothers have gone to work. Most mothers seek treatment mainly from the health facilities where health services are provided free of charge. When private clinics are required, they seek consent from their husband. They also occasionally seek treatment from herbalists and witchdoctors for illnesses that take a while to heal, and for conditions that are not well understood, such as stunting. In a few cases, mothers also seek treatment from churches or mosques, where religious leaders pray for the sick, sometimes smearing their bodies with olive oil.

Birth spacing and family planning

According to the qualitative findings, an average household size ranges from seven to 10 members comprising of about five to eight children. Fathers explained that a small household is easier to look

after and provide basic care services they need as opposed to a large household. Mothers in some visited localities, considered a family size of 10 members to be big, as they take responsibility for providing food for the family and husbands concentrate on expenditures such as school fees and setting up income generating businesses.

> *Mothers give birth to eight children on average because this number of children is considered good and easy to provide for, pay school fees, medical bills and share land amongst them. Children from 10 and above are considered many while children four and below are considered few.*
>
> **Focus group participant, Apoke village**

Community participants explained that ideal birth spacing is about two years. Much as they appreciate all the benefits of proper birth spacing, they expressed inability to, in some cases, space their births well due to various impediments. Mothers testified that birth spacing in the visited localities ranges from 14 to 24 months. Some risks associated with poor birth spacing mentioned during the community discussions included: poor maternal health and malnutrition, inability to pay school fees; insufficient food to feed the whole family and difficulty in behaviour management of children. Participants believed that children from large, poorly spaced families can end up becoming thieves, and alcohol and drug addicts in the community.

> *Children who are badly spaced cannot be healthy, they are ever dirty, and there is no land to apportion them when they grow up.*
>
> **Focus group participant, Apoke village**

Qualitative findings reveal that family planning use and uptake in the visited localities is generally low because of widespread myths about family planning, side effects of contraceptive use, low male partner support and prestige attached to high birth numbers. Low uptake of modern contraceptives results in high numbers of children, but also early marriages. In observance of social norms in the visited localities, when a girl gets pregnant, they drop out of school and leave their parents' home to marry the man responsible for the pregnancy, irrespective of their age. Some young girls and women that were married below the age of 18 years attested that this was done against their will, but no one could accommodate them at home after they got pregnant.

Participants in the visited communities had mixed reactions on family planning use. Whereas some perceived the use of modern contraceptives as positive and affordable, others described the side effects as impediments to their use. In particular, men were not in favour of women using contraceptives, as they perceived that they can cause increased libido, fibroids, weight loss and weight gain, heavy menstruation and complications at birth when the woman stops using the contraception.

Community participants indicated that sensitisation on the use of contraceptives by the health care providers is poor, leading to women using unsuitable contraceptives. Despite the negative perception of modern family planning methods, community members believe in the importance of child spacing. Community participants advocated for scaling up of family planning sensitisation in their communities to improve the quality of life of the women.

> *Family planning is not good because it brings complications and, in most cases, makes women lose weight, but again poor birth spacing is bad because it brings poverty.*
>
> **Focus group participant, Labongo Village**

> *Our men do not want us to use family planning even though we appreciate its usefulness.*
>
> **Focus group participant, Apoke Village**

Community participants also attributed drunkenness, limited knowledge of the menstrual cycle, and concealing information on most likely fertile days as other reasons for poor birth spacing. Women shared that their husbands get drunk and force sexual relations, causing unwanted pregnancies. On the other hand, men explained that their wives do not inform them of the fertile days when they could avoid sex, either due to stigma or lack of knowledge.

> *Men blame women for uncontrolled sex urge. Women complain that when the man fails to have routine sex with her, then he has an extra marital affair with another woman*
>
> **Female focus group participant, Apoke village**

Some women who had many children, as desired by their husbands, acknowledged the burden associated with high birth numbers. They said that they were unable to take good care of themselves and the household because of the sacrifices they have to make for the family. They said that with high birth numbers, the quality of life for household members is poor, and that there are inadequacies in provision of needs. The needs range from feeding, clothing, school fees and land for farming (when they marry) among others. Women also said inability to provide for the large family size results into high crime rates in the community as many children end up dropping out of school and become either thieves or drug/alcohol addicts.

Behaviour	Perceived risk	Community justification
Pregnant women not attending ANC	High	Women said they do not attend ANC because of distance to the health facility, unprofessional behaviour by health workers, and failure to procure maternity wear. However, they narrated the big risks associated with missing ANC which include failure to get help from a government facility at the time of birth, transmitting HIV to the baby in case of a home delivery, poor maternal health which may lead to maternal death, etc.
Women who happen to conceive while still breast feeding	Medium	There is tendency to stop breast feeding once the woman gets pregnant leaving young breast-feeding children at the risk of malnutrition.
Heavy workload among pregnant and lactation women	Medium	There is worry of the poor health for the mother and unborn child. However, women are forced to continue with the workloads due to limited support from the spouses, especially on the domestic chores.
Isolating and throwing away children born with a disability	Low	Any child born with a disability brings a bad omen to the family and should be thrown away immediately after birth.[135]

135 Participants gave an example of a child born with Hydrocephalus malfunction who they said should be thrown into the river for the mother to conceive again.

Giving children herbs as opposed to visiting the health facility	Medium	When the household lacks money for transport to take the sick child to the health facility, they resort to using herbs. When health workers rebuke a mother, who has taken a poorly dressed or dirty child to the facility for treatment, many women tend to shy away from such a facility and resort to using herbs and other traditional treatment.

Table 27: Risky behaviour associated with childbearing, child spacing and child illnesses in Mid-North

B.3 FEEDING AND CARE PRACTICES

Household feeding practices

Study communities in the mid-north sub-region tend to have one to three meals a day during seasons of relative food availability and access, but this pattern reduces to a maximum of two meals a day as food stocks dwindle. Households usually have breakfast after 10:00am, lunch at 1:00pm-3:00pm and dinner after 8:00pm.

Focus group participants reported that lactating women tend to eat more (about five meals per day) than pregnant women (3 meals per day in small portions; others, twice a day in bigger portions) when the food stocks are adequate. This is mainly due to increased body demands and the knowledge that the baby feeds from the mother's breast milk and so she needs to feed well. Participants also reported that lactating women tend to have more meals than pregnant women as pregnant women are more selective of the food they eat and have reduced appetite.

During times of reduced food stocks, non-pregnant women and older girls commonly miss meals in favour of the rest of the family (fathers, children, pregnant and lactating women). The reason attached to prioritizing the men is that they labour to look for the food and so need to be fed at all costs. Another striking reason given for prioritising men is that some men become violent when not served their desired quantity at mealtime. Children and the youth are also given priority because they may end up begging for food or working in other people's homes in exchange for food if it is not given at home. Pregnant and lactating women are prioritised because of the fear that they can easily get weak if they do not eat, causing serious health implications including maternal death.

> *In times of food shortages, women and older girls sometimes go hungry and let the children and men eat. We give men priority when it comes to food because we are scared of some men turning violent if not given food*
>
> **Focus group participant, Apoke Village**

Historically, households used to eat more than three times because food was in plenty and there was good food diversity. The trend, however, drastically changed during the Kony war, which lasted about 20 years. According to the community participants, food diversity and food meal patterns reduced greatly due to the war. Communities that were affected by the Kony war still suffer long-term nutritional effects of the war given that past meal patterns and diversity have not yet been resumed. It was the testimony of the participants that even though many people have been resettled to their homes by the government, the communities are still adapting and suffering impacts of the war. Participants attested that historically only men ate wild meat (wild rabbits, antelopes, squirrels and cats) but today women, children and men eat wild meat as the incomes are too small for households to afford domesticated meat products. However, some women do not eat wild meat due to strong cultural beliefs.

During the meal composition sessions, study communities said that seasonality and lack of knowledge on balancing diets deprived them of having balanced diets irrespective of having a fairly rich variety of food to eat. Results of the meal composition sessions are provided in the table below.

Meal	Simsim Groundnut Sorghum Cattle Zone (Lapul Ocwida Village)	Simsim Groundnut Sorghum Cattle Zone (Labongo Village)	Mid-North Simsim Maize Cassava Zone (Aromo Village)	(Mid-North Simsim Maize Cassava Zone) Apoke Village
Breakfast	Tea or porridge with cassava, sweet potatoes, beans and millet/sorghum bread	Tea or porridge (maize flour) with cassava, pumpkin or sweet potatoes	Greens (marakwang) and millet bread (sorghum and cassava) or posho and tea	Boiled cassava chips and tea or porridge (millet or maize flour)
Lunch	Sorghum bread and sometimes posho; eaten with sweet pea leaves / Boo (pasted/ not pasted), beans, silver fish, marakwang vegetable and pumpkin leaves.	Sorghum bread, posho, cassava and sweet potatoes; eaten with beans, sweet peas (boo), okra (otigo), marakwang, pigeon peas (lapena), Lentils (choroko), dodo, cabbage	Posho, sweet potatoes, sorghum bread or plain cassava; eaten with silver fish, beans, marakwang vegetable, okra	Boiled cassava, sorghum bread, millet bread and chokuru (looks like sweet potatoes) and sometimes rice; eaten with sweet peas (Ngo), sweet pea leaves (Boo), Marakwang vegetable (pasted with ground nuts and simsim), marakwang plain sauce (Tohe) and layu vegetable
Dinner	Cassava, posho, sweet potatoes and pumpkin; eaten with Okra, pigeon pea (lapena), Cucumber (Obokogwe), Kenu and lamunya	Sorghum bread, posho, cassava and sweet potatoes; eaten with beans, sweet peas (boo), Okra (Otigo), Marakwang, Pigeon peas (lapena), Lentils (choroko), dodo, cabbage	Posho, sweet potatoes, sorghum bread or plain cassava; eaten with silver fish, beans and sweet pea, marakwang vegetable and okra	Usual composition same as for lunch

Table 28: Results of a participatory exercise on meal composition in Mid-North

Breastfeeding practices

Mothers in Mid-North sub-region said they start breastfeeding their new-born babies within 30 minutes to one hour after birth. They also indicated that they usually feel dirty following the birth, so they bathe before initiating breastfeeding. Further discussions highlighted that there are mothers in the community however, who believe that colostrum is not good for their babies, so they discard it before initiating the first feeding. When they are not breastfeeding, mothers said they give the babies water mixed with sugar. Others claimed that they are unable to breastfeed early enough, as they feel there is no breastmilk, so they resort to giving their babies water for the first two to three days.

> *Babies are fed on sugar and water in the first 3-4 days when the first milk is being expressed out.*
>
> **Focus group participant, Apoke Village**

VHTs explained that the practice of early pre-lacteal feeding (giving water and sugar) to babies is high, but has recently reduced due to continued sensitisation. They sensitise mothers on the health benefits of breastfeeding the baby early, not giving any water to the baby for the first six months and to ensure every mother is clean when she goes to give birth. Community participants confirmed that mothers are adopting these behaviours.

During the community discussions, mothers explained that they breastfeed babies on demand when they cry, but this reduces as they start engaging more in the household chores and farm work. When mothers start going to the gardens, babies are sometimes left at home and cannot be breastfed as and when they require. According to the mothers, babies are breastfed both during day and night as long as the mother is available. They described that babies below six months are breastfed more than seven times during the day and about four times during the night while children above six months are breastfed less because they eat solid food and have animal milks. Mothers living with HIV exclusively breastfeed their children only up to six months as per Ministry of Health (MoH) guidelines. Sero negative children can then continue breastfeeding up to one year while sero positive children continue to breastfeed up to two years.

> *We breastfeed even when the mother is ill (when the condition is not very bad) but in case of HIV/AIDS, mothers are advised to only breastfeed up to 6 months.*
>
> **Focus group participant, Aromo village**

Although mothers described breastfeeding exclusively up to six months, some fail to do so for various reasons. Mothers informed that they breastfeed as long as they have sufficient breastmilk, but introduce their babies to tea and porridge as soon as they perceive breastmilk is no longer enough to satisfy the baby. Irrespective of the age at which the baby is introduced to complementary feeding - mothers explained that complementary foods include soft foods like cow's milk, porridge (maize flour, millet or soya) and eggs - and fed three to four times a day. Children over one year share family meals with the entire household and only eat at the time when the other household members are eating, except those still breastfeeding and those whose mothers prepare for them porridge in the morning.

> *When a breast-feeding mother does not have enough breast milk, they start giving tea to the baby at the age of two weeks or one month*
>
> **Focus group participant, Aromo Village**

During further discussions, some mothers admitted they stop breastfeeding as soon as they realise they have another pregnancy, irrespective of the age at which the baby is. There is a perception among mothers that the temperature of holding a breastfeeding baby can lead to the death of the foetus in the womb. Others believe that when a mother gets pregnant, the breastmilk they produce is no longer good enough for the baby as it lacks essential nutrients. They informed that should the mother continue breastfeeding, then there is a likelihood that she will deny both the breastfeeding child and also the growing foetus of nutrients.

> *Once a mother gets pregnant, she is supposed to stop breastfeeding because the breast milk can make the young child unhealthy. The unborn child will not get enough nutrients required for development.*
>
> **Focus group participant, Apoke Village**

Mothers from the visited localities held the view that the proper age to stop breastfeeding is two years, and children between six months and two years are supposed to be fed on soft foods like cow's milk, porridge and eggs, though harder foods can also be given when the child develops teeth. They strongly believed that during the breastfeeding period, a mother is obliged to give the child breastmilk or other milk whenever they (children) demand because it is the child's right.

Findings of the 2019 FSNA confirm some of the testimonies of the mothers who participated in the qualitative enquiry. According to this survey, only 50.6 per cent of the mothers initiate breastfeeding of their babies in the first hour after birth, and only 68 per cent are able to exclusively breastfeed their babies for six months.[133] The worst performing district is Omoro district where only 46% of the mothers initiate breastfeeding in the first one hour and 58 per cent are able to exclusively breastfeed up to six months. [35]

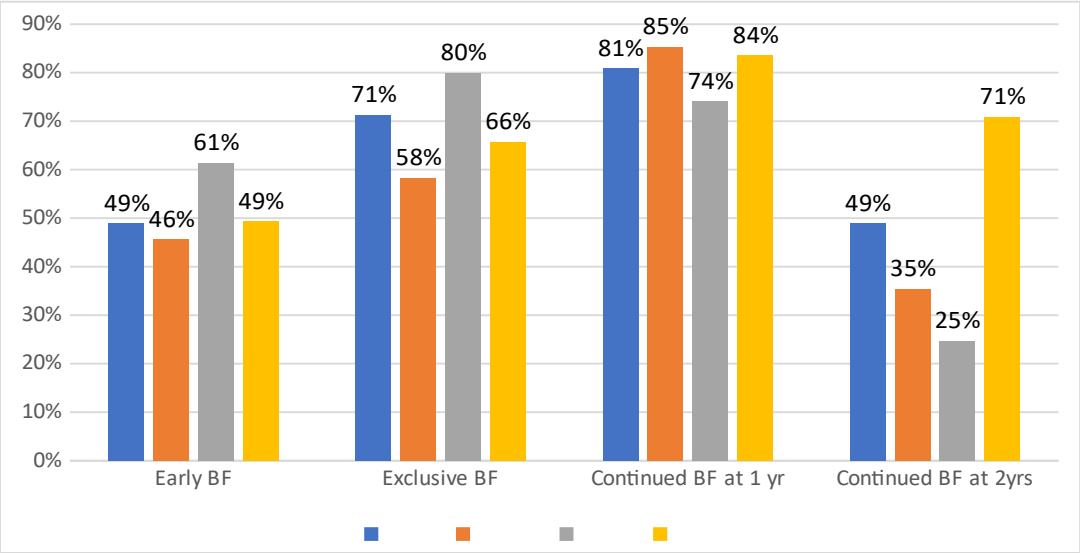


Figure 24: Breastfeeding practices in Mid-North sub-region, Sept 2019

Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between these indicators, meaning that children who were reportedly put to the breast within one hour of birth were no more or less likely to be wasted, stunted, or anaemic (Cf: Annex IV).

YOUNG CHILD AND MATERNAL CARE PRACTICES

Focus group participants referred to the community sensitisation carried out by VHTs, NGOs and at the health facilities when they go for antenatal care visits. They mentioned good practices, including regularly bathing the child, breastfeeding the child on demand, giving the child food after six months, taking the child to hospital when sick, carrying the child on the back if there is no one to help and putting the child in clean bedding. Other practices mentioned were ensuring that the child sleeps under ITN, closed shoes and heavy clothes during cold periods, stopping the child from playing in rain, removing faeces of the child from the compound, not allowing a child to play with sharp devices, and ensuring that the child is fully immunised.

During the community discussions, mothers described their struggle to balance childcare and the demands of household chores and farm work. In one of the visited localities, mothers pointed out that children below six months are taken to the garden and remain under the care of their elder siblings while in other localities they mentioned that children are left at home when as young as four months. Mothers expressed dissatisfaction with the limited support given by men during childbirth.

One mother in Apoke village tearfully said: “Some fathers who drink leave home very early in the morning and come back home late in the night. It is impossible for such fathers to take care of their children.”

The workload that women endure affects timely food preparation for the children. Considering that women have to look for food and firewood, fetch water, bathe the children, wash their clothes, take sick children for treatment and many other duties, the little support provided by men adversely affects proper care for the children. In some communities, women said they are only supported by grandparents, paid caregivers (if they can afford to pay) and young children usually below seven years who have not yet started schooling. Female participants said they are burdened with the caring of their children to the extent that some of them end up getting sick and malnourished. It was revealed that heavy women workload has forced some women to separate from their husbands and go back to their parents’ homes. In this case, the children are left with the father who barely has good care knowledge, predisposing the young children to suffering and poor upbringing.

Findings from the 2019 FSNA show a worrying number of children that are left under the care of young siblings and with inadequate supervision, with the largest proportion of these being in Omoro district.

	Left alone	Left with another child	Left with inadequate supervision
Pader	13%	20%	23%
Omoro	45%	55%	62%
Otuke	33%	43%	47%
Kole	35%	39%	53%

Table 29: Inadequate care practices for more than one hour, at least once in seven days, 2019 FSNA[35]

According to the community participants, foods supposed to be given to children six months and above include breastmilk, cow milk, porridge, soupy foods like mushrooms, okra, sweet pea leaves and their seeds (Boo), cabbage, pigeon peas (Lapena), green vegetables (marakwang), other green vegetables, beans, egg plants, meat, silver fish, eggs and fruits like mangoes, pineapples, and oranges. It was revealed by participants that poverty and low socio-economic status limit parents from accessing food for the children. Seasonality was described as influential in the feeding practices for children. The months of February, March, April, June and July are usually very difficult months in terms of food availability and access, resulting in inadequate feeding during those months.

Findings from the 2019 FSNA depict a scenario that is similar or even worse than that arising out of the testimonies of the community participants. According to this survey, only 22 per cent of the children six to 23 months feed a minimum number of times a day[61] after being introduced to complementary feeding. The diversity of foods to which these children are fed is appalling as only 10 per cent of them are able to meet a minimum daily dietary diversity;[62] the worst cases being Otuke and Omoro districts where the proportions are 4 per cent and 5 per cent respectively.[35]

	Timely complementary feeding	Minimum meal frequency	Minimum dietary diversity	Minimum acceptable diet
Pader	75%	25%	11%	3%
Omoro	66%	22%	5%	2%
Otuke	48%	20%	4%	3%
Kole	80%	21%	21%	6%

Table 30: IYCF practices in Mid-North Sub-Region, 2019 FSNA[43]

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between these indicators, in that minimum dietary diversity was significantly associated with wasting and anaemia (Cf. Annex IV).

Table 31 summarises risk associated with certain breastfeeding and child care practices, per qualitative inquiry.

Behaviour	Perceived risk	Community justification
Mothers who are not adequately feeding yet breast feed children	Medium	Most mothers try to feed in large quantities when breastfeeding, without regard to quality. Communities recognise the health problems those who do not feed well will face, including producing less quantities of breastmilk and developing anaemia.
Pre-lacteal feeding	High	Pre-lacteal feeds given to new-born babies predispose them to infection, dehydration and malnutrition because of missing out colostrum.
Delayed breast feeding and introduction of unsafe pre-lacteal feeds	High	Children miss out on good first milk and end up lacking immunity.
Breastfeeding when pregnant	High	Once a mother gets pregnant, she should stop breastfeeding because once a pregnant mother breastfeeds a child, the child breastfed can become malnourished, the child breastfeeding may not get attention needed from the mother and the milk will not be good. The unborn child will not get all the nutrients required for development and the child breastfeeding will not be healthy.
Giving water, tea, family food, to a child below 6 months of age	Low	When the breastmilk is not enough, the child should be given other foods like cow milk, porridge, and Irish potatoes. Otherwise they will suffer from malnutrition
Leaving babies with older siblings and grand parents	Medium	Siblings can take good care of their younger brothers and sisters, especially when the mothers have not gone very far. Grandparents have enough experience in looking after young children, so they only need to be provided with food

Table 31: Risky behaviour associated with breastfeeding and child care practices

C.3 FOOD SECURITY AND LIVELIHOODS

According to the qualitative findings, farming is the main source of food and income for most households in the sub-region. Households mainly practice subsistence farming, with commercial farming being done on a small scale by some average income households. Much as communities practice both crop farming and livestock rearing, they tend to concentrate more on crop farming. Households vulnerable to food insecurity are those headed by orphans and the elderly, and households without women.

Income generating activities

According to the community participants, farming is the main source of income. Whereas most households said they derive income from crop sales, others mentioned sale of livestock and livestock products as their main source of income. Crops grown for sale include cassava, maize,

simsim, beans, groundnuts, soya and sorghum; and livestock kept include cattle, goats and sheep. An increasing number of households said they are adopting poultry as a source of income much as in the past it was only for home consumption of eggs and meat. Other sources of income during the dry season that participants mentioned are charcoal burning, retail shops, petty trade, casual labour, produce business, alcohol brewing and brick laying.

According to the 2019 FSNA, sale of own crop produce is the main source of income from which about 38 per cent of the households derive their main income.[136] This is followed by wage labour (both agricultural and non-agricultural) which is the main source to 31 per cent of the households, while trade is the main source of income for 15 per cent of the households. According to the same findings, few households (2 per cent) embrace sale of own livestock and livestock products as the main source of income.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed significant associations between these indicators. Children whose household's main source of income was sale of firewood/charcoal were more likely to be stunted, compared to households who survived on own agricultural production. Children whose households depended on waged labour were significantly less likely to be anaemic; those in households who depended on income from livestock sale were potentially less likely to be anaemic (p-val <0.1) (Cf. Annex IV).

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Climate												
Dry season	+++	+++	++			++	++				+++	+++
Rainy season			+	+++	+++		+	+++	+++	+		
Economic activities												
Principal agricultural season	+	+	++	+++	+++	+++	++	+++	+++	+++	++	++
Demand for (local) agricultural work	+	+	++	+++	+++	+++	++	+++	+++	+++	++	++
Migration	++	++	++			++	++				++	++
Heavy workload of men	+	+	++	+++	+++	++	++	+++	+++	++	+	+
Heavy workload of women	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Food Security												
Price of food	+++	+++	+++	+++	+++	+	+	+++	++	+	++	+++
Availability of food	+	+	+	+	+	++	+++	+++	+	+	++	+++
Availability of financial resources	+	+	++	++	++	++	+++	++	++	+++	+	+
Hunger Gap	++	+++	+++	+++	++	++	+	+	++	+	+	+
Malnutrition	++	++	++	++	+	+	+	++	++	+	+	+

Table 32: Seasonality of IGAs and food security in Mid-North sub-region

136 Secondary analyses, 2019 FSNA.

Crop farming

Crop farming is the main source of food and income for most households in the sub-region. According to community participants, households grow a variety of crops that include cassava, maize, sweet potatoes, simsim, sorghum and millet. Others are vegetables, sweet pea, amaranthus (dodo), pumpkin, beans, pigeon peas (lapena), and groundnuts.

According to the 2019 FSNA, the main crop grown in the sub-region is cassava, followed by beans and then maize.[133]

	Pader	Omoro	Otuke	Kole	Mid-north
Maize	57%	39%	10%	59%	41%
Beans	28%	60%	33%	65%	46%
Cassava	30%	49%	41%	77%	49%
Sorghum	66%	14%	17%	4%	25%
Simsim	27%	19%	24%	28%	24%
Potatoes	10%	12%	15%	45%	21%

Table 33: Main crops grown in Mid-North sub-region

According to focus group participants, historically farming was easy because of adequate and cheap farmland, fertile soils with high productivity, limited crop and animal diseases, low population in the area, and free land offers for agricultural use. However, the increased population pressure, poor agronomical practices, land fragmentation, reduced soil fertility, increased incidence of pests and diseases, long dry spells, and high input prices have all combined to reduce agricultural production in the sub-region. Additionally, participants described flooding and water logging, high transport costs for agricultural inputs, high costs of pesticides, lack of knowledge on the right pesticides and fertilisers to use, reduced farm labour due to sickness and migrations, poor post-harvest handling, and overuse of rudimentary tools as the other constraints to crop production in the sub-region. Community participants said food crops are destroyed by rodents, termites, rot and aflatoxins and they make losses in the long run.

> *If we knew the right drugs to spray the crops our crop yield would be much better. We hope government or an NGO brings us good quality seeds because they are expensive. One kg of hybrid maize seeds costs approximately 12,000.*
>
> **Focus group participant, Labongo village**

According to the 2019 FSNA, the main constraint to agricultural production is drought conditions as reported by 77 per cent of the households, followed by inadequate farm inputs reported by 5 per cent of the households.[133] Both constraints have a statistical association with anaemia. Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association between anaemia and inadequate inputs and drought/rainfall.

Food production for some households in the sub-region has reduced significantly, yet the little harvest is shared between consumption and sale. Community participants indicated that food production was higher 10 to 15 years ago than it is today, and food could be stored throughout the year. They also informed that children used to eat more frequently, especially fruits and vegetables, than they do today.

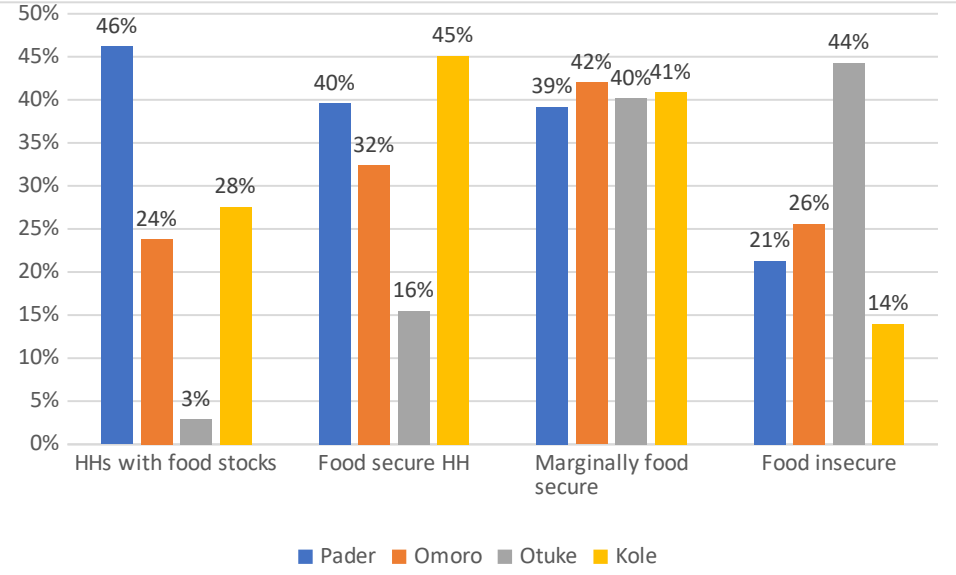


Figure 25: Food security status in Mid-North sub-region, 2019 FSNA

Information gathered during the qualitative discussions is confirmed by results of the FSNA conducted in May 2019. According to findings of this survey, 25 per cent of the households had food stocks that could last about a month, yet the next harvest was expected in late July[136].

The worst hit district was Otuke district where only 3 per cent of the households had food stocks in May 2019.[136] From the community discussions, participants verified that the soils in the district have become too infertile to support crop agriculture. They informed that originally, they were cattle keepers but only diversified to crop production after losing their cattle to theft and disease.

Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant relationship between availability of food stocks in the home and anaemia (Cf: Annex IV).

Results of the quantitative survey also show that only 33 per cent of the households were food secure in May 2019, with the worst hit district being Otuke, where only 15.5 per cent of the households were food insecure.[35] By that time, 20 per cent of the households in Otuke district survived on food obtained through gifts and aid, whereas another 28 per cent survived on limited market purchases.[136]

Livestock keeping

The few households that keep livestock in the sub-region are involved in rearing cattle, goats and sheep for commercial purposes and poultry mainly for domestic consumption. Even though the stock has dwindled over time, households in Otuke district tend to have more livestock than those in other visited localities. However, households in Pader district tend to have more diversified livestock than those in other visited localities.

The information generated from the focus group discussions and observations is confirmed by the quantitative survey results as shown in the graph below.

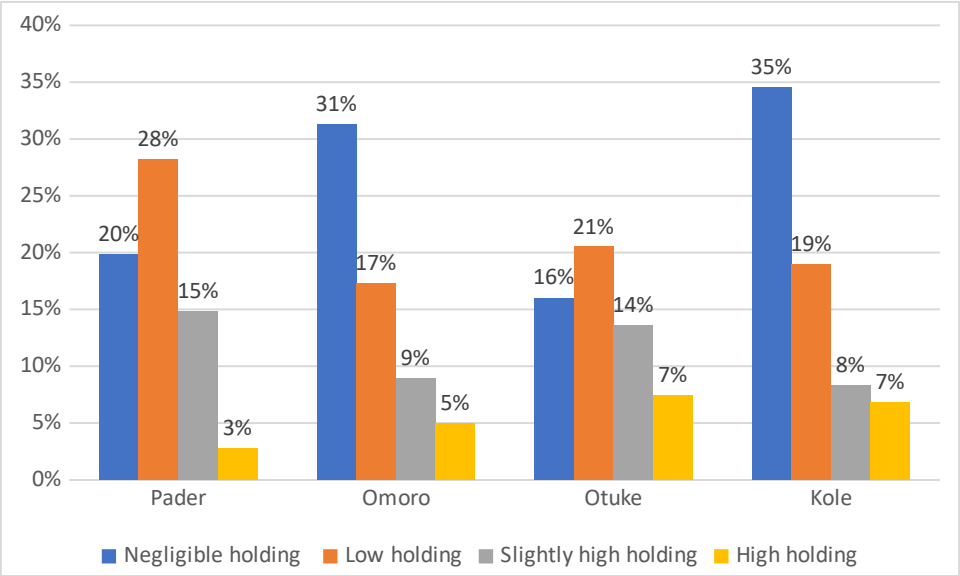


Figure 26: Livestock ownership in Mid-North sub-region, 2019 FSNA[35]

Although livestock ownership did not have a statistical association with undernutrition and anaemia, embracing livestock production as the main source of income was statistically associated with anaemia. This implies that households keeping livestock are less likely to have anaemic children if they improve consumption of livestock products and are able to sell livestock and livestock products to generate more income to access food from the markets and good health care.

According to community participants, challenges affecting livestock rearing in the community include:

Inadequacy in water and pasture during the dry season; limited grazing land so cattle end up in other people's crop gardens leading to monetary fines; livestock vectors and diseases; livestock theft; poor quality breeds of livestock kept; limited labour that can work as herdsmen; high costs of accessing veterinary services; and low prices of livestock when taken for sale in nearby markets.

Migration

High peaks of migration in the sub-region occurred during the northern Uganda Kony war, with the Acholi sub-region being more affected than the Lango area. Most people who were affected by the Kony war migrated to other areas within Uganda, while a few community members who could afford to do so migrated to foreign countries. Migrants generally moved from Gulu, Pader, Kitgum, and Nwoya to Masindi, Kampala, Jinja, Hoima, and Nakasongola districts. Those who could not afford to migrate on their own ended up in Internally Displaced Peoples (IDPs) camps where they obtained emergency support. Migrations resulting from the war displacements commonly cause land conflicts due to death of witnesses who knew the land boundaries. As a result, many land squatters have ended up claiming land that did not originally belong to them, resulting in conflict.

According to community participants, migrations now occur less frequently than 15 years ago, when the war was ongoing. Currently, migration occurs during hunger periods in the dry season, when no agricultural work is conducted. Productive men migrate the most in the communities for a period of three months to a year, with some not returning. Reasons for migration include searching for employment to support families, taking over widows in other communities, family disputes, and rejection of heavy agricultural work.

It was reported during the community meetings that when migrants fail to earn enough, they are at risk of alcoholism and do not return home. They use the little money they have to feed themselves while the women sustain the family left behind.

> *When men go to look for jobs, they leave the women back home with children. Sometimes they do not send money and the women struggle with provision of food and other needs to the children. Men who fail to get money to send home are the ones who end up taking a lot of alcohol and getting married to other women where they migrated to*
>
> **Focus group participant, Aromo Village**

Market access and other household expenditure

Poor roads that become impassable during the rainy season, distance and high transport fares to markets affect access.

Community participants described using money from various income sources to buy livestock, pay medical bills, pay dowry for their children, cater for school expenses, rent land, procure casual labour, buy alcohol, and buy clothes and food. Others indicated they save some money to set up small businesses and offer condolences to families that have lost their dear ones.

Qualitative findings revealed that some community members (commonly men) tend to spend money obtained from the sale food crops and animals on wasteful expenditures like alcoholism and tobacco smoking.

> *Alcoholism is a very big problem in the community. Most men like to spend all the money got from the sale of crops in the bars.*
>
> **Focus group participant, Lapul Ocwida Village**

Findings from the quantitative survey reveal that over 30% of the households are using income on consumption of alcohol and tobacco products, an expenditure that does not benefit the nutrition status of children.[136] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant relationship between this type of expenditure and anaemia, in that children whose head of household made those purchases were more likely to be anaemic.

Coping mechanisms

Community participants revealed a number of coping strategies they have adopted to counter low food availability and access, and income source shocks. Some of those they mentioned were borrowing food from the neighbourhood, doing barter trade for some food items, buying livestock during harvesting season and selling during dry season to buy food, while other people sell off their valuable household assets.

Findings from the 2019 FSNA show an increasing number of households having vegetable kitchen gardens. According to findings of the survey, the highest number of households with kitchen gardens was found in Pader (72 per cent), followed by Omoro district (65 per cent) and then Kole (58per cent), while the least number was found in Otuke district (30 per cent).

D.3 WATER, SANITATION AND HYGIENE

Water Availability and Access

Functionality of water sources in the selected districts of Kole, Otuke, Pader and Omoro is estimated at 70 per cent as at June 2019 and safe water coverage in the selected districts was estimated to be over 70 per cent.[64]

During the focus group discussions, boreholes were mentioned as the major water source for the communities with the exception of Apoke village that did not have a functional borehole. Other water sources included wells, springs and swamps. The water is used for cooking, bathing, drinking, washing and livestock. During the discussions, community participants were unable to demonstrate knowledge of the difference between protected and non-protected water points, although boreholes were described as the safest source of water. Weather variations throughout the year affect the accessibility of water within the communities. During the dry period between December and March, participants told of streams and wells drying up and insufficient water, while during the rainy seasons, frogs contaminate the spring and well water. Although water sources were available in every community, focus group discussants expressed the need for more water sources and recommended drilling more boreholes and wells as well as converting wells to protected springs.

While water sources seemed available in most of the localities, participants cited long distances to the nearest safe water point as one of the factors affecting access.

> *Water is extremely far 2km away; we go miles to access a borehole. In most households, the women are responsible for fetching water, men seldom fetch. It takes 60-90 minutes to reach the water point and 60 minutes to wait in the queue (December to March)*
>
> **Focus group participant, Labongo village**

While some participants indicated it takes them about one hour to reach the nearest water source, others said the average time, including waiting time at the source, is close to two and a half hours. Participants in all visited communities acknowledged that there has been an improvement, as historically they would spend four hours on a single water trip. However, vulnerable groups such as the elderly and blind find it hard to fetch water. According to the participants, long waiting times are caused by long queues at the boreholes, wells and springs, resulting in the community members fetching less water. They said, on average, each person uses about 10 litres per day. Besides specific containers put aside for the collection of drinking water for animals, visited communities use jerry-cans, pots, buckets, saucepans and calabashes as the key containers for collecting and storing water, for both drinking and other domestic use.

From observation and community discussions, it was evident that households do not treat water before drinking or using it for cooking. However, community members acknowledged the importance of water treatment. Some community members said they drink water from the water source using a cup or small jerry-can, and this practice was found more common among the cattle keepers. While some participants said it was risky to drink water from the water source such as the stream, others believed it was okay to drink rainwater and water from boreholes without any further treatment. In one of the localities, participants said rainwater can cause stomach-ache and cough and tastes bad, so it should be treated before drinking. Some community members acknowledged leaving containers with drinking water open, whereas others warned of the risks of water contamination.

Community members expressed willingness to change and indeed requested that sensitisation meetings on water treatment be organised. They expressed concerns about children developing stomach pain when they take water from the wells, indicating that such water could need treatment.

In one of the visited localities, participants explained that a water committee comprising nine members including the Local Council 1 vice chairperson, secretary and treasurer is formed for every village. The committee is responsible for the management of boreholes and other protected water sources. Households pay a fixed amount of money every month and the pooled funds are used to pay the person who takes charge of security of the water source and does repairs in case of any breakdown.

Findings from the qualitative survey of community participants are confirmed by findings of the quantitative FSNA conducted in May 2019. According to this survey, boreholes are the main source of water in the sub-region with about 70 per cent of the households using boreholes as their first choice source of water for domestic use.[136] From the same findings, it is revealed that 3.8 per cent of the households access water from unimproved sources,[133] with the most affected district being Pader, with a percentage of 5.7 per cent.[35] Additionally, only 7.4 per cent of the households treat water for drinking, irrespective of the source of water.[133] Further analysis of the data, putting into consideration other anthropometric measurements, showed that source of water has no statistical association with undernutrition and anaemia, however, water treatment is significantly associated with wasting.

According to the 2019 FSNA, 75.3 per cent of the households require less than 30 minutes to collect water from the nearest water source. However, only 57 per cent of the households are able to use 20 litres of water per person per day.[133] Even though the waiting time is not high, households still collect insufficient quantities of water a day, which can be attributed to workload of the women who are mainly charged with the duty of collecting water. From further analysis, use of inadequate quantity of water per person per day was not significantly associated with undernutrition outcomes, meaning a child was not more or less likely to be wasted, stunted, or anaemic based on quantity of water his household reported per member.

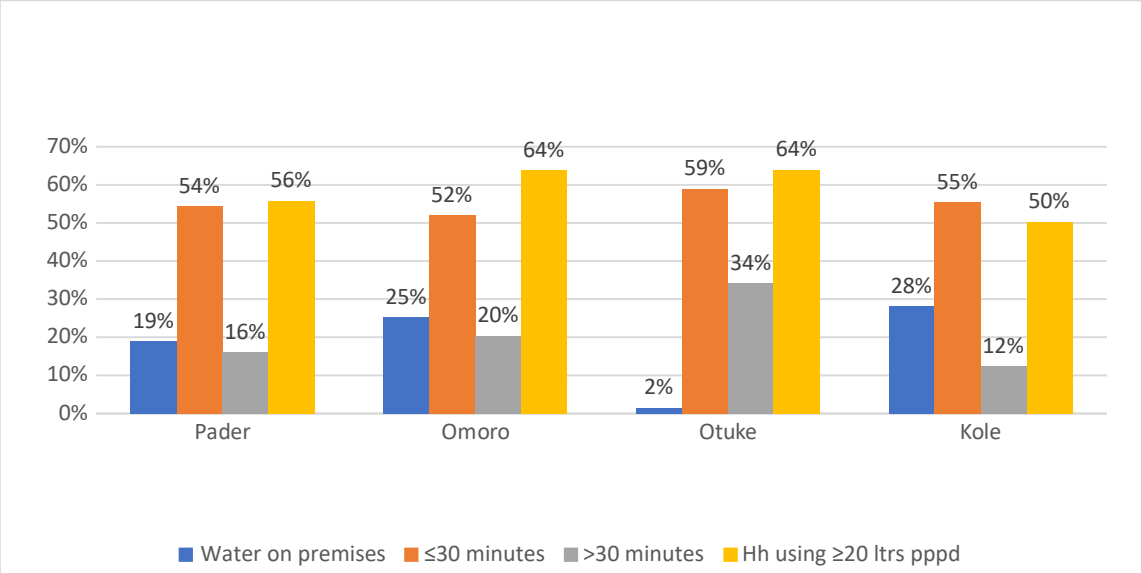


Figure 27: Time taken to obtain water & per capita use in Mid-North sub-region, Sept 2019

Table 34 summarises risks associated with, and courage to change, certain water access and use behaviours.

Behaviour	Perceived risk	Community justification
Drinking water from the streams, river	Medium	The community said they sometimes drink it, however, it is more common among the pastoralists. This exposes them to risk of contracting diarrhoea and typhoid because the water is not usually safe for drinking.
Water from unprotected sources makes children sick	High	Some households use water from unimproved sources. This water is neither boiled nor treated, which exposes children to diseases such as diarrhoea and stomach-ache.
Drinking rain water	Medium	It is not risky to drink rainwater, even without boiling it because it is safe from the sky.
Behaviour	Courage to change	Community justification
Water treatment	Difficult	No treatment options for the community members who would like to treat their water. Others try to minimise firewood use so they ignore the process of boiling water. Some community members prefer the taste of the water without treatment.

Table 34: Risky behaviours associated with, and courage to change, water access and use in Mid-North sub-region

Sanitation and Hygiene

The local leadership in the sub-region has played an important role of putting in place by-laws that have ensured that most households have latrines. From observations conducted during the qualitative inquiry, most of the households were seen to have pit latrines. Community participants attributed the improved latrine coverage and use to the by-laws enacted by the local government leadership. However, it was found during the community meetings that some community members do not have toilets and use hills and bushes for defecation. Reasons given by community members for not having toilets included bad soil texture and females heading households and being unable to dig pit latrines.

Findings of the 2019 FSNA confirm observations made during the qualitative enquiry. According to these findings, 99 per cent of the households are able to access a toilet facility but with about 11 per cent using open pits.[136] For those using open pits, Omoro district has the highest proportion totalling 28.4 per cent.[35] Subsequent analyses taking into account anthropometric measurements of children in the household revealed a significant association with access to a toilet and anaemia; children who lived in households with access to a toilet were significantly less likely to be anaemic.

From the qualitative inquiry, each community had their own hygiene practices dependent on the different circumstances such as household incomes, water availability and the existence of certain risky behaviours. In some localities, participants stated that they are not accustomed to often washing their hands as there is not enough water in the community and they do not often buy soap because it is expensive. On the contrary, in one of the visited localities participants said they wash their hands often and use soap for most of the time, especially after visiting the toilet and when they come back from the from the market. The critical handwashing times all participants mentioned are washing hands after going to the toilet, before cooking, and before eating. Generally, community participants seemed more sensitive to washing their hands when handling food.

> *Eating without washing hands feels as if you have gotten a disease already; and cooking without washing hands should not happen because it can cause diseases.*
>
> **Focus group participant, Aromo village**

According to the FSNA, about 84 per cent of interviewed community members reported washing their h

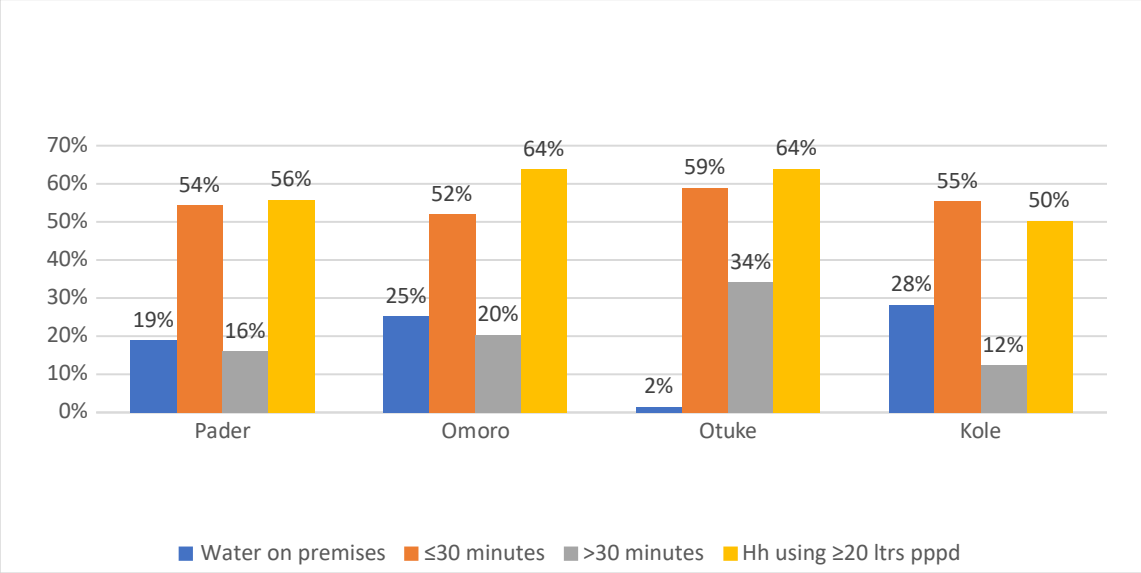


Figure 28: Handwashing practices in Mid-North sub-region[35]

According to community participants, bathing is mostly done after garden work and in the evening. Only a handful of participants bathe in the morning and are able to bathe twice a day. Mothers informed that they try as much as they can to bathe their babies when they get dirty. Participants acknowledged that not bathing could lead to skin rashes, cause scabies, candida, and bad body odour. With regard to brushing teeth, community members said that not brushing the teeth could lead to teeth decay, and bad odour of the mouth. Community participants are often unable to afford to buy toothbrushes, and therefore use sticks to brush their teeth.

> *There are many people both adults and children, with scabies because people do not like to bathe in this community. A woman can take a week without bathing while a man can take a full month without bathing. Lice too exist in this community and children are not often bathed in this community.*
>
> **Focus group participant, Lapul-Ocwida village**

Community members do not sleep with animals in the same houses. Chicken sleep up the trees and cattle away from the compounds. However, goats sleep on the verandas of the houses. With the presence of goats and chicken around the homestead, their faecal matter sometimes litters the compound as well. There were no rubbish pits within some communities and no hand washing facilities reported or observed within the compounds.

Community members were aware that letting flies sit on food can cause diseases. The majority of community participants believed that it was a good practice to clean one's compound, as it helps prevent diseases such as diarrhoea, control flies around the household, reduce mosquito breeding grounds and prevent snakebites within the community.

Table 35 summarises risks associated with, and courage to change, certain sanitation and hygiene practices.

Behaviour	Perceived risk/difficulty	Community Justification
Defecating around the house	High	According to community participants, flies will pick faecal matter and then move to uncovered food and utensils. This can cause household members to ingest faecal matter causing stomach infections and diarrhoea
Not washing hands after defecation	High	Adults and young children end up eating with dirty hands and may take in germs that cause infections like diarrhoea
Behaviour	Courage to change	Community justification
Irregular hand washing	Difficult	Community participants said they do not wash their hands often because of the limited water within the household. In addition, they stated not being used to washing hands most of the time; soap is also expensive for most households.
Irregular bathing	Difficult	Bathing is generally a problem in some communities. There are many people both adults and children with scabies in one of the visited localities because people do not like to bathe. Other communities express the limited water availability in households as a reason for infrequent bathing.
Washing clothes	Difficult	During the focus group discussions, women said that due to the distance to the water streams and rivers, it is hard to keep the children clean all the time including washing their clothes.
Cleaning toilets	Medium	Most of the latrines have muddy floors, which are hard to clean but community members smear ash in case of faecal matter and urine. Communities recognise that this exposes faecal matter to flies that can easily carry germs from there to food and utensils in the house.

Table 35: Risky behaviour and courage to change associated with sanitation and hygiene practices

E.3 GENDER

Marriage and Decision-making

According to community participants, girls in the sub-region usually marry after they are 18 years old, and boys after the age of 20. There is concern that underage marriages cause a burden to parents and society, and mature couples are able to make proper decisions that enable the marriage to continue irrespective of any challenges they could be facing.

At 18 years of age, the girl's body is ready for marriage and when approached by a man she will make the right decision to either get married or not. When a girl gets married at the right time, she fears to come back home and will stay in the marriage.

Focus group participants, Aromo village

During the community discussions, there were reports of some girls marrying at the age of 15 years and boys marrying before they are 20. Community participants mentioned the factors driving early marriage in girls as the desire for money to buy personal needs (such as sanitary towels/ pads, nice clothes and food), aspiration for dowry, low social economic status of the household, forced marriages due to family disagreements and violence, and peer pressure as the leading

causes of underage marriages among girls in the sub-region. On the other hand, boys go into early marriage after dropping out of school due to lack of school fees. Additionally, drug and alcohol abuse challenges, peer pressure and urge for personal income generation are the other factors causing early marriage among boys.

Most newly married young couples live in the same homestead with their parents for support, while a few young couples become independent. Qualitative findings reveal that sometimes due to the heavy burden of mother-baby care on the young couple, parents of girls who conceive before marriage tend to shift the burden to the parents of the boy. The parents of the boy in most cases are not only fined (monetarily or by livestock) when their son impregnates a girl, but are also conditioned to complete the bride price soon after the girl has safely given birth.

Irrespective of the challenges faced in the families regarding early marriage, participants said they try to take care of their children so that they do not fall into early marriages. Elders often counsel the youth during and after school (when they get married). Participants explained that only few girls resume school after giving birth to one or two children in their marriage. Parents reiterated their commitment to keep young girls in school rather than give them away in marriage.

> *We would rather go in for some petty job to provide food for our girls instead of sending them off to early marriage.*
>
> **Focus group participant, Labongo Village**

Participants indicated that some decisions are made jointly by both wife and husband, and some are made singly. Joint decisions are made on some financial expenditures or incomes to be earned and how to bring up children. On further discussion, participants said men quite often singly make decisions on when and where to take children for school, paying school fees, seeking medical treatment (especially if it requires payment), buying and selling assets (like land, animals or any other family belonging), family planning method to use, number of children to have and balancing diet (commonly buying meat). In case of men's physical absence, the women consult on phone or with in-laws.

On the other hand, participants reported that women make independent decisions on what to cook at home daily, when to join village saving schemes, going to the garden, staying or divorcing a man, family planning decisions in case the man is in continued disagreement and household expenses that do not involve huge sums of money. In difficult times some women tend to support men in other roles such as paying school fees, improving the family diet and paying medical bills.

Women reported that they make independent decisions on meals since men hardly provide food in the home as they tend to involve themselves more in expenditures that involve huge sums of money like buying assets.

> *Men only buy meat to change the diet. We are the ones who look for food to feed the family.*
>
> **Focus group participant, Aromo village**

Table 36 summarises decision-making, as described during the qualitative inquiry.

Domain	Bearer of decision	Community Justification
Marriage	Girl and her parents	Parents in the communities visited have a big role in deciding who their daughters get married to although over the years there is flexibility that one can choose whom to marry. Sex outside marriage is not accepted and once a girl gets pregnant before marriage, the parents send her to the home of the boy who impregnated her so that he can prepare to visit the parents of the girl.
Family size	Woman and man jointly or man alone	The participants said the men decide on what number of children to have.
Family planning	Man	Men in the communities said they are not in support of the modern family planning methods due to the complications associated with them, such as over bleeding and loss of weight. Therefore, women have to seek consent from men to start using the contraceptives; but a few women secretly use contraceptives without the consent of their partners. It was common testimony during the discussions that any woman who wishes to use contraceptives must first consult the husband and indeed health workers supported this to ease tension and violence at home. Much as consulting is not bad in itself, the likelihood of men refusing was so high that women prefer not to consult at all but rather do it stealthily.
Schooling	Woman and man jointly or man	The issues concerning education are jointly decided. In the visited localities, equal opportunities for schooling are given to both girls and boys unless otherwise. Preference for boys over girls was the practice in the past but that has changed.
Treatment of illnesses	Woman and man jointly or man	During the discussions, the participants said both men and women make decisions regarding treatment of illnesses; except when it involves using private health facilities where the man makes the decision alone.
Household expenses	Woman and man jointly	According to participants, fees payment, medical bills payment and buying food for the household are jointly made. However, men's expenses are on payment of dowry for the sons, future savings, buying animals and spending on alcohol, which has also contributed to domestic violence in households. While women make decisions on what clothes to buy for the children, what food to buy and what to buy for herself.
Household nutrition	Woman	The nutrition of the household is left solely to the women within the communities. The decision on what to eat remains predominantly on the woman because she is responsible for whatever happens in the kitchen. The women said they make decisions on what to eat, how much in terms of portion and when to eat including the type of food to feed her family within the course of the day.
Daily activities	Woman	According to participants, the women and not men determine the daily activities in a home because men are never home. Household chores such as cooking, cleaning the homestead , taking care of children in terms of bathing them are all decided by the women.

Table 36: Decision making for Mid-North sub-region

Subsequent analyses taking into account anthropometric measurements of children in the household did not reveal any statistical association between decision-making regarding livestock production and child undernutrition outcomes.

In one of the visited localities, men complained that women have been so empowered by NGOs that it is now difficult to discuss anything with them. For example, a programme focusing on female empowerment in Pader district has left some men feeling incapacitated, thus leaving most of the

decisions to women. However, the programme has been praised for reducing the cases of gender-based violence (GBV) in the communities.

Women's decision-making power is limited and remains the same throughout the year even when the men migrate. Women reported that in most cases they have to call their husbands or parents-in-law even for small decisions. In-laws make life difficult for the women as they sluggishly make decisions concerning where to take the child for treatment (especially if it requires private health service), construction of houses, buying cattle (after the men send money) or land utilisation, among others. It was revealed during the discussion that some women feel so disempowered that they have to leave all decisions, except for those related to food preparation, to be made by the man. In case the woman is a widow, the decisions tend to be made by the in-laws.

> *My husband makes all the decisions in the home because he is the head of the family. I have to ask for his permission even to butcher a chicken for the children to eat. If I prepare meat the next question the man will ask is where I got the money from and this may degenerate into a quarrel.*
>
> **Focus group participant, Apoke village**

According to community participants, conflicts and disagreements arise when decisions have to be made on when and where to marry a daughter, how much of the food produce to sell and store, what disciplinary action to subject a child to, and how many children to have. Domestic violence results when partners fail to agree on decisions, commonly during harvesting time when the men have more income than in lean seasons. Decision making among couples is additionally complicated by extra marital affairs and strong cultural beliefs. When men get income after the sale of food stock during the harvesting season, they tend to get into new relationships of which the current wives do not approve. When the women discover that their husbands are having an extra relationship, they deny them sex due to fear of HIV infection, which can sometimes result in GBV.

> *Men tend to become less cooperative when they have outside relationships. They fail to make joint decisions with us as long as they are seeing other women out there.*
>
> **Focus group participant, Labongo Village**

Women's workload

The typical woman's day starts with waking up at 6:00am in the morning. She cleans the compound, washes utensils, lights a fire to prepare breakfast, wakes up the children and prepares them for school and lays beds. The woman serves breakfast at 8:00am (other family members serve themselves between 9:00am and 12:00am). After, she goes to the garden (where she is involved in planting, weeding or harvesting) and by 12:00pm she has returned home. She prepares lunch that is served by 2:00pm. Some women have to take maize, sorghum, or millet for grinding before starting to prepare lunch. After lunch, the woman bathes children, washes clothes, and collects firewood and water. Some women might afterwards go back to the garden while others tend to look for food to prepare for dinner, which gets ready by 8:00pm. She goes to bed after 9:00pm. Lactating women breastfeed on demand more throughout the day than the night. In case there is a sick child, at home, it is the responsibility of the mother to take that child for treatment.

Qualitative findings reveal that women's workload is heavier than men's workload. As a result, women reported falling sick, and becoming extremely fatigued with body pains. They said that their spouses complain when women say they are tired because culturally, women who are not

hard working are considered “lazy”. Community participants revealed that due to heavy workloads, some women have resorted to drinking alcohol to relieve stress and relax their minds.

Routines change seasonally, with workloads peaking during rainy season (garden clearing, planting, and weeding) and reducing during the dry season, when they are resting and preparing for the next planting season. Women are not generally involved in constructing houses, but it is their work to collect grass for thatching and also doing local flooring with cow dung. Most pregnant women work less compared to the non-pregnant women and most mothers rest for at least six weeks after giving birth before they can resume normal duties. A few resume work after three days of rest.

Qualitative findings also revealed that many women suffer each time migrations occur because of the increased expenditure and workload on women. Diets change when partners migrate, predisposing the household members to malnutrition, and sometimes inadequate funds are sent to meet family needs (such as feeding, clothing, payment of medical bills) and there can be early marriages due to early school dropout, especially for the girls due to hardships at home. Most male partners tend to support the family after a period of one to two months, and some end up in new relationships that affect the support that their families receive. Poor communication between the migrants and their families commonly leaves women unsupported, especially in seasons of food scarcity.

Men’s workload

The typical man’s day starts with waking up by 6:00am and going straight to the garden until 12:00pm when he returns home to have breakfast. A few men help the women out with domestic activities such as cleaning the compound and collecting water for bathing, cooking and washing. Otherwise, after breakfast the men take animals (if they own them) for pegging and grazing, returning at 2:00pm for lunch, before returning to the garden. The man then returns home after 4:00pm, sometimes returning to graze the animals. Otherwise, many men go the nearby trading centres after 6:00pm to relax and drink until approximately 8:00pm, going to bed at around 9:00pm.

Men had mixed perceptions of their workload. While some men felt their workload was adequate others felt it was heavy. Some men said that much as they do not work throughout the day like the women, their workload is heavier than that of the women because it is energy demanding. Other men said offering security to the family was part of their roles.

> *Men’s work requires more energy compared to women’s work. So, men work more than the women.*
>
> **Focus group participant, Labongo village**

Communities were more motivated to work when the land was fertile and more productive. In addition, families were less dependent on money, compared to now where there are more household bills to pay. Historically, communal work was commonly practiced where different households could farm on rotational basis. This is no longer the case.

F.3 UNDERNUTRITION AND ANAEMIA IN MID-NORTH

According to the anthropometric survey, integrated into the FSNA exercise, conducted between in May 2019, the prevalence of global acute malnutrition (GAM) in the Mid-North sub-region stands at 4.4 per cent, while severe acute malnutrition (SAM) was estimated at 2.1 per cent. The prevalence of stunting was estimated at 17.2 per cent and is more prevalent in the Simsim Groundnut Sorghum

Cattle Zone than in the other livelihood zone. The proportion of anaemic children was estimated at 52.8 per cent.

Historical and seasonal trends of undernutrition

There is no disaggregated data on undernutrition and anaemia for mid-north sub-region, but aggregated data shows that since 2001 stunting and anaemia have been the main problems for children in the area. Wasting has generally been at manageable levels except in 2006 when it increased to 7 per cent.

Available statistics show that children in the Lango sub-region are more wasted than those in the Acholi sub-region. On the other hand, stunting and anaemia are bigger problems in Acholi than in Lango sub-region. Looking through the statistics over time, pragmatic interventions need to be geared towards improving anaemia and stunting (stunted growth and development) outcomes and more so in the Acholi sub-region.

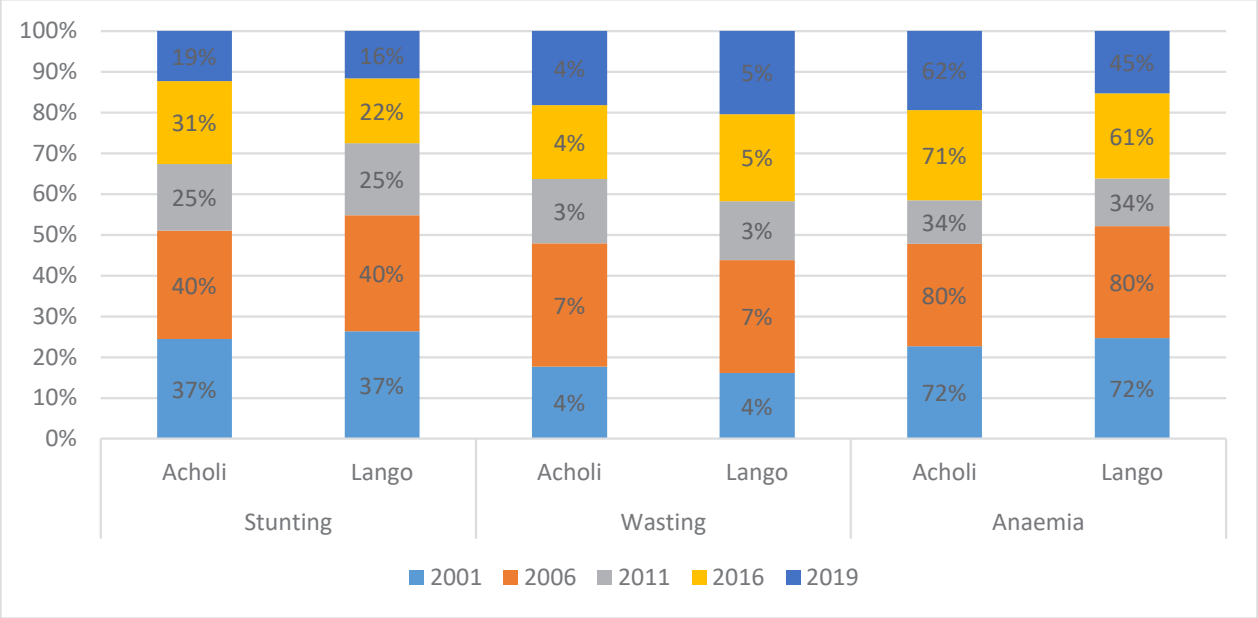


Figure 29: Trends of undernutrition and anaemia in Acholi and Lango sub-regions

G.3 COMMUNITY PERCEPTIONS OF UNDERNUTRITION AND THERAPEUTIC ITINERARY

Community perception of undernutrition

During the qualitative inquiry, focus group participants, while looking at images of malnourished children, stated that respective children looked like orphans and may not have been fed well right from birth. They also suspected that the mother might not have practiced adequate birth spacing and therefore the child did not get enough nutrients to stay healthy. On the other hand, they thought a mother might be a dirty woman and fed a child with dirty water. On further discussion and with more photos presented, participants were able to identify three distinct cases of malnutrition i.e. marasmus, kwashiorkor (which they identified with oedema) and stunting.

Community members described a malnourished child as one who is weak, with diarrhoea, and not well treated. They envisaged that such child would usually have little quantities of nutrients in the body. According to them, malnutrition has multiple causes that may include food shortage, having

many children, chronic diseases, poor spacing (conceiving while the child is still young, leading to poor care of the child), poor hygiene, and eating the same food frequently in a household (lack of balanced diet). Other stated causes include lack of knowledge by caretakers on the foods to give their children, mental stress on women that prevents them from taking proper care of themselves and their young ones and generally heavy workload women are faced with.

During these exchanges, participants described poor families as being more vulnerable to malnutrition as they do not have enough food to give their children. Participants mentioned several characteristics of households with children having malnutrition. They specifically highlighted households without latrines, where children sometimes eat raw foods like raw tomatoes without washing, where children eat food without washing their hands, and households where dirty utensils are often used. They also mentioned households where parents are alcoholic, where mothers have less care for their children, with parents who do not do enough farming, and those that consume only one type of food without bread, oil, milk and meat. In most of the localities, the defining factor for household characteristics was the socio-economic status of the household as this determined the other characteristics.

The child with marasmus, who they referred to in the local language as having “neto”, was described as one who is thin and looking sickly. They said they have about one of such cases in every 10 households in the community. In fact, participants from Acholi said they have more nodding syndrome cases than marasmus cases, but the situation was the reverse before 2007. The cited causes of marasmus include food shortage, large families/poor birth-spacing, children with chronic diseases, and use of water from unprotected wells.

The child with kwashiorkor, who they referred to in the local language as having “odech”, was described as one with a swollen stomach and might not have breastfed well. They saw this child as one who is possibly fed on cold food in the morning and does not breastfeed well. On further scrutiny, participants said the child lacked enough blood in the body and that could be the reason why the body was swelling, starting with the stomach where the cold food is stored. They described this as a more common case than those of marasmus, and said they usually escalated in the months of June to September. Some community beliefs associated with kwashiorkor included: witchcraft that attacks a child from the anthill and pushes the stomach outwards, a child having too much water in the stomach and a child born of a woman who throws money to the husband, which is an abomination in their culture.

In the discussions with the religious leaders and TBAs, they also agreed that there are cases of kwashiorkor and marasmus in the communities. They attributed these to poor care for the children, giving children cold food, eating without washing hands, and drinking and bathing contaminated water.

According to the participants, stunting has no clear name in the local language, but three to four children in every 20 households are stunted. The causes of stunting, which participants often referred to as shortness, are not known to the community members. They, however, think it may be caused by children doing heavy work when still very young or children being born of parents who are genetically short. Poor feeding, lack of care for the children commonly due to family misunderstandings, some parents taking a lot of alcohol and abandoning their children, and low education that makes it difficult for parents to follow advice from health workers are the other possible causes of stunting. Some participants described a stunted child as one who is normal but just short because God created them that way. In one of the visited localities, stunting was associated with the belief that such is a next sibling to twins but the right cultural cleansing was not performed.

According to community participants, children are more vulnerable to malnutrition than pregnant and lactating mothers are. Among pregnant and lactating mothers, they singled out teenage mothers

as those more likely to be malnourished. Children were considered more vulnerable than pregnant and lactating women because of limited food varieties prepared for them, especially during the times when food stocks have greatly reduced.

Community Therapeutic itinerary

According to community participants, parents should not feel any pressure from having a sick child at home for the fact that other community members will look at such a household as being very poor. In some instances, other community members will think that the child has HIV/AIDs and others would think that there was no proper child spacing in that family.

Community participants stated that their first approach to preventing malnutrition is to ensure proper feeding, good hygiene and sanitation, having safe/clean drinking water, and taking the child to the nearest health facility in case of any signs of illness. They also said they ensure that their children are fully immunised before the age of five years and those above five years are considered for any government recommended mass immunisation exercises. Participants stated that they attend community organised health sessions, as these are helpful most especially in providing health information such as disease awareness and treatment. They said that through community health sessions, they accrue family planning knowledge and are encouraged to test for HIV/AIDS. The community health sessions are usually organised by VHTs and Local Council 1 (LC1), in liaison with NGOs and the district health department.

The health journey for malnourished children in the Mid-North sub-region was not clear from the community discussions. Much as most participants were of the view that all malnourished children should first be taken to the health facility or religious leader in case of difficult-to-understand cases, further discussions revealed the practice to be to the contrary.

Mothers said they preferred taking children to the VHTs who give supplements (Multivitamin and Mineral Power) which boost the child's immunity. However, they attested that these supplements increase the appetite of the child making him or her eat a lot, making this approach untenable in times of food scarcity.

Some community participants said their first option is to give the child herbs that are either prepared by a competent herbalist or hand-picked from the garden/bush. Households that can afford give the child honey or chia black seeds.[137] When the herbs fail to work in case of kwashiorkor or acute oedema, participants said they massage the child with warm water and then take him or her to the health facility or to a witchdoctor. It was reported by community members that witchdoctors are successful with some cases but also fail on others that are then referred back to the VHTs or to the district hospital for better management.

In some of the visited localities, participants said they no longer give herbs to children with kwashiorkor.

> *Long ago, we treated kwashiorkor with traditional medicine, but this failed in a number of cases. We could notice no change, sometimes a child feels better for a short time and the illness re-occurs in a far worse state than before and in some cases resulting into death*
>
> **Focus group participant, Labongo village**

137 Chia seeds are tiny black seeds from the plant Salvia hispanica, which is related to mint. They are regarded an important food due to their perceived ability to provide sustainable energy. Some community participants preferred to call this "Lamola".

VHTs and TBAs were in agreement with community participants. TBAs advise mothers to take children with kwashiorkor or malnutrition to the health facilities and not to give traditional herbs, which advice most mothers now heed. VHTs explained that at the health centre IV or district general hospital, malnourished children are managed with Ready-to-Use Therapeutic Food (RUTF) and micro-nutrient powders that contain essential vitamins. Community participants revealed that once treatment is prescribed at the health facility, they try as much as they can to adhere to the recommended dosage for the child to be better. To better manage kwashiorkor, TBAs said they advise mothers with such children to go to a bigger health facility where blood transfusion can be done as the swelling may be due to reduced blood in the body.

H.3 COMMUNITY PERCEPTIONS OF CAUSAL MECHANISMS OF UNDERNUTRITION

The qualitative inquiry in Mid-North region included more than 60 independent exchanges with approximately 600 participants. Their detailed and complementary testimonies helped to define a causal pathway for undernutrition in the region, which served as a basis for the triangulation with the available secondary data, particularly 2019 FSNA data sets.

Similarly to West Nile and Karamoja regions, the community identified inadequate care practices and inadequate infant and young child practices as key risk factors for wasting while both are linked with heavy women's workload. Mother's multiple household occupations, often complemented by her income-generating responsibilities do not leave a lot of time for proper child care, which also manifests in inadequate utilisation of health services, increasing a child's vulnerability to illness and/or chronic illness due to a delayed treatment. In addition, young mothers do not tend to have sufficient knowledge of basic childcare practices, which in combination with childcare by another family member, may result in an increased risk of infection and/or inadequate food intake. Mothers admitted struggling with breastfeeding and child feeding as their heavy workload prevents them from being able to breastfeed and/or prepare multiple meals a day. Secondly, due to poverty, children rarely eat balanced and diversified meals. In effect, low household economic power and early marriages were identified as triggers of undernutrition, extending a vicious cycle to the next generation. The scarcity of income was described as an outcome of low crop production due to inadequate farm inputs, erratic rainfall, and pests and diseases.

According to the community, key risk factors for stunting reflect those for wasting while inadequate hygiene and sanitation practices also play a role. As latrines are scarce and open defecation is still practiced, contamination at ingestion is very likely for children playing in unsafe play areas and/or if a household uses an improved water source close to open defecation sites.

I.3 SUMMARY OF FINDINGS AND CATEGORISATION OF RISK FACTORS

In order to understand how participating communities perceive the severity of risk factors to undernutrition, a prioritisation exercise was conducted in each of four localities at the end of the qualitative data collection period. All risk factors identified by community members over the course of this study were presented back to them with the use of flashcards, portraying each discussed risk factor. After a recapitulation of survey findings by the qualitative data collection team, participants were invited to validate the interpretation of results and suggest modifications, if necessary. Subsequently, they were requested to divide risk factors into three categories (major, important, minor), depending on their impact on child undernutrition. The results of this exercise are presented in the table below. Risk factors perceived as having a major impact on undernutrition are highlighted in red, important factors are marked in orange while risk factors with minor impact are

coloured green. White cells marked “N/A” signify that a respective community did not identify that risk factor as a cause of undernutrition in their milieu.

	Risk factor	Lapul Ocwida	Labongo	Aromo	Apoke	Overall
A	Limited access to quality health services	+++	+++	++	+++	+++
B	Limited use of health services	N/A	+	+	+++	+
C	Low birth spacing/unwanted pregnancies	+	+	+	++	+
D	Parental stress	+++	+++	+++	+	+++
E	Non-optimal breastfeeding practices	N/A	+	+	++	+
F	Non-optimal infant and young child feeding practices	+	+	+	++	+
G	Low quality of interactions between a child and caregiver	N/A	+	+	+	+
H	Low access to food	+++	++	+	+	++
I	Low dietary diversity	+++	++	+++	++	+++
J	Low diversity, access and availability of income sources for households	N/A	++	++	++	++
K	Malfunctioning market or supply system	+	+	+	+	+
L	Low coping capacities/ resilience	+	+	++	+	+
M	Low access and availability of water (quality and quantity)	N/A	+++	++	+++	++
N	Poor sanitation practices	+	++	++	+++	++
O	Poor hygiene practices	+	++	+	+++	++
P	Low social support for women or households	N/A	+	+	+	+
Q	Early marriage and/or Early pregnancy	+	+++	+	++	++
R	Low nutritional status of women	N/A	+	+	+	+

*N/A - respective community did not identify that risk factor as a cause of undernutrition

Table 37: Summary of results of community rating exercise for Mid-North region

After the completion of both qualitative data collection and secondary quantitative data analysis, Link NCA Analyst triangulated all available data sets, compared correlations for each risk factor and determined the strength of its association with undernutrition. The ratings for each hypothesised risk factor are summarised in the table below.

	Risk factor	Strength of association with under-nutrition from scientific literature	Prevalence of risk factor according to secondary data (literature review)	Statistical associations from secondary data				Seasonal and historical associations with under-nutrition	Findings from the qualitative study	Community rating exercise	Interpretation/ Impact of risk factor
				W	S	A	O				
A	Limited access to quality health services	++	++	N/A				++	++	+++	Important
B	Limited use of health services	++	++					++	++	+	Important

C	Low birth spacing/ unwanted pregnancies	++	+	N/A	-	+	+	Minor
D	Parental stress	++	+	N/A	+	++	+++	Minor
E	Non-optimal breastfeeding practices	+++	++		+	+++	+	Minor
F	Non-optimal IYCF practices	+++	++		++	+++	+	Important
G	Low quality of interactions between a child and caregiver	++	+	N/A	+	+	+	Minor
H	Low access to food	++	++		++	++	++	Important
I	Low dietary diversity	++	++		++	++	+++	Important
J	Low diversity, access and availability of income sources for households	++	+++		+++	++	++	Important
K	Malfunctioning market or supply system	+	+	N/A	++	++	+	Minor
L	Low coping capacities/ resilience	+++	++		++	++	+	Important
M	Low access and availability of water (quality and quantity)	+++	++		++	+++	++	Important
N	Poor sanitation practices	++	++		+	++	++	Important
O	Poor hygiene practices	++	+++	N/A	+	++	++	Important
P	Low social support for women or households	++	+	N/A	+	++	+	Minor
Q	Early marriage and/or Early pregnancy	+	+	N/A	+	++	++	Minor
R	Low nutritional status of women	+++	++		+	+	+	Minor

The weight of each risk factor was determined in line with the rating grid presented in Table 17.

Table 38: Summary of categorisation of risk factors for Mid-North region

At the same time, Link NCA Analyst revisited causal pathways of undernutrition, as developed with communities during the qualitative inquiry, and developed two simplified outlines, likely to explain a majority of cases of undernutrition (wasting and stunting) and anaemia in Mid-North region.

Figure 30 below depicts a causal mechanism for undernutrition, highlighting the risk factors with a significant statistical association with wasting and/or stunting. The most vulnerable group to acute malnutrition were male children aged 36-47 months while the most vulnerable group to chronic malnutrition were children 24-35 months. Children from Omoro and Kole districts, or alternatively from Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts, were less likely

to suffer from chronic malnutrition. In addition, a mother's education at secondary level or higher seemed to decrease the child's odds of stunted growth.

While the community perceptions in Mid-North region outline similar dominant and complementary pathways to those observed in West Nile and Karamoja regions, the quantitative evidence for triangulation was scarce. None of the key indicators demonstrated a clear statistical association with wasting while only one risk factor correlated with stunting. In other words, according to the available data, only a child living in a household with charcoal sale as a primary source of income has higher odds of stunting, thus suggesting a link between limited access to income and inadequate nutritional intake. All other risk factors outlined in communities' testimonies, however, could not be sufficiently triangulated.

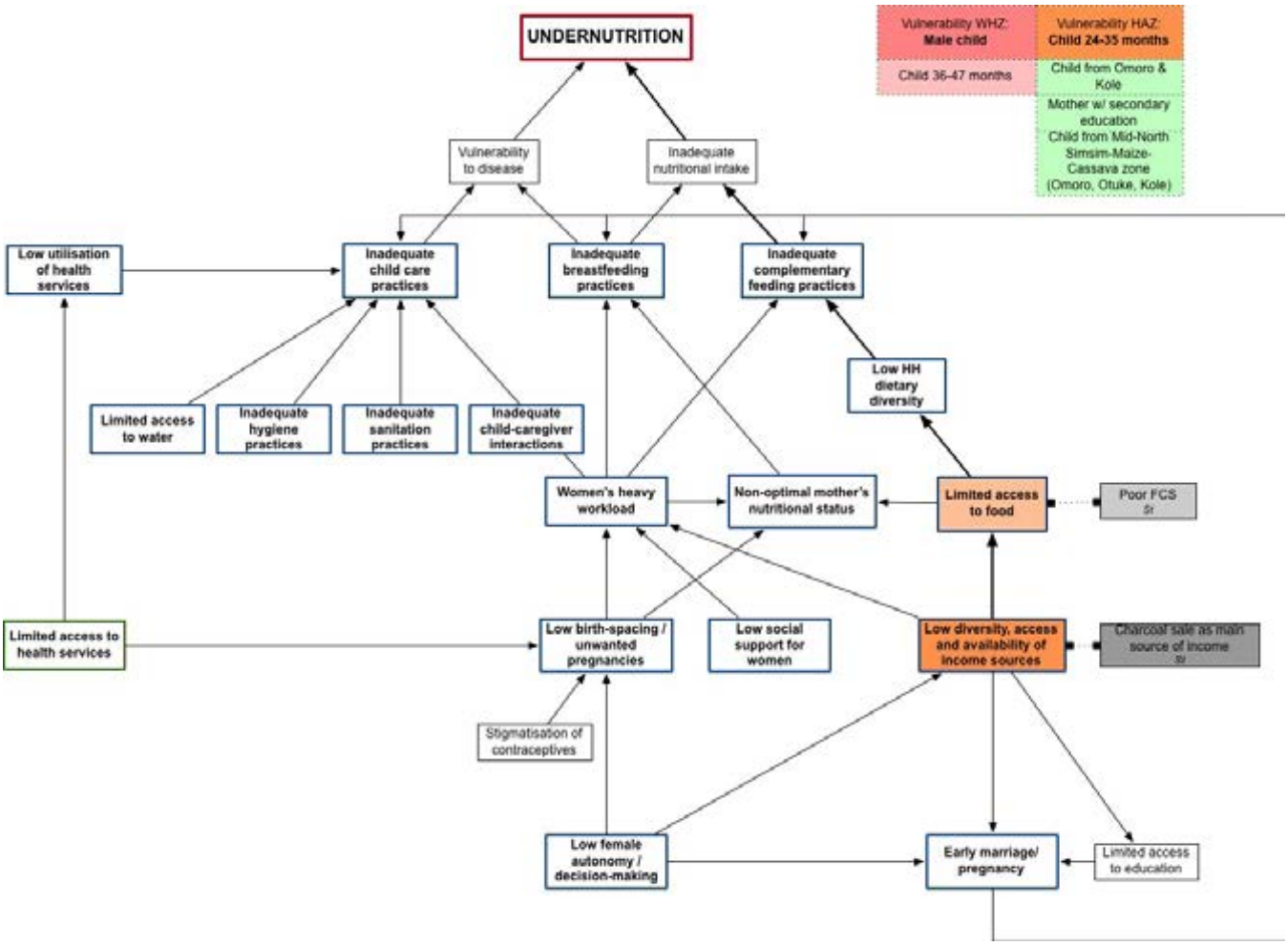


Figure 30: Simplified causal pathway for undernutrition (wasting and stunting) in Mid-North Region[138]

Figure 31 below depicts a causal mechanism for anaemia. The most vulnerable group to anaemia were children, whose mother attained only primary education. Children aged 24-59 months presented lower odds of anaemia as well as children from Otuke or, alternatively, from Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts.

Unlike for wasting and stunting, the quantitative evidence for anaemia is more abundant and mirrors causal mechanisms observed in West Nile and Karamoja regions. A dominant pathway to anaemia

138 Dark orange cells represent risk factors presenting a significant statistical association with chronic malnutrition (p 0.05) (See Annex 4). Cells highlighted in light orange signify risk factors with a potential link to chronic malnutrition (p <0.1) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with chronic malnutrition.

appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate sanitation practices expose a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in micronutrient deficiency. In Mid-North region, two risk factors demonstrated a protective relationship in this respect, namely an access to latrines and measles vaccination, highlighting a role of adequate multi-sectoral preventive measures to ensure an optimal nutritional status of children.

A complementary pathway to anaemia seems to link a limited access to income and consequent limited access to food with an inadequate food intake of children under five years of age and a potential micronutrient deficiency. A child living in a household with a livestock sale or wage labour as primary sources of income, was less likely to be diagnosed with anaemia while a child living in a household, which uses income for tobacco or alcohol and/or cultural/social celebrations, was more likely to be diagnosed as such, thus suggesting the non-beneficial use of income for child development.

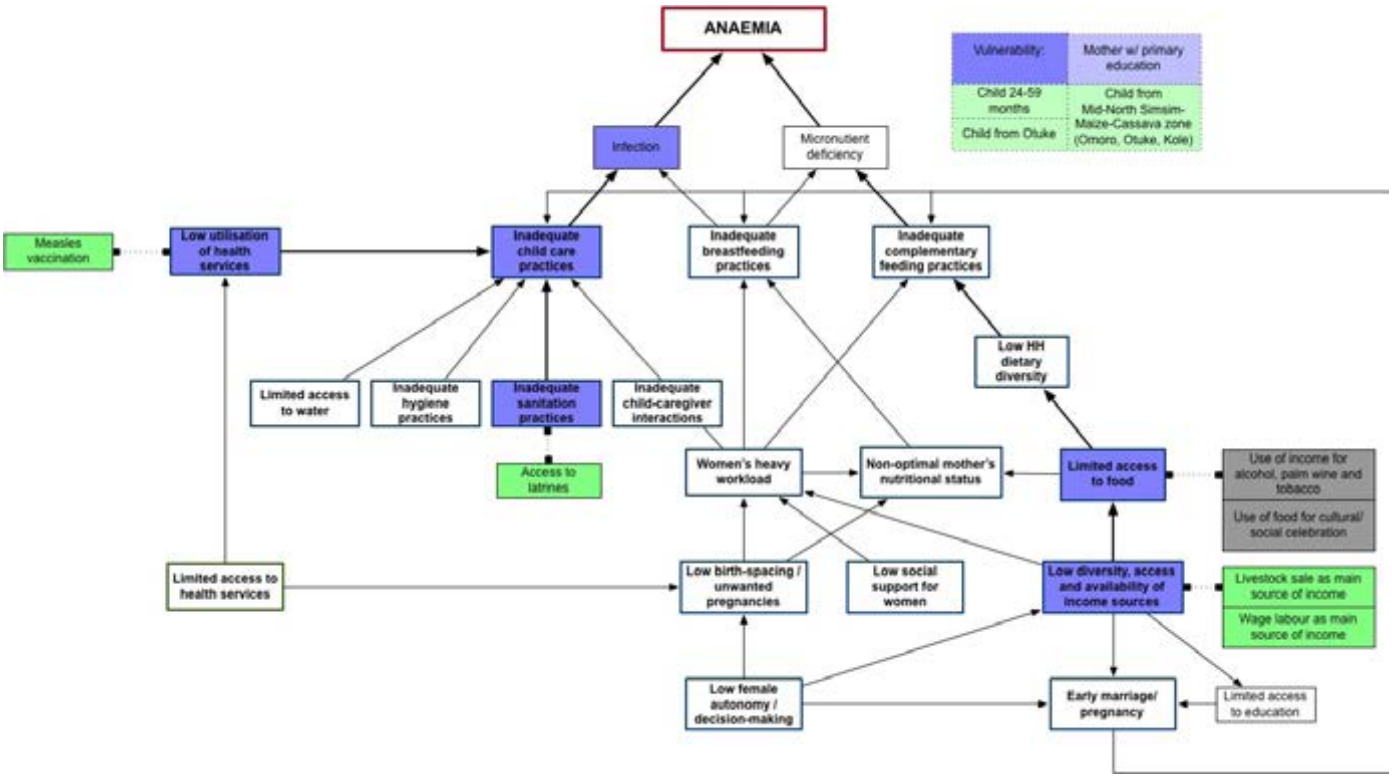


Figure 31: Simplified causal pathway for anaemia in Mid-North Region[139]

139 Dark purple cells represent risk factors presenting a significant statistical association anaemia (p 0.05) (See Annex 4). Cells highlighted in light purple signify risk factors with a potential link to anaemia (p <0.1) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with anaemia.

IV CONCLUSIONS AND RECOMMENDATIONS

The Link NCA Nutrition Causal Analysis in Northern Uganda was conducted between August and December 2019. The study area was selected for its persistent high prevalence of undernutrition (wasting, stunting and anaemia) within the framework of a multi-agency effort code-named Development Initiative for Northern Uganda (DINU) and Karamoja Nutrition Programme (KNP). The global objective of the Link NCA study was to identify the major pathways leading to undernutrition (wasting, stunting) and anaemia among children in West Nile, Karamoja and Mid-North regions with the aim of developing recommendations for future programming.

The analyses undertaken during this Link NCA study allowed the identification of 19 risk factors believed to have an impact on the incidence of undernutrition in West Nile region. Eighteen (18) risk factors were identified for Karamoja and Mid-North regions each. Following a triangulation of data from diverse sources, two risk factors were identified as having a major impact in Karamoja region while none were identified as such in West Nile and Mid-North regions. Ten risk factors were classified as having an important impact in Mid-North region, 12 in Karamoja and 15 in West Nile. Eight risk factors were judged to have a minor impact on the incidence of undernutrition in Mid-North and four in Karamoja and West Nile each.

Across three regions of the study zone, limited access to water and non-optimal infant and young child feeding practices received the highest rating while also being categorised as major risk factors in Karamoja region. Other highly ranked risk factors included limited access to health facilities, limited access to income sources, low coping capacities and inadequate sanitation practices. In other words, priority sectors for interventions include Water, Sanitation and Hygiene, Health and Caring Practices as well as Food Security and Livelihoods.

It is important to note, though, that the use of existing FSNA datasets for the bivariate and multivariate analyses conducted during this study, naturally limited the triangulation and consequent categorisation of risk factors identified during earlier stages of the study. As a consequence, certain risk factors, such as low birth-spacing and/or heavy workload of women appear to have a lesser weight. However, a lack of evidence for these factors should not be misinterpreted as a lack of causal relationship as these risk factors play their role in a complex series of cause-effect interactions, detailed via causal pathways.

The overall ratings for each hypothesised risk factor across three regions are summarised in the table below.

	West Nile					Karamoja					Mid-North				
Risk factor	**Statistical associations from secondary data**				**Overall categorisation of risk factor**	**Statistical associations from secondary data**				**Interpretation/ Impact of risk factor**	**Statistical associations from secondary data**				**Interpretation/ Impact of risk factor**
	W	**S**	**A**	**O**		**W**	**S**	**A**	**O**		**W**	**S**	**A**	**O**	
Limited access to quality health services	N/A				Important	N/A				Important	N/A				Important
Limited use of health services					Important+					Important+					Important

Low birth spacing/ unwanted pregnancies	N/A	Minor	N/A	Important	N/A	Minor
Low birth weight	N/A	Minor	Not applicable		Not applicable	
Parental stress	N/A	Important	Not applicable		N/A	Minor
Non-optimal breastfeeding practices		Important		Minor		Minor
Non-optimal IYCF practices		Important		Major		Important
Low quality of interactions between a child and caregiver	N/A	Important	N/A	Important	N/A	Minor
Low access to food		Important		Important		Important
Low dietary diversity		Important		Important		Important
Low diversity, access and availability of income sources for households		Important+		Important+		Important
Use of household income non-beneficial to nutrition status of mothers and children	Not applicable			Important+	Not applicable	
Low coping capacities/ resilience		Important		Important		Important
Malfunctioning market or supply system	Not applicable		Not applicable		N/A	Minor
Low access and availability of water (quality and quantity)		Important		Major		Important
Poor sanitation practices		Important		Important		Important
Poor hygiene practices	N/A	Minor	N/A	Important	N/A	Important
Heavy workload of women	Not applicable		N/A	Minor	Not applicable	
Low female autonomy/ decision making		Important	Not applicable		Not applicable	
Low social support for women or households	N/A	Minor	N/A	Important	N/A	Minor
Early marriage and/or Early pregnancy	N/A	Important	N/A	Minor	N/A	Minor
Low nutritional status of women		Important		Minor		Minor

Table 39: Summary of categorisation of risk factors for the entire study area

The calculation of statistical associations between individual risk factors and nutritional status of children in households surveyed during annual FSNA exercises allowed the highlighting of similarities and differences in causal mechanisms across regions, giving rise to the so-called "regional" causal mechanisms of undernutrition (wasting and stunting) and anaemia, which were presented in respective sections above. The compilation of "regional" pathways allowed for the design of "overarching" causal pathways for each condition, which detail generally applicable mechanisms across the study zone while acknowledging nuances in risk factors across regions. Documenting evidence at two levels, this combined approach could contribute to more suitable adaptations for future interventions by providing an overview, which actions might be applicable to the whole study zone and which might be more region-specific.

Overarching causal pathway for wasting

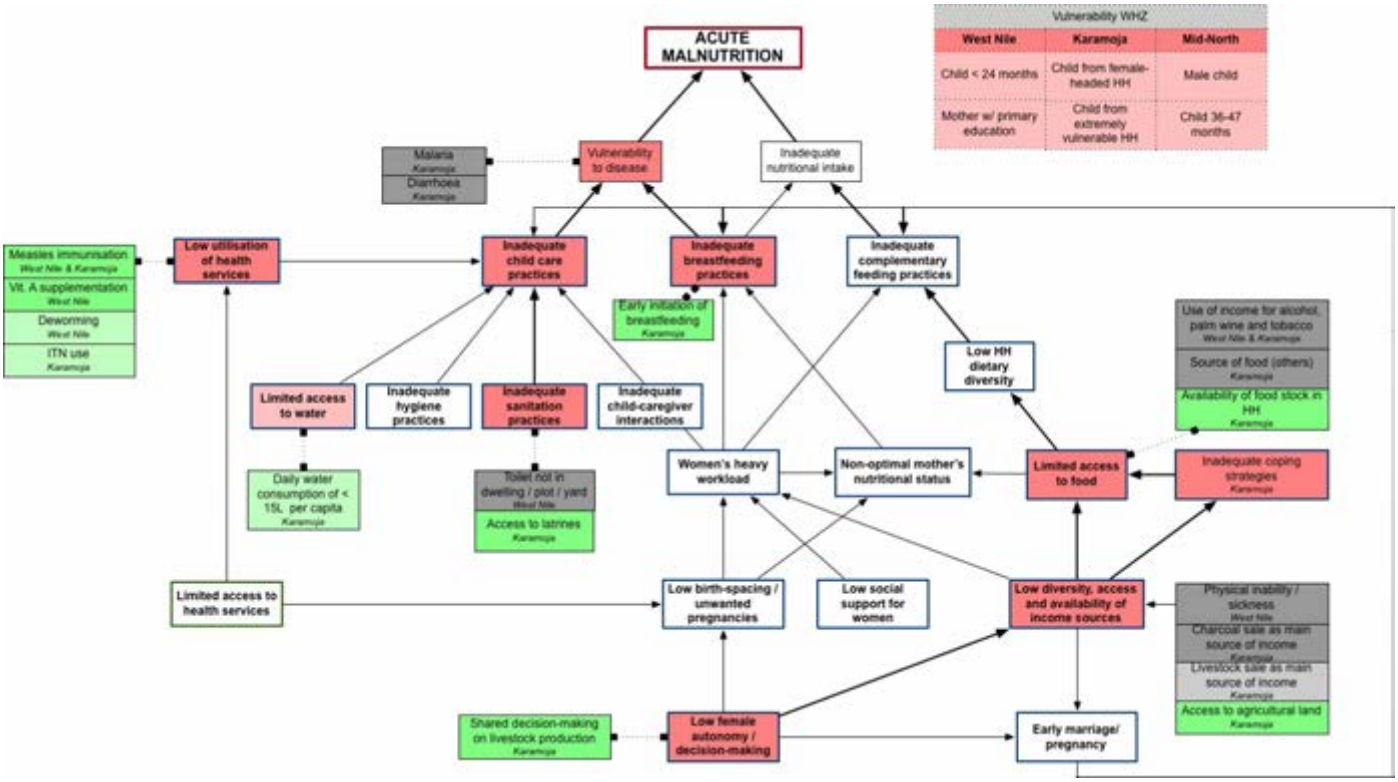


Figure 32: Simplified causal pathway for wasting for the entire study area[140]

The most vulnerable group to acute malnutrition in Karamoja region were children from female-headed households and/or extremely vulnerable households, while no child age or gender vulnerability was detected. However, in Mid-North region, male children were more likely to be wasted while in West Nile children under 24 months of age were most affected. A child in West Nile was also more likely to suffer from acute malnutrition if his/her mother attained only primary education.

A dominant pathway to wasting across the three regions appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate access to sanitation facilities exposes a child to environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. According to the available data, a child in West Nile region, living in a household where the toilet was not in a dwelling/plot/yard, had higher odds of wasting while a child in Karamoja region

140 Dark red cells represent risk factors presenting a significant statistical association with acute malnutrition ($p < 0.05$) (See Annex 4). Cells highlighted in light red signify risk factors with a potential link to acute malnutrition, respectively ($p < 0.1$) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with acute malnutrition.

with access to a latrine was less susceptible to wasting. In addition, a child in West Nile and Karamoja regions with a measles vaccination was less likely to be wasted while the same also applied to a child in West Nile who received his/her Vitamin A supplementation. Children suffering from malaria or diarrhoea in Karamoja region were more likely to be diagnosed as acutely malnourished.

A complementary pathway to wasting across three regions seems to be largely triggered by limited access to income, which then translates into a limited access to food and eventually resulting in inadequate food intake of children under five years of age. In West Nile region, a child living in a household which identified physical inability or sickness as the key constraint to farming, had higher odds of wasting. The same applied to a child in Karamoja region, living in a household with a charcoal or livestock sale as primary sources of income, highlighting a potential higher vulnerability of the household. On the other hand, a child in Karamoja whose family had access to agricultural land was less likely to suffer from acute malnutrition. This could eventually translate into a higher availability of food in the household, which also decreased odds of wasting in Karamoja. A child in the same region, living in the household which did not access food from own production or at the market was more likely to be wasted as well as a child from Karamoja and West Nile regions, living in the household, which uses income for the purchase of alcohol and tobacco, thus suggesting the non-beneficial use of income for child development.

Overarching causal pathway for stunting

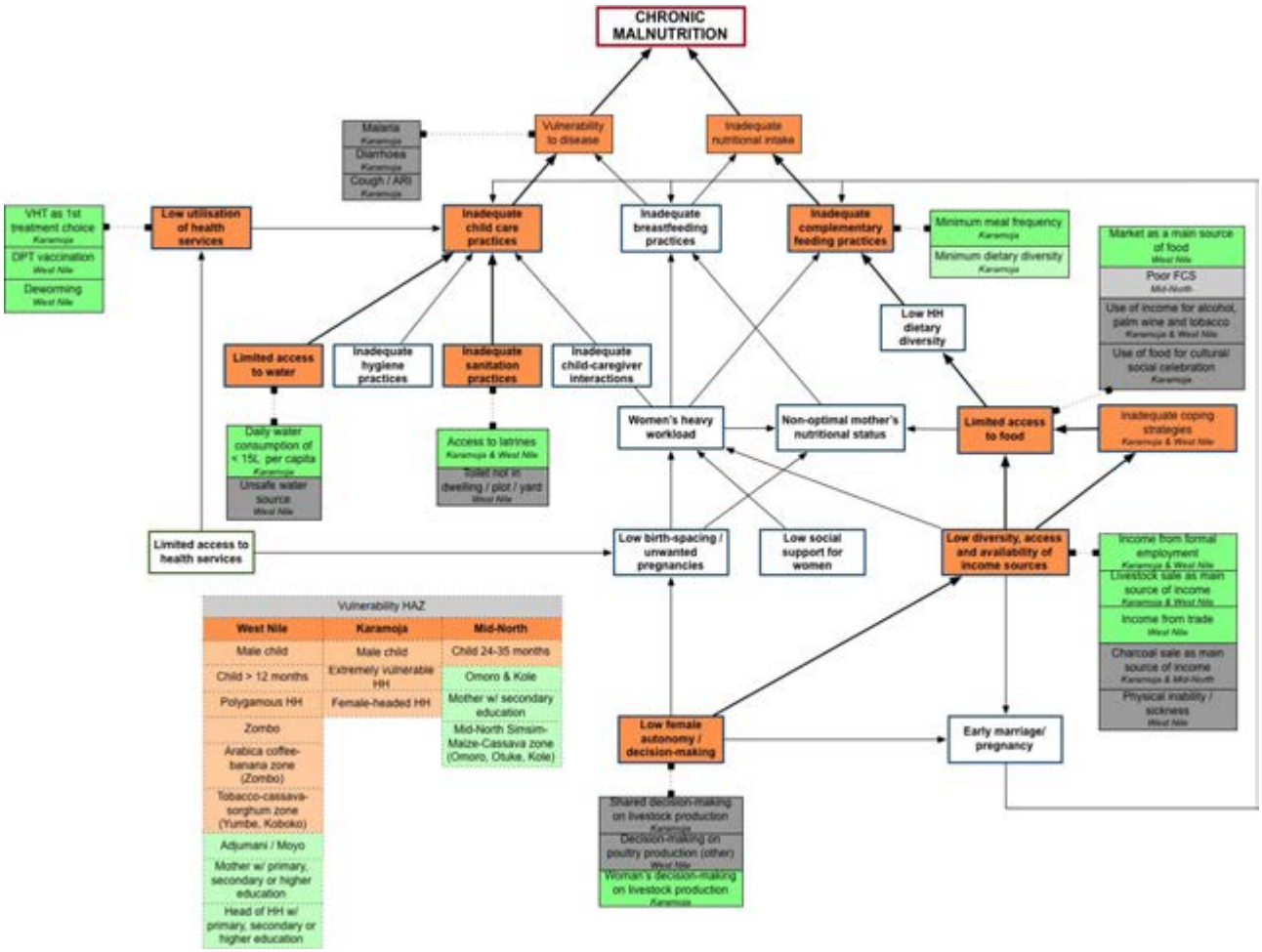


Figure 33: Simplified causal pathway for stunting for the entire study area[141]

141 Dark orange cells represent risk factors presenting a significant statistical association with chronic malnutrition ($p < 0.05$) (See Annex 4). Cells highlighted in light orange signify risk factors with a potential link to chronic malnutrition ($p < 0.1$) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with chronic malnutrition.

The most vulnerable group to chronic malnutrition in Karamoja region were male children from female-headed households and/or extremely vulnerable households. Male children were also more likely to be stunted in West Nile region, where children from polygamous households demonstrated higher odds of stunting as well. Children from Zombo and/or Arabica coffee-banana zone in the same district as well as children from Tobacco-cassava-sorghum zone in Yumbe and Koboko districts were more likely to be stunted while children from Adjumani or Moyo were less likely to be so. A mother's or head of household's education (primary or higher) seems to decrease a child's odds of stunting in West Nile region while in Mid-North mother's education must be at least secondary level for the same effect. In addition, children from Omoro and Kole districts, or alternatively from Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts were less likely to suffer from chronic malnutrition.

Similarly to wasting, a dominant pathway to stunting across three regions appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate access to sanitation facilities exposes a child to the environmental contamination, low utilisation of health services may delay and/or impede the adequate treatment in case of infection, the repetition of which may result in undernutrition. According to the available data, a child in West Nile region, living in the household where the toilet was not in a dwelling/plot/yard, had higher odds of stunting while a child in Karamoja or West Nile region with an access to a latrine was less susceptible to stunting. In addition, a child in West Nile region with an access to an unsafe water point was more likely to be stunted while a child in Karamoja region, living in a household using more than 15 litters of water per capita, had lower odds of stunting. This highlights the effect of limited water access on the incidence of stunting, which most likely accentuates the impact of inadequate access to sanitation facilities. While this relationship was hinted at in the pathway for wasting, it came out more strongly in relation to stunting.

On the health-seeking side, access to village health teams as the first treatment choice seemed to decrease a child's odds of stunting in Karamoja region, while a positive effect of DPT vaccination and deworming was observed in West Nile. Children suffering from malaria, diarrhoea or acute respiratory infection in Karamoja region were more likely to be diagnosed as chronically malnourished.

A complementary pathway to stunting across the three regions seems to take have its roots in low female decision-making powers, which influence household's access to a variety of income sources and eventually its access to food. This translates into an inadequate food intake of children under five years of age and consequently into stunted growth and development. In Karamoja region, a child living in a household in which a woman took decisions on livestock production, was less likely to be stunted while a child in the same region, living in a household where this decision was shared between husband and wife, was more likely to be chronically malnourished. In addition, a child in West Nile region, living in a household where other members of the household took decisions on poultry production, demonstrated higher odds of stunting.

At the level of limited access to income, a child in West Nile region, living in a household, which identified the physical inability or sickness as the key constraint to farming, had higher odds of stunting. The same applied to a child in Karamoja and Mid-North regions, living in a household with a charcoal sale as a primary source of income, highlighting a potential higher vulnerability of the household to poverty. On the other hand, a child in Karamoja and West Nile regions, living in a household with formal employment and livestock sale as primary sources of income, suggesting a certain stability of income, was less likely to suffer from chronic malnutrition. The same applied to a child in West Nile region, living in a household with primary income from trade.

The stability of income could eventually translate intoa household's coping strategies as children in Karamoja and West Nile regions living in households deploying coping strategies more frequently,

were more likely to be stunted. Similarly to wasting, a child from Karamoja or West Nile regions, living in the household, which uses income for the purchase of alcohol and tobacco and/or alternatively for celebrations,[142] was more likely to be stunted, thus suggesting the non-beneficial use of income for child development. It is important to note that the minimum meal frequency was observed as a protective factor against stunting in Karamoja region, thus implying that an adequate use of income for optimal infant and young child feeding is beneficial in this context.

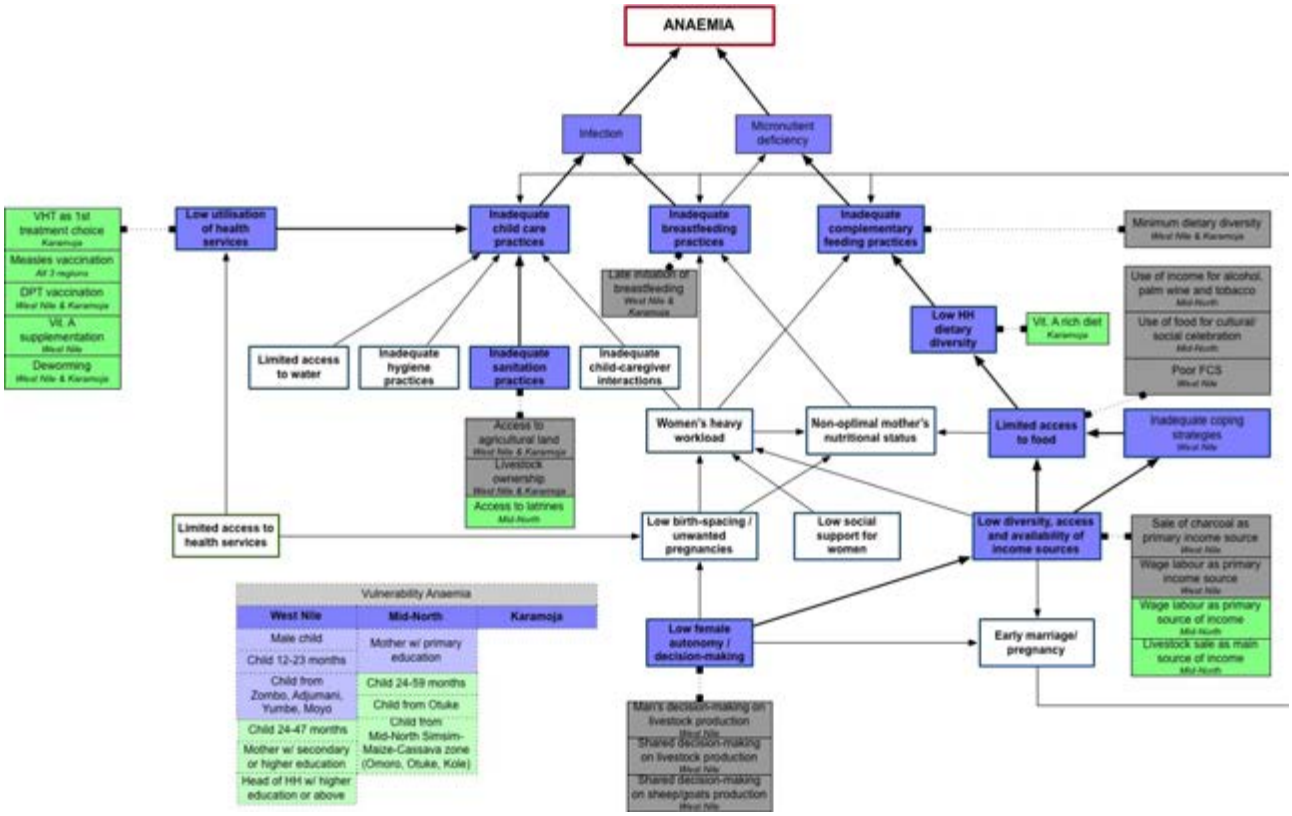


Figure 34: Simplified causal pathway for anaemia for the entire study area[143]

The most vulnerable group to anaemia in West Nile region were male children aged 12-23 months, living in Zombo, Adjumani, Yumbe or Moyo districts, which partially overlaps with home district vulnerability for stunting, as explained above. On the other hand, a child aged 24-47 months was less likely to be stunted while mother's or head of household's education (secondary or higher) seems to decrease child's odds of anaemia in the region. This proved true in Mid-North region too as a child, whose mother attained primary education only, was more likely to be anaemic. However, a child above 24 months, living in Otuke or, alternatively, in Mid-North Simsim-maize-cassava zone in Omoro, Otuke and Kole districts was less likely to be anaemic. This coincides with lower vulnerability to stunting in the same livelihoods zone.

Similarly to wasting and stunting, a dominant pathway to anaemia across three regions appears to be a combination of inadequate child care practices and low utilisation of health services. While the inadequate sanitation practices expose a child to environmental contamination, low utilisation of health services may delay and/or impede adequate treatment in case of infection, the repetition of which may result in undernutrition. While access to a latrine in Mid-North region mirrors identical

142 Karamoja region only.

143 Dark purple cells represent risk factors presenting a significant statistical association with anaemia (p 0.05) (See Annex 4). Cells highlighted in light purple signify risk factors with a potential link to anaemia (p <0.1) Cells in dark/light green represent protective factors with a significant and/or potential statistical association with anaemia.

triggers in wasting and stunting pathways explained above, it is the livestock ownership and access to agricultural land in Karamoja and West Nile regions, which suggest a harmful link with anaemia. While this may appear counter-intuitive from a food security perspective, it is likely that children living in households dependent on agricultural production are more exposed to environmental contamination through their proximity with animals, which may lead to (repetitive) infections.

On the health-seeking side, similarly to a stunting pathway above, access to village health teams as the first treatment choice seemed to decrease a child's odds of anaemia in Karamoja region, while a positive effect of measles vaccination was observed in all three regions; DPT vaccination and deworming demonstrated a protective relationship against anaemia among children from West Nile and Karamoja regions while Vitamin A supplementation proved useful in West Nile.

A complementary pathway to anaemia across three regions seems to take have its roots in low female decision-making powers, which influences a household's access to a variety of income sources and eventually its access to food. This translates into an inadequate food intake of children under five years of age and consequently into a micronutrient deficiency. In West Nile region, a child living in a household in which a man took decisions on livestock production or such decision-making was shared, was more likely to be anaemic.

At the level of limited access to income, a child in West Nile region, living in a household with a charcoal sale or wage labour as primary sources of income, was more likely to be diagnosed with anaemia while the latter risk factor seemed to have a reverse effect in Mid-North region. The access to income could eventually play into a household's coping strategies as children in West Nile region, living in households deploying coping strategies more frequently, were more likely to be anaemic. Similarly to wasting and stunting, but this time in Mid-North region, a child living in the household which uses income for the purchase of alcohol and tobacco and/or alternatively for celebrations, was more likely to suffer from anaemia, thus suggesting the non-beneficial use of income for child development. It is important to note that the minimum dietary diversity was observed as a protective factor against anaemia in West Nile and Karamoja regions, thus implying that an adequate use of income for optimal infant and young child feeding is beneficial in this context.

Overall, the biggest differences between overarching pathways can be observed at the level of limited access to water, which plays a considerable role in the stunting pathway, while it is rather absent on pathways for wasting or anaemia. Similarly, an early initiation of breastfeeding seems to intervene on wasting and anaemia pathways but it is absent on the pathway for stunting. Other risk factors are largely applicable for all three regions while regional differences exist and have been accounted for in this report. These variations highlight the necessity of adapting future interventions with respect to a region and/or nutritional deficiency, which they will aim to address. However, based on these findings, the following activities are recommended to be considered for an incorporation into current/future programming.

DOMINANT PATHWAY RECOMMENDATIONS

Dominant pathway recommendations are applicable to the entire study zone and address the risk factors, which were ranked the highest during the Link NCA study. They should be addressed with the highest priority.

1. Encourage the construction of family latrines using methodological approaches, which proved previously successful in the Ugandan context, including trainings and sensitisation activities adapted to context, typical income, lifestyle and concerns;
2. Improve access to water through construction of new and/or maintenance of existing water points using existing structures and mechanisms to ensure their proper long-term utilisation

(e.g. water committees, district water departments, etc.). Special attention should be paid to historically or seasonally water-stressed areas;

3. Improve water treatment management at water point and household levels, including the use of appropriate water treatment options and effective water transportation and storage practices to ensure water safety before use;
4. Encourage the creation of baby-friendly play spaces and their appropriate maintenance to decrease potential contamination with the surroundings, especially in households rearing livestock (cattle, sheep/goats, poultry);
5. Strengthen the sensitisation of mothers as well as other family members on appropriate hygiene and sanitation practices, especially in households, where a mother and/or a head of household attained maximum primary education. Special attention should be paid to hand-mouth contamination by unaccompanied infants;
6. Increase the coverage and capacity of village health teams to ensure the continuous sensitisation of communities, while teaching them how to adapt behaviour change communications to address frequently experienced barriers to change in their community;
7. Increase the capacity of village health teams to screen and treat common childhood diseases (e.g. diarrhoea, malaria, acute respiratory diseases) by increasing their technical and financial support;
8. Improve the utilisation of health facilities by improving the quality of provided services, especially via continuous capacity building of health facility personnel and constant availability of medicinal products, especially in remote rural areas;
9. Ensure regular mass immunisation, deworming and Vitamin A supplementation campaigns, especially in remote rural areas. This may include a revitalisation of growth promotion and nutritional assessments for children under five years of age at health facility and community levels.

COMPLEMENTARY PATHWAY RECOMMENDATIONS

Complementary pathway recommendations are applicable to the entire study zone to a varying degree and address the risk factors, which were ranked relatively high during the Link NCA study, but lower than the dominant pathway risk factors. They should be addressed with the medium priority.

1. Strengthen the sensitisation of households on advantages of joint-decision making for the advancement of household and more equitable division of responsibilities in order to reduce high parental workload and stress;
2. Support the creation and/or capacity building of external support groups for both men and women in order to strengthen existing social support mechanisms, putting particular emphasis on emotional support and stress relief, while creating beneficial business and market linkages;
3. Support the diversification of income opportunities through livelihood zone-appropriate revenue streams, including agricultural production schemes, adapting assistance modalities to target hardship during lean periods. This may include improved access to information and agricultural financing, promotion of diversified, fortified and/or bio-fortified, seeds for planting, improvement of market infrastructure for agricultural outputs, adaptation of agricultural practices to climate change and/or promotion of training in off-farm income generating activities;
4. Promote the use of improved processing technologies to improve shelf life and quality of stored food. This may include community sensitisation on improved storage facilities and food stock management to ensure the continued availability and access to food throughout the year;
5. Promote the use of household income beneficial for maternal and child health, including cash

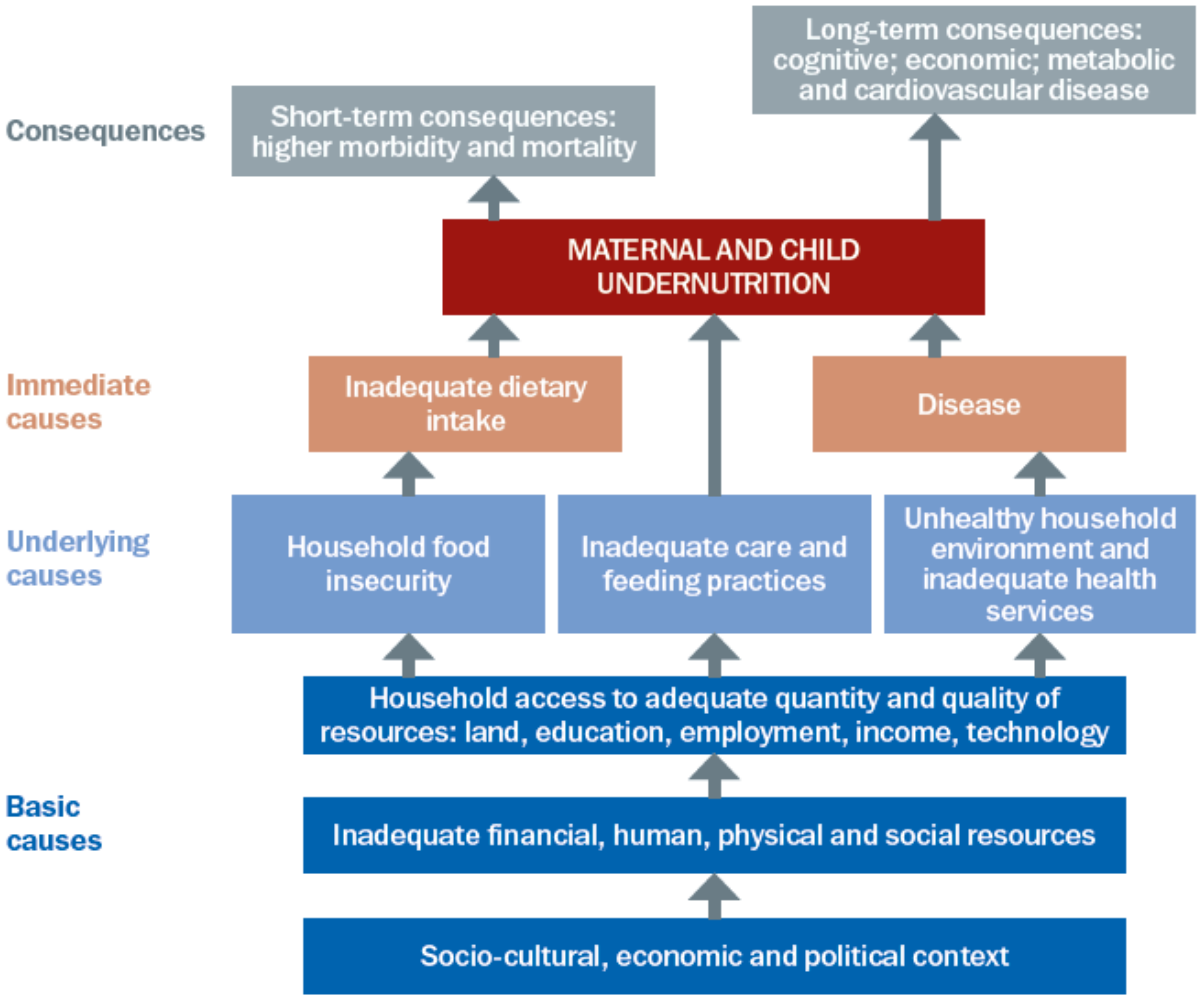
management and saving schemes for emergency spending. This may include the sensitisation of households on the use of income for alcohol, tobacco and cultural celebrations with a potential effect on child's growth and development;

6. Strengthen the sensitisation of households on adequate infant and young child feeding practices with special attention paid to food hygiene, meal frequency and dietary diversity. This may include general sensitisation on household nutrition, promoting vegetable production and consumption of a diversified diet;
7. Promote appropriate birth-spacing and family planning practices, especially among adolescents, by facilitating access to relevant health, education and/or youth services responsible for relevant information sharing, support and provision of suitable means of contraception to target groups. This may include nation-wide sensitisation campaigns aiming to destigmatise family planning among men, ensuring that they engage constructively in the respective decision-making.

ANNEXES

I. UNICEF CONCEPTUAL FRAMEWORK

Figure 1. Conceptual framework of the determinants of child undernutrition



Reference
UNICEF. Improving Child Nutrition. New York, United Nation's Children's Fund (UNICEF), 2013.

II. DETAILED SAMPLING FOR QUALITATIVE INQUIRY

West Nile Region							
Livelihood Zones	**Characteristics**	**Major hazards / challenges**	**Districts in LZ**	**Selected district and justification**	**Sub-counties in the selected district**	**Parishes in sub-county**	**Selected village**
Tobacco Cassava Sorghum Zone	Mixed cropping zone with much of the land reserved for cash crop production. Cash crops include tobacco, cassava and g.nuts, while food crops include cassava, millet, sorghum	Livestock vectors and diseases Prolonged dry spell Flooding Erratic rainfall Poor transport services	Koboko, part of Yumbe	**Koboko** • Recurrent droughts • Refugee hosting district	Midia Koboko TC, Kuluba, Lobule, Ludara	Dricile- Midia, Kingaba, Aunga, Ginyako, Leiko	Kingaba
West Nile Simsim Sorghum Livestock Zone	Has both refugee and host community; need for both nutrition causal pathways Host community livelihoods based on a combination of crop and livestock production. Has bi-modal rainfall and fertile clay soils. Rain-fed agricultural production for sorghum, cassava, simsim, pigeon pea, maize & cotton. Main livestock are poultry, ruminants, cattle. Main source of income is crop sales and main food source in own production	Crop pests & diseases Livestock vectors & diseases Low cotton prices Prolonged dry spells	Adjumani, Moyo, part of Yumbe, Nebbi, part of Arua, Maracha, Refugee settlements	**Nebbi** • Less humanitarian interventions • Semi-arid land • Poor health facility coverage • Recurrent food insecurity • Issues of alcoholism • Cross-border trade with Congo via Zombo	Akworo , Erussi , Kucwiny, Nebbi , Nebbi TC, Nyaravur , Pakwach , Pakwach TC, Panyango T/C, Panyimur, Parombo & Wadelai	Pawong, Kalowang, Koch	Achora, Goli, Jupudongo, Jupuyik, Japakeno, Jupukok, Obiya, Boma East, Jupamagwar, Jupungo, Pariko, Boma West, Jupathombu, Jupunyak, Patongo
				Moyo • Issues of sanitation • Poor dietary diversity • High malnutrition • Refugee hosting district	Aliba, Dufile, Gimara, Itula, Lefori, Metu, Moyo, Moyo TC	Dufile, Laropi, Oraa, Panyanga	Nzerea North

West Nile Arabica Coffee Banana Zone	Mixed crop production zone with crops being main food and cash income sources. Main crops are banana, coffee and vegetables. Livestock sales and casual labour supplement cash crop income. Market access is good, making trade easier	Prolonged dry spells Crop pests and diseases	Zombo, part of Arua	**Zombo** • Only district available for selection • Erratic rainfall leading to flush floods	Abanga, Atyak, Jangokoro, Kango, Nyapea, Paidha, Paidha TC, Zeu	Abeju, Abira, Oyeyo, Paley	Patek
Albertine West Nile Low Land Cattle Zone	Not included in the sampling frame; LZ is minor in the region		Adjumani (Extreme north of the district)		Part of Adropi		
Mid-North							
Livelihood Zones	**Characteristics**	**Major hazards / challenges**	**Districts in LZ**	**Selected district and justification**	**Sub-counties in the selected district**	**Parishes in sub-county**	**Selected village**
Simsim Groundnut Sorghum, Cattle Zone	Mainly crop production and limited livestock keeping. Main food crops are sorghum, finger millet and pigeon peas; main cash crops are simsim, groundnuts and sorghum. Good proximity to trading centres for most households and trade with South Sudan	Prolonged dry spells Crop pests and diseases Flooding	Pader, part of Kitgum	**Pader** • Only district available for selection	Acholibur, Puranga, Pader, Pajule, Pader TC, Ogom, Latanya, Lapul, Laguti, Kilak, Awere, Atanga, Angagura	Gojan, Kal, Lawiyeadul, Ngoto, Opatte	Lapul Ocwida
					Lapul	Ato, Koyo, Lukaci, Ogole	Labongo

Mid-North Simsim Maize Cassava Zone	Zone cuts across Acholi and Lango regions. Major source of food and income is crop production, supported by the generally flat topography and predominantly fertile sandy loam soils. Livestock production, charcoal burning, quarrying and wild gathering support the little income from crop sales. Main crops grown are cassava, sorghum and millet, maize and beans	Prolonged dry spells Crop pests & diseases Livestock vectors and diseases Flash floods and water logging	Omoro (Acholi region) Otuke, Kole (Lango region)	**Omoro** • Only district available for selection from Acholi region, under this LZ	Koro, Ongako, Bobi, Lakwana, Lalogi, Odek, Omoro TC Odek – food insecurity, nodding syndrome, high malnutrition	Binya, Lamola, Palaro, Lukwor	Aromo
				Otuke • More frequent food insecurity crises than Kole	Adwari, Okwang, Olilim & Orum	Amunga, Anepkide, Angetta, Atira, Gotojwang, Ogwete	Apoke
Karamoja Region							
Livelihood Zones	**Characteristics**	**Major hazards / challenges**	**Districts in LZ**	**Selected district and justification**	**Sub-counties in the selected district**	**Parishes in sub-county**	**Selected village**
North-eastern Highland Apiculture & Potato Zone	Bee keeping and Irish potato growing are main sources of livelihood for the population. Of recent maize production has been adopted. The fertile loam soils with alluvial soils that flow from the hills, and modest rainfall that ranges 850-1500mm per annum support agriculture	Cattle raids, Cross border conflicts, Crop pests and diseases	Kaabong	**Kaabong** • Only district available for selection	Kamion, part of Kalapata, part of Kathile & part of Lodiko	Kamion, Lokwakaramoe, Timu	Lochoto

South-eastern Cattle Maize Zone	Inhabitants of the zone are naturally agro-pastoralists. Recent diversification to grow sorghum, sweet potatoes, sunflower and beans; besides maize. Zone has fertile sandy-clay soils and fertile volcanic soils that support crop agriculture. Long dry spells force pastoralists to practice nomadism	Prolonged dry spells, Crop pests and diseases, Livestock vectors and diseases, Flooding, Cattle theft	Amudat, part of Moroto, part of Nakapiripirit	**Amudat** • Whole district is South-eastern Cattle Maize Zone • Cultural perspective unique from the other two districts • Lowest latrine / toilet coverage in the zone and Karamoja region	Karita, Amudat, Amudat TC, Loroo	Karita, Lokales, Losidok	Moron
Western Mixed Crop Farming Zone	Rain-fed agriculture, intercropping, hand digging and animal traction. Zone has fertile soils and receives more rainfall than the other zones.	Prolonged dry spells, Livestock vectors and diseases, Wind, Sanitation problems, High malaria prevalence, Crop pests and diseases, Social conflicts	Karenga, part of Abim, part of Kotido, part of Nakapiripirit, part of Napak	**Napak** • Poor sanitation • Low levels of education • Low school attendance 37%	Iriiri, Nabwal, Lorengecora, Apeitolim & part of Matany (Poron resettlement area)	Iriiri , Tepeth, Nabwal,	Kaurikiakine
Sorghum and Livestock Zone	Zone found in driest belt of the region, with low food production and income strategy diversification. Zone faces recurrent dry spells and food insecurity crises	Prolonged dry spells, Conflicts & cattle theft, Crop pests and disease, Livestock vectors & disease, Wild animals, Wild fires, Rodents, Wind, Flooding / water logging	Part of Abim, part of Kaabong, part of Kotido, part of Moroto, Nabilatuk, part of Napak	**Kotido** • District has high rates of malnutrition and stunting (GAM – 18.5%, Stunting 35.4% in June 2017; Anaemia 74% in Jan 2018) • More frequent food insecurity crises • Flash floods in 2018 and 2019	Kotido s/c, Kotido municipality, Nakapelimoru, Panyangara, and Rengen	Nakwakwa, Lopuyo, Maru, Kotyang, Naponga, Lokadeli, Nakoneto	Loodoi

III. QUALITATIVE STUDY GUIDE

Interview Guide: Health

1. How would you describe a healthy child? Are children on these images healthy? (Cf. Child illness flashcards)
2. Are these illnesses present in your community? Which ones are the most widespread? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria)
3. Do they differ by season? (Cf. Seasonal calendar)
4. How have they changed over the past 10-15 years? (Cf. Historical calendar)
5. What are the causes of these illnesses? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria)
6. How are these illnesses treated? (Cf. Health journey/Therapeutic itinerary) (NB: Trace for each cause independently. Inquire about differences during dry/rainy season)
7. Have the treatment options changed in the past 10-15 years? (Cf. Historical calendar)
8. How do you decide which treatment to choose? Who gives you advice?
9. What traditional treatments exist in and around your community? Which ones do you use? (NB: If not mentioned, ask specifically about the holy water.)
10. How do you care for a sick child? (PROBE: Do you breastfeed a sick child? Why/Why not? Do you feed him/her less/more? What types of food cannot be fed to a sick child? Why?)
11. Are some children in your community sicker than others? Do you know why? How would you describe them?
12. What do you do to keep your child healthy? How much effort does it take to do it every day?
13. Where is the nearest health post/health centre/hospital? How long does it take you to get there? Does your access change by season? (Cf. Seasonal calendar)
14. How much does it cost to get there? How much does the treatment cost? Are medicines readily available?
15. What are health post's opening hours? Is the staff available when there is an emergency? How do you contact them?
16. What kind of services are available in the nearest health post? Which ones do you use? Why?
17. Does the staff know how to treat illnesses, which are frequent in your community? Do they speak your language? Are they kind?
18. What motivates you to seek treatment in the health post? What discourages you to do so? (PROBE: quality of health care, staff absence, lack of drugs, decision-making power, work-load, distance to the health facility, etc.)

Perceptions of interventions

19. Have you tried to address these problems individually/collectively on a community level? If so, how?
20. Have there been any projects that attempt/attempted to address problems related to health/access to health facilities?
21. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
22. How do you think they could be improved? (SOLUTIONS)
23. Are there any obstacles to make it happen? (OBSTACLES)

24. What could be done on your side? (LOCAL CAPACITIES)
25. What do you need to make it happen? (NEEDS)
26. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
27. Who should be targeted by this action in priority? Why?

Interview Guide: Malnutrition

1. What do you think of children on these photos? Are children on these images healthy? Why/Why not? (Cf. Photos of wasted children (Marasmus/Kwashiorkor) + stunted children)
2. Which illness are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?
3. What are the causes of this illness? What are the reasons a child would become like this?
4. What do you think of this illness? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
5. Do you have children like this in your community? If yes, which type is most common?
6. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)
7. Do you think your child can become like this? Why/Why not? (PROBE: What behaviours/practices can induce/prevent this condition?)
8. Do you think you can become like this? Why/Why not?
9. Do you know any women in your community who are like this? If so, why do you think they are like this?
10. During which season/month do you observe more children to be like this? (Cf. Seasonal calendar)
11. Since when have children in your community been suffering from this illness? (Cf. Historical calendar)
12. How do you treat this illness in your community? (Cf. Health journey/Therapeutic itinerary) (PROBE: What is the most common treatment? Why?)
13. What do you do to keep your child healthy?
14. What challenges do you face to keep your child healthy? During which seasons/months, does it become more difficult?
15. **Storytelling:** *XX has a daughter that was born two years ago. She was breastfeeding her during the first year and then started to give her food, which she prepared for the rest of the family. During the fasting period, she would not give her daughter to eat during the day because all people in the household need to fast together. Her daughter started to lose weight and was no longer interested to play with other children. XX decided to take her to a religious leader to cure her daughter with the holy water. However, her daughter was not getting any better.* What do you think of this story? Did XX make good decisions? Why/why not? What would you do differently? What would you suggest XX does next?
16. **Storytelling:** *XX has a little boy. She was breastfeeding him for a few months but then she became pregnant again when he was only five months old. After that she stopped breastfeeding and started to give him food that she prepared for the rest of the family. XX's husband migrated to the city for a few months and she did not seem to have enough food for all her children. XX heard that the health centre distributes food in little packets to children if their arms are small enough. One day, when going to the market, she decided to try her luck. The little packets would allow her to feed her children before her husband comes back.*

What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently?

Perceptions of interventions

17. Have there been any projects that attempt/attempted to address problems related to malnutrition?
18. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
19. How do you think they could be improved? (SOLUTIONS)
20. Are there any obstacles to make it happen? (OBSTACLES)
21. What could be done on your side? (LOCAL CAPACITIES)
22. What do you need to make it happen? (NEEDS)
23. Which solution should have the greatest priority? What is the most important action to be taken?
24. Who should be targeted by this action in priority? Why?

Interview Guide: Nutrition

1. What is a staple food in your community (what do you eat most?) How many times a day do you eat?
2. Have there been any changes to your eating habits in the past 10-15 years? (Cf. Historical calendar)
3. Are there any changes to your eating habits throughout the year? (Cf. Seasonal calendar)
4. What do you normally eat during a fasting period? (Cf. Meal composition chart)
5. What do you normally eat throughout a day during a non-fasting period? (Cf. Meal composition chart)
6. Would you like to eat differently? If so, how? Why/Why not? (Cf. Meal composition chart)
7. Who decides what you eat?
8. Are eating habits the same for children/pregnant and lactating women? Why/Why not?
9. What foods cannot be eaten by children/pregnant and lactating women? Why/Why not?
10. What foods cannot be eaten by girls/boys? Why/why not?
11. **Storytelling:** *XX is 19 years old. She married about three years ago. She is now pregnant with her second child. It is now the fasting period and she respects the custom together with her husband. However, she noticed she has been feeling weaker and feels sometimes sick throughout the day. She went to the health centre and the staff encourages her to eat to help the baby to grow. When she told her husband that she needs to eat to stay healthy, he refused. What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently? Is the situation applicable to lactating women as well?*
12. What foods do you consider healthy? Why?
13. Do you have access to this food in your community? Where do you access it? (PROBE: food aid/own production/purchase)
14. Does the access change at any time during the year? (Cf. Seasonal calendar)
15. Has the access changed in the last 10-15 years? (Cf. Historical calendar)
16. Do you have enough food to feed your household throughout the year?
17. Has this changed in the last 10-15 years? (Cf. Historical calendar)

18. What do you think about meals of two children on the picture? (Cf. Images of balanced/unbalanced meal)
19. What do you think about meals of two children on the second picture? (Cf. Images of meal portions)
20. How would you divide this food among your family? Does the family eat together or in a specific order?
21. **Storytelling:** *XX has a husband and 5 children. Parents of her husband live with them. Her husband gave her 5000/= to prepare an evening meal. XX bought some millet flour but it will not be enough for the whole family. During the dinnertime, she set aside a plate for her husband and his parents. She gave the rest of the meal to her eldest children, two boys. XX and her three little girls went to bed hungry. What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not*? What would you do differently?

Perceptions of interventions

22. Have there been any projects/organisations that attempt/attempted to address problems related to nutrition?
23. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
24. How do you think the projects can/ could have been improved? (SOLUTIONS)
25. Are there any obstacles to make it happen? (OBSTACLES)
26. What could be done on your side? (LOCAL CAPACITIES)
27. What do you need to make it happen? (NEEDS)
28. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
29. Who should be targeted by this action in priority? Why?

Interview Guide: Breastfeeding & Complementary Feeding

1. How does your daily routine with a baby look like? (Cf. IYCF & Care practices flashcards)
2. Does your routine change at any one time during the week? If so, how?
3. Does your routine change at any one time during the year? If so, how? (Cf. Seasonal calendar)
4. Has the daily routine changed in the past 10-15 years? Do you do things differently than your parents/grandparents? Explain. (Cf. Historical calendar)
5. Would you like the daily routine to change? If so, how? Why?
6. Does someone help you with child caring? If so, when (daily/weekly/sporadically)?
7. How are fathers involved in child caring activities? How do you feel about their involvement? (sufficient/not sufficient?) Why?
8. What challenges do you face when caring for your children? (PROBE: lack of knowledge/resources/time/other.)
9. **Storytelling:** *XX is 25 years old. She has four children. The last one was born three months ago. She is breastfeeding him when she is at home in the mornings and in the evenings. In between she has lots of activities in the village (fetching water, collecting firewood, going to the market, working in the field) and she does not bring her baby with her. She leaves the baby with her mother-in-law. A few weeks ago she went to the health centre and the staff told her to breastfeed her baby on demand in order for the baby to grow well. She is afraid that the baby*

will grow fat and somebody will give it a bad eye. She prefers her baby to stay the way he is. In addition, she has so many things to do! She can't possibly carry the child around the whole day! What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently?

Agree/disagree game (+DEBRIEFING) new session separate from the above story.

10. When my baby is born, the first thing I give him to drink is the holy water.
11. When my baby is born, I wash him up and put him to sleep.
12. When my baby is born, I breastfeed him immediately.
13. When my baby is born, the first milk in my breasts is not good. I throw it away.
14. When my baby is born, I take him to a religious leader for a blessing.
15. When I breastfeed, I also give my baby some water because it is very hot and the baby is thirsty!
16. When I breastfeed, I also give my baby some cow/goat milk.
17. When I breastfeed, I do not have enough milk to keep my baby happy.
18. When I breastfeed, I feel weak.
19. When I breastfeed, my breasts hurt.
20. When I breastfeed, I eat more.
21. When I breastfeed, I do not fast.
22. When I get pregnant, I stop breastfeeding.
23. When I work, my milk is hot and I cannot breastfeed my baby.
24. I start giving some food to my baby when he is 4 months old.
25. I start giving some food to my baby when he is 8 months old.
26. I cook special meals for my baby.
27. I feed my baby the food I prepared for the whole family.
28. During meals, I help my baby to eat.
29. During meals, it is older children who help my baby to eat.
30. When my baby does not want to eat, I do not force him.
31. When my baby cries, I take him into my arms to calm him down.
32. When my baby cries, I give him something to eat.
33. When my baby cries, I give him something to drink.
34. When my baby cries, I leave him to calm down by himself.

Risk game (+DEBRIEFING) - identifying risk behaviours' through their actions

35. Breastfeeding on demand.
36. Breastfeeding when a woman is pregnant.
37. Breastfeeding when a woman is hot or ill.
38. Eating little during breastfeeding.
39. Fasting during breastfeeding.
40. Giving holy water to the baby before he is 6 months old.
41. Giving water to the baby before he is 6 months old.
42. Giving tea to the baby before he is 6 months old.
43. Giving family food to the baby.
44. Giving food to my baby during the fasting period.

45. Leaving a baby with older siblings.
46. Leaving a baby with his grandmother/grandfather.
47. Raising a voice or slapping a baby when he does something wrong.

Courage to change (+DEBRIEFING) - change to proper IYCF practices

48. Early initiation of breastfeeding.
49. Exclusive breastfeeding till 6 months of age.
50. Breastfeeding on demand.
51. Feeding baby during a fasting period.
52. Preparing special meals for babies.
53. Non-fasting during breastfeeding.
54. Non-fasting for children under 5 years of age.
55. What do you normally feed your baby throughout a day during a fasting period? (Cf. Meal composition chart)
56. What do you normally feed your baby throughout a day during a non-fasting period? (Cf. Meal composition chart)
57. Would you like to give him something else? If so, how? Why/Why not? (Cf. Meal composition chart)
58. Have the eating habits for children changed in the past 10-15 years? Do you do things differently than your parents/grandparents? Explain. (Cf. Historical calendar)
59. **Storytelling***: XX has a little boy. He is very active. He likes to play. He likes to run. Sometimes he is really naughty. As XX's husband migrates to find work, XX stays alone with her little boy. She is now pregnant with her second child. This morning the little boy woke up very energetic. He sings and jumps around. XX has just returned from the water source and put a jerry can next to the door. As the little boy was running around, he knocked the jerry can over and spilled the water. XX was really upset and slapped him for being naughty. What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently?*

Perceptions of interventions

60. Have there been any projects that attempt/attempted to address problems related to breastfeeding and complementary feeding?
61. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
62. How do you think the projects can/ could have been improved? (SOLUTIONS)
63. Are there any obstacles to make the solutions happen? (OBSTACLES)
64. What could be done on your side? (LOCAL CAPACITIES)
65. What do you need to make solutions happen? (NEEDS)
66. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
67. Who should be targeted by this action in priority? Why?

Interview Guide: Marriage, Pregnancy & Birth spacing

1. At what age do young men marry in your community? What is the usual age of women they are marrying? Do you consider it problematic? Why/Why not? What are the reasons for mar-

rying at that age?

2. **Storytelling:** *XX is 15 years old. She has 7 other siblings and she is the oldest one. There has not been enough rain in the past year where she lives. The harvest is very low, it barely lasted one month. XX's parents sold two oxen, which they had, to sustain their family for some time. They think XX should marry so they have less stomachs to feed. Plus, the dowry could help the rest of the family to survive before the next harvest season. What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? If you were XX's parents, what would you do differently?*
3. Are there other reasons for early marriage in your community?
4. **Storytelling:** *XX is 16 years old. She is beautiful and kind and many boys are interested in marrying her. She has an eye on a young man that does not live too far from her house. They have known each other since they were little children. One day, when XX's parents go to the field, XX stays at home looking after her little siblings. A young man comes for a visit and they display the affection for each other for the first time. Two months later, XX realises that she is pregnant. What do you think of this story? Does this happen in your community? Why do you think it happens? How does the community perceive sexual relations outside the wedlock (before marriage/during marriage? What would you do if you were XX? What would you do if you were XX's parents?*
5. When do you think a girl is ready to be a mother (physically and emotionally?)
6. Who advises women, and especially adolescent girls, during pregnancy?
7. Do couples in your community have disagreements during the marriage? Are they frequent? How are they handled? What is the cause of these disagreements?
8. How many children do people in your community usually have? Why?
9. **Storytelling:** *XX is 28 years old. She married her husband 12 years ago. Since then, she gave birth to a child almost every year. Out of 10 children, 3 died rather young. XX's husband wants to replace them so that they have enough people to work in the fields. XX does not want any more children, she is tired of successive pregnancies. She is afraid to tell her husband that she does not want any more children because he says they are a gift from God. What do you think of this story? Can this happen in your community? Why do you think it happens? What do people think about birth spacing? Is a woman involved in a decision on a number of children? Why/why not? What would you do if you were XX?*
10. What is a usual birth gap in your community? How do you feel about it? (Short/adequate/long) Why?

Agree/disagree game (+DEBRIEFING)

11. When I am pregnant I go to a health centre for a check-up.
12. When I am pregnant I go to a religious leader for a blessing.
13. When I am pregnant I go to a traditional healer to make sure my baby develops well.
14. When I am pregnant I do not go to a health centre because it is too far.
15. When I am pregnant I do not go to a health centre because the staff is seldom there.
16. When I am pregnant I do not go to a health centre because I am afraid they will make my baby to grow big.
17. When I am pregnant I do not go to a health centre because they give me advice I cannot follow.
18. When I am pregnant I do not go to a health centre because I do not have money.
19. When I am pregnant I do not go to a health centre because I do not have time.
20. When I am pregnant I eat more so that my baby can grow.

21. When I am pregnant I eat less because I do not feel well.
22. When I am pregnant I eat less because I am afraid my baby will grow big.
23. When I am pregnant I fast.
24. When I am pregnant I work as usual.
25. When I am pregnant I work less.
26. I prefer to give birth at home.
27. I prefer to give birth at a health centre.
28. After birth I rest for at least 6 weeks.
29. After birth I resume my activities after a few days.

Risk game (+DEBRIEFING)

30. Young woman having a baby at 15 or 16 years of age.
31. Woman having a baby at 30 years of age.
32. Woman having a baby every twelve months.
33. Woman getting pregnant when breastfeeding a baby.
34. Woman not attending prenatal care services at a health centre.
35. Woman fasting when pregnant.
36. Woman working during pregnancy.
37. Woman giving birth at home.
38. Woman working after giving birth.

Courage to change (+DEBRIEFING)

39. Having a first child at 18 years of age.
40. Having children about two years apart.
41. Having less children.
42. Use different contraception means.
43. Attending prenatal care at health centre.
44. Not fasting during pregnancy.
45. Not working during pregnancy.
46. Not fasting during breastfeeding.

Perceptions of interventions

47. Have there been any projects/organisations that attempt/attempted to address problems related to birth-spacing?
48. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
49. How do you think they could be improved? (SOLUTIONS)
50. Are there any obstacles to make it happen? (OBSTACLES)
51. What could be done on your side? (LOCAL CAPACITIES)
52. What do you need to make it happen? (NEEDS)
53. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
54. Who should be targeted by this action in priority? Why?

Interview Guide: Women's Workload & Social Status

1. How does your daily routine look like? (Cf. Daily activities chart)
2. Does your routine change during the year? If so, how? (Cf. Seasonal calendar)
3. How do you perceive your workload? How does it make you feel?
4. When do you feel most busy or tired? What do you do when you feel that way? Do you have someone to help you?
5. Has the daily routine changed in the past 10-15 years? Do you do things differently than your parents/grandparents? Explain. ? (Cf. Historical calendar)
6. Are there differences in daily routines among different households? If so, what differences? What characterises these households?
7. How does your daily routine vary from that of men?
8. Can women in your community make decisions on their own? If so, what can you decide on your own? (PROBE: schooling, marriage, HH expenses, meal composition, daily activities, workload, rest after childbirth, health treatment in case of illness, family planning?)
9. Does your decision-making power change when your husbands migrate? Who takes decisions in his absence?
10. Have you been in a situation where you were not satisfied with the decision that was made in relation to you? Explain. How did you feel?
11. If you have a problem, who do you go to help you? What was the most recent situation when you needed someone's help? Explain.
12. What possible contributions do women make in your community? (PROBE: What roles can young women aspire to play in their community when they grow up?)
13. How do you feel about those possibilities/contributions – are they sufficient? If not, what is lacking? What would you like to change/do differently? What is preventing you from doing so?
14. Do you feel safe in your community? Has there been any change in community relations in the past 10-15 years? (Cf. Historical calendar)
15. What activities do you usually engage in with other community members? Are there any occasions that you celebrate together? (Cf. Seasonal calendar)

Perceptions of interventions

16. Have there been any projects/organisations that attempt/attempted to address problems related to your workload or decision-making?
17. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
18. How do you think they can/could be improved? (SOLUTIONS)
19. Are there any obstacles to make it happen? (OBSTACLES)
20. What could be done on your side? (LOCAL CAPACITIES)
21. What do you need to make it happen? (NEEDS)
22. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
23. Who should be targeted by this action in priority? Why?

Interview Guide: Men's Workload & Social Status

1. How does your daily routine look like? (Cf. Daily activities chart)
2. Does your routine change during the year? If so, how? (Cf. Seasonal calendar)
3. How do you perceive your workload? How does it make you feel?
4. When do you feel most busy or tired? What do you do when you feel that way? Do you have someone to help you?
5. Has the daily routine changed in the past 10-15 years? Do you do things differently than your parents/grandparents? Explain. ? (Cf. Historical calendar)
6. Are there differences in daily routines among different households? If so, what differences? What characterises these households?
7. How does your daily routine vary from that of women?
8. Did you attend school when you were younger? What are the reasons why boys do not go to school in your community? What are the reasons why they drop out from school?
9. Can women in your community make decisions on their own? If so, what can they decide on their own? (PROBE: schooling, marriage, HH expenses, meal composition, daily activities, workload, rest after childbirth, health treatment in case of illness, family planning?)
10. Does their decision-making power change when their husbands migrate? Who takes decisions in their absence?
11. Have you been in a situation where a woman was not satisfied with the decision that was made in relation to her? Explain.
12. What possible contributions can men make in your community? (PROBE: What roles can young men aspire to play in their community when they grow up?)
13. How do you feel about those possibilities – are they sufficient? If not, what is lacking? What would you like to change/do differently? What is preventing you from doing so?
14. Do you feel safe in your community? Has there been any change in community relations in the past 10-15 years? (Cf. Historical calendar)
15. What activities do you usually engage in with other community members? Are there any occasions that you celebrate together? (Cf. Seasonal calendar)
16. If you have a problem, who do you go to help you? What was the most recent situation when you needed someone's help? Explain.

Perceptions of interventions

17. Have there been any projects/Organisations that attempt/attempted to address problems related to your workload or social status?
18. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
19. How do you think they can/ could have been improved? (SOLUTIONS)
20. Are there any obstacles to making this happen? (OBSTACLES) which ones?
21. What could be done on your side? (LOCAL CAPACITIES)
22. What do you need to make it happen? (NEEDS)
23. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
24. Who should be targeted by this action in priority? Why?

Interview Guide: Agricultural Production & Income

1. What are the main sources of income in your community (Men /Women separately)?
2. Do they vary throughout the year? (Cf. Seasonal calendar)
3. Have they changed in the last 10-15 years? (Cf. Historical calendar)
4. What has caused the change?
5. What challenges do you experience in relation to Crop farming? (PROBE: access to water/land, soil degradation, unavailability of seeds/tools/know-how/labour, labour cost, plant diseases, market access for sale, price fluctuations seeding period vs. harvest period, demand fluctuations, quality requirements)
6. Do these challenges vary throughout the year? (Cf. Seasonal calendar)
7. Have they changed in the last 10-15 years? (Cf. Historical calendar)
8. What has caused the change?
9. What consequences do they have on your household income?
10. What coping strategies do you deploy to compensate for eventual agricultural related losses?
11. What challenges do you experience in relation to husbandry? (PROBE: access to water/pasture/vaccination, animal diseases, unavailability of know-how, access to markets for sale, price fluctuations, demand fluctuations, quality requirements)
12. Do these challenges vary throughout the year? (Cf. Seasonal calendar)
13. Have they changed in the last 10-15 years? (Cf. Historical calendar)
14. What has caused the change?
15. What consequences do they have on your household income?
16. What coping strategies do you deploy to compensate for eventual losses?

Perceptions of interventions

17. Have there been any projects/ organisations that attempt/attempted to address problems related to farming?
18. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
19. How do you think they can be/could have been improved? (SOLUTIONS)
20. Are there any obstacles to make it happen? (OBSTACLES)
21. What could be done on your side? (LOCAL CAPACITIES)
22. What do you need to make it happen? (What is to be done to bridge the gap in implementing the solution given in 19) (NEEDS)
23. Which solutions should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
24. Who should be targeted by this action in priority? (Vulnerable groups) Why?

Perceptions of interventions

25. Have there been any projects that attempt/attempted to address problems related to livestock farming?
26. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
27. How do you think they can be/could have been improved? (SOLUTIONS)

28. Are there any obstacles to make it happen? (OBSTACLES)
29. What could be done on your side? (LOCAL CAPACITIES)
30. What do you need to make it happen? (NEEDS)
31. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
32. Who should be targeted by this action in priority? (Vulnerable groups) Why?

Interview Guide: Market Access, Use of Resources and Coping Strategies

1. What markets are you normally using? How long does it take you to get there?
2. Does your access vary throughout the year? (Cf. Seasonal calendar)
3. Has your access changed in the last 10-15 years? (Cf. Historical calendar)
4. What has caused the change? What consequences does it have on your household?
5. Are products available throughout the year? If not, what and when is not available? Why? (Cf. Seasonal calendar)
6. Has the product availability changed in the last 10-15 years? (Cf. Historical calendar)
7. Are product prices stable throughout the year? If not, what product prices fluctuate? When? Why? (Cf. Seasonal calendar)
8. Have product prices changed in the last 10-15 years?
9. How do you spend your household income? (Cf. Household expenses)
10. Who makes decisions regarding household expenses? (PROBE: purchases (various categories) vs. sale of agricultural production)
11. Does a decision-making process change in the husband's absence (e.g. migration)?
12. Do women receive a weekly allowance? If so, how much and what for? Is it sufficient? Why/why not?
13. Do men and women spend money differently? If so, how? Why?
14. Where do you usually get your food? (PROBE: own production, purchase, food aid, barter, forest harvest)
15. Does this vary throughout the year? (Cf. Seasonal calendar)
16. Has this changed over the last 10-15 years? (Cf. Historical calendar)
17. How do you ensure that you have enough food for your household throughout the year?
18. What do you do when you do not have enough money to provide food for your household? (PROBE: destocking (both crops& livestock), selling productive assets, sale, use of excessive debt, the reduction in daily food intake and the number of daily meals, migration for labour, etc.)
19. Are certain households in your community more vulnerable to food insecurity? Why?

Perceptions of interventions

20. Have there been any projects/organisations that attempt/attempted to address problems related to food security?
21. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
22. How do you think they can/could have been improved? (SOLUTIONS)
23. Are there any obstacles to make it happen? (OBSTACLES)
24. What could be done on your side? (LOCAL CAPACITIES)

25. What do you need to make it happen? (NEEDS)
26. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
27. Who should be targeted by this action in priority? Why?

Interview Guide: Land Access, Migration, Community Solidarity & Food Aid

1. How would you describe land access in your community? (PROBE: source (inheritance/purchase/lease/other), ownership (M/F), size, distance, geographical & seasonal accessibility, quality, water access/irrigation, taxes/fees).
2. Has the land access changed in the last 10-15 years? (Cf. Historical calendar)
3. What consequences does land access have on your agricultural production? (PROBE: crop selection, crop rotation, use of natural/chemical fertilisers)
4. How do you address these challenges?
5. Do people in your community have a tendency to form groups/associations/community-based organisations? If so, for what purpose? (PROBE: membership (M/F), fees, activities, benefits, external support (gov't, NGOs)
6. Do people in your community tend to save money/resources? If so, for what purpose? What do they save? How much?
7. Do people in your community have access to credit? If so, how does it work? (PROBE: who can access it (M/F), provider, amount, interest)
8. Do people in your community tend to have debts? Why? How much? What do they do when they can't repay them?
9. Do people in your community tend to migrate to earn money? If so, who migrates? Where? When? For how long? Why? (Cf. Seasonal calendar)
10. Have migration patterns in your community changed over the last 10-15 years? (Cf. Historical calendar)
11. What consequences does the migration or changed migration patterns have on members of a household who stay behind? (PROBE: income, workload, decision-making, nutrition, health, hygiene & child caring practices)
12. Apart from migration for economic reasons, do people in your community tend to leave the village for prolonged periods of time (weeks/months)? If so, who leaves? Where? When? For how long? Why? (Cf. Seasonal calendar)
13. Do they travel with children? If so, what consequences does this travel have on them? (health, hygiene & child caring practices)
14. **Storytelling:** *YY and XX have been married for some seven years. They have 5 children. They have a little field that YY inherited from his father. Even during a good year, the field would not yield enough crops to sustain his family for a year. YY thus has to leave the village for three to four months to work as a daily labourer. Unfortunately, that is the period where he would need to work on his own field. XX thus does not have a choice and has to work alone. It is extremely tiring and she needs to stay away from her children almost all day. Sometimes, it is her eldest daughter, who is only 6, that cares for other children. Sometimes, her mother or mother-in-law help out. However, it is very tough without her husband not being there! From time to time, XX receives a food ration from a non-governmental organisation to help her transition tough times before the next harvest. She uses a portion to feed her children, a portion to help her mother and the rest she sells to repay her debts. After a few days, there is nothing left and she is concerned what they will do before her husband comes back.* What do you think of this story? What do you think about XX's situation? Do women in your

community face same difficulties? Why/why not? What would you do differently?

15. What challenges do you face in relation to food aid? (PROBE: beneficiary selection, quantity, quality, timing)

Perceptions of interventions

16. Have there been any projects/organisations that attempt/attempted to address problems related to subject, which we have just discussed?
17. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
18. How do you think the projects can/ could have been improved? (SOLUTIONS)
19. Are there any obstacles to make the improvements happen? (OBSTACLES)
20. What could be done on your side? (LOCAL CAPACITIES)
21. What do you need to make it happen? (NEEDS)
22. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
23. Who should be targeted by this action in priority? Why?

Interview Guide: Water, Hygiene and Sanitation

1. Where do you get water for your household? Do you use a different source for drinking/ cooking/bathing/animal consumption/agriculture?
2. Does your source change in different seasons? (Cf. Seasonal calendar)
3. Has your source changed in the last 10-15 years? (Cf. Historical calendar)
4. Does someone manage this water source? Are there any conditions of use?
5. Do you have enough water for your needs throughout the year? If not, when? (Cf. Seasonal calendar)
6. Has the access to water changed in the last 10-15 years? (Cf. Historical calendar)
7. Do all the people in the community have the same access to water? If not, why? Who are they?
8. Who is responsible for fetching water for the household?
9. How long does it take to get water? (NB: time to water point, queuing, time back from water point). Does it change throughout the year? (Cf. Seasonal calendar)
10. How much water do you collect in a day? Does it change throughout the year? (Cf. Seasonal calendar)
11. Has this changed over the last 10-15 years? (Cf. Historical calendar) How? Why? What are the consequences of these changes?

Agree/disagree game (+DEBRIEFING)

12. The water in my community is good for drinking.
13. The water in my community gives us stomach problems.
14. The water in my community makes children sick.
15. The water in my community is clear.
16. I wash my hands and my body in the morning.
17. I wash my hands when I go to toilet.
18. I wash my hands before cooking.

19. I wash my hands before eating.
20. I do not wash my hands often because there is not enough water in my community.
21. I do not wash my hands often because I need to preserve it for other use.
22. I do not think I need to wash my hands often, we have always lived this way.
23. I buy soap every time I go to the market.
24. The soap is very cheap.
25. I do not like latrines.
26. I do not need a latrine at home. I spend a lot of time working away from my house.
27. I do not need a latrine at home. It is more natural to do our needs in the field.
28. I wash my baby every time it gets dirty.
29. I let my baby play outside the house.
30. There are animals wandering around my house.
31. There are animals wandering inside my house.

Risk game (+DEBRIEFING)

32. Drinking water at the source.
33. Drinking water from the water stream.
34. Drinking rain water.
35. Leaving water containers open.
36. Letting flies sit on a plate of food.
37. Eating without washing hands.
38. Cooking without washing hands.
39. Not washing hands after defecating.
40. Defecating around the house.
41. Not cleaning a latrine.
42. Baby playing in the dirt.
43. Baby in contact with household animals.
44. Animals wandering around the house.

Courage to change (+DEBRIEFING)

45. Fetching water from a safe source (Boreholes, Springs, protected wells)
46. Water treatment
47. Handwashing
48. Bathing
49. Open defecation
50. Using a latrine
51. Cleaning a latrine
52. Buying soap
53. Cleaning a house
54. Cleaning the compound
55. Washing clothes
56. Covering food
57. Storing food

Perceptions of interventions

58. Have there been any projects/ organisations that attempt/attempted to address problems related to water, sanitation and hygiene?
59. What do you think about them? Have you benefitted from them the way you wished? Why/ Why not?
60. How do you think the projects can/ could have been improved? (SOLUTIONS)
61. Are there any obstacles to make it happen? (OBSTACLES)
62. What could be done on your side? (LOCAL CAPACITIES)
63. What do you need to make it happen? (NEEDS)
64. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
65. Who should be targeted by this action in priority? Why?

Interview Guide: Community Beliefs & Sensitisation Activities

1. How would you describe an ideal baby? How does it look like? (size/characteristic features/ behaviour)
2. What can you do to have such a baby before/after he is born?
3. Has the image of an ideal baby changed in the last 10-15 years? Why?
4. Do you feel any pressure from your family/neighbours/community to have an ideal baby? If yes, what do they say/do?
5. What happens if somebody's baby does not fit this criteria? Which consequences does it have on household's reputation in the community?
6. Have you observed that certain mothers/fathers care for children differently? How? How do you feel about it?
7. Have you observed that certain mothers/fathers neglect their children? What do they do or not do? Why/why not? What consequences does it have on the growth and development of these children?
8. What do you consider very important for the good development of children? Do all parents do it? Why/why not?
9. What do you think about vaccination? (PROBE: access, availability, cultural acceptability, etc.)
10. Do you participate in sensitisation sessions organised by health workers or community development officers of different NGOs? Why/why not?
11. Who is invited to those sensitisation sessions? Are there any other people who should be included? Why?
12. What do you think about different subjects that they talk about? Have you found them useful/relevant/easily applicable? Why/why not?
13. Which behaviours (that were addressed during sensitisation sessions) did you particularly struggle with? Why? (Advantages/Disadvantages)
14. Are there people in your community who are not endorsing certain messages/behaviours? Who & why? (APPROVAL)
15. What should be improved? (SOLUTIONS)
16. Are there any obstacles to make the improvements happen? (OBSTACLES)
17. What could be done on your side? (LOCAL CAPACITIES)
18. What do you need to make it happen? (NEEDS)

19. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
20. Who should be targeted by this action in priority? Why?

Interview Guide: Health & Nutrition (Health Facility Personnel)

1. What is your role in the health facility? How long have you been working here? Have you worked in a similar position elsewhere? If so, where and for how long?
2. How do you feel about your position? (PROBE: training, supervision, workload, availability of materials/medicine, location, salary)
3. What types of services do you offer? What fees do you charge? (PROBE: antenatal care, childbirth, postnatal care, vaccination)
4. What are your working hours/opening hours? Are you available in cases of emergency? How can people reach you?
5. What is your daily routine? Does it change throughout the week/month? Does it change throughout the year? If so, how? Why?
6. What challenges do you face in relation to your daily routine?
7. How does the community perceive services at this health facility? What services do they tend to use the most? Why?
8. Are there any services that they do not use at all? Why?
9. Are you aware of any barriers which may be preventing them from using services at this health facility? If so, what are they?
10. What childhood diseases are most current in this community? What are their principal causes in this community?
11. In which months are they most frequent? (Cf. Seasonal calendar)
12. Has there been a change in the prevalence of these diseases in the past 10-15 years? (Cf. Historical calendar)
13. What is their preferred treatment option and/or classic therapeutic itinerary in case of current childhood diseases? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria, malnutrition)
14. Does it change at any one time during the year? (Cf. Seasonal calendar) Has it changed over the past 10-15 years? (Cf. Historical calendar)
15. Do you offer services related to the treatment of malnutrition? If so, can you explain how it is organised? Are there specific days when the service is available?
16. What challenges do you face in relation to CMAM programme? (PROBE: case load/workload, screening, stock-outs, community perception, etc.)
17. What is the community perception of malnutrition? What are its principal causes in this community? Does the community understand its causes differently? If so, how? Why?
18. Is malnutrition stigmatised in this community? If so, how?
19. What categories of children are most vulnerable to malnutrition? Why?
20. Are there children in these categories who are not malnourished? If so, why? What do their parents do differently?
21. What main challenges do parents face to keep their children healthy? (Cf. Hypotheses flashcards)[144] How do you think it is linked with malnutrition?

144 Use for probing depending on feedback.

Perceptions of interventions

22. Have there been any projects/organisations that attempt/attempted to address problems related to health/access to health facilities?
23. What do you think about them?
24. How do you think they can/ could have been improved? (SOLUTIONS)
25. Are there any obstacles to make the improvements happen? (OBSTACLES)
26. What could be done on your side/community side? (LOCAL CAPACITIES)
27. What do you need to make it happen? (NEEDS)
28. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
29. Who should be targeted by this action in priority? Why?

Interview Guide: Health & Nutrition (Traditional Healer/Birth Attendant)

1. What is your role in the community? How long have you been living here? Have you also lived elsewhere? If so, where, when & why?
2. What types of services do you offer? How can people reach you?
3. What main challenges do people in this community face?
4. What consequences do these challenges have on their health? Why?
5. What do you think of children in these photos? Are children in these images healthy? Why/ Why not? (Cf. Photos of wasted children (Marasmus/Kwashiorkor) + stunted children)
6. Which illness are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?
7. What are the causes of these illnesses? What are the reasons a child would become like this?
8. What do you think of these illnesses? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
9. Do you have children like these in your community? If yes, which type is most common?
10. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)
11. How do you treat these illnesses in your community? (Cf. Health journey/Therapeutic itinerary) (PROBE: What is the most common treatment? Why?)
12. What main challenges do parents face to keep their children healthy? (Cf. Hypotheses flashcards)[145] Do you think that they are linked with malnutrition[146]? If so, how & why?
13. Are there citations from holy scripts/local beliefs that may be linked with these challenges? If so, which? What do you think about them? Do they need to be strictly followed? Why/why not?
14. If not mentioned, ask specifically about the use of holy water during the first six months of child's life, fasting of children, fasting of pregnant & lactating women, birth spacing. Have they been followed in the same manner in the past 10-15 years? If not, what has changed? Why? (Cf. Historical calendar)
15. If shown that these practices have life-endangering consequences, what can you/church/ community do?

145 Use for probing depending on feedback.

146 If not recognised, point to the children in photos.

16. Have you heard any stories in the past when certain local beliefs had to be reconsidered? If so, what beliefs did it concern? How was it handled? Do you think that it can be replicated? Why/why not?

Interview Guide: Health & Nutrition (Religious Leaders)

1. What is your role in the community? How long have you been living here? Have you also lived elsewhere? If so, where, when & why?
2. What types of services do you offer? How can people reach you?
3. What is your daily routine? Does it change throughout the week/month? Does it change throughout the year? If so, how? Why?
4. What main challenges do people in this community face?
5. What consequences do these challenges have on their health? Why?
6. What do you think of children in these photos? Are children in these images healthy? Why/Why not? (Cf. Photos of wasted children (Marasmus/Kwashiorkor) + stunted children)
7. Which illnesses are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?
8. What are the causes of these illnesses? What are the reasons a child would become like this?
9. What do you think of these illnesses? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
10. Do you have children like these in your community? If yes, which type is most common?
11. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)
12. How do you treat these illnesses in your community? (Cf. Health journey/Therapeutic itinerary) (PROBE: What is the most common treatment? Why?)
13. What main challenges do parents face to keep their children healthy? (Cf. Hypotheses flashcards)[147] Do you think that they are linked with malnutrition?[148] If so, how & why?
14. Are there citations from holy scripts/local beliefs that may be linked with these challenges? If so, which? What do you think about them? Do they need to be strictly followed? Why/why not?
15. If not mentioned, ask specifically about the use of holy water during the first 6 months of a child's life, fasting of children, fasting of pregnant & lactating women, birth spacing. Have they been followed in the same manner in the past 10-15 years? If not, what has changed? Why? (Cf. Historical calendar)
16. If shown that these practices have life-endangering consequences, what can you/church/community do?
17. Have you heard any stories in the past when certain local beliefs had to be reconsidered? If so, what beliefs did it concern? How was it handled? Do you think that it can be replicated? Why/why not?

147 Use for probing depending on feedback.

148 If not recognised, point to the children in photos.

IV. QUANTITATIVE ANALYSIS RESULTS

Karamoja

Trends of undernutrition and anaemia in Karamoja, by district

			Abim	Amudat	Kaabong	Kotido	Moroto	Nakapiripirit	Napak	Karamoja
Global Acute Malnutrition (GAM)	Lean season	June 2015	9.1	10.1	15.7	13.1	18.3	15.3	16.2	14.1
		July 2016	6.7	10.9	12.8	12.1	13.7	8.3	13.6	11.0
		June 2017	11.1	12.1	11.8	18.5	18.5	11.8	12.7	13.8
	Harvest season	Jan 2016	9.7	10.8	13.9	12.6	13.2	11.3	16.3	12.4
		Jan 2018	6.2	14.5	10.2	8.1	15.0	11.3	8.6	10.4
		UDHS 2016								10.0
Severe Acute Malnutrition (SAM)	Lean season	June 2015	2.2	2.1	3.3	2.2	6.0	4.4	5.5	3.7
		July 2016	0.9	2.3	1.7	3.5	3.4	2.1	2.5	2.3
		June 2017	2.9	3.2	2.1	3.5	4.5	2.0	1.8	2.9
	Harvest season	Jan 2016	3.0	1.4	3.5	3.8	5.2	5.4	4.4	3.8
		Jan 2018	1.3	3.3	2.2	2.8	4.3	2.6	1.4	2.5
		UDHS 2016								3.0
Stunting	Lean season	June 2015	22.8	27.3	40.3	30.6	32.4	30.5	46.4	32.7
		July 2016	23.0	17.5	26.1	30.0	34.1	25.6	39.9	28.0
		June 2017	23.7	26.0	40.5	35.4	40.9	30.2	31.9	32.6
	Harvest season	Jan 2016	31.9	24.2	50.4	42.4	46.8	42.5	41.8	39.5
		Jan 2018	31.4	23.8	35.4	44.2	34.9	32.2	35.8	34.0
		UDHS 2016								35.2
Anaemia		Jan 2016	45.7	61.9	61.7	60.1	45.8	66.5	59.5	57.2
		Jan 2018	51	53	63	74	51	76	44	59.0
		UDHS 2016	-	-	-	-	-	-	-	67.7

Karamoja June 2017 FSNA

Nutritional status of children in Karamoja sub-region, June 2017

Indicator	Criteria	Karamoja	Sorghum livestock	Mixed crop	Maize livestock	Apiary potato	Boys	Girls
Global acute malnutrition (GAM)	WHZ (<-2.0 and or oedema)	13.8 (12.9-14.8)	15.8 (14.1-17.7)	12.1 (10.4-14.0)	14.1 (11.1-17.7)	14.5 (8.7-23.1)	16.9 (15.6-18.2)	10.9 (9.8-12.1)
	MUAC (<12.5cm and or oedema)	12.3 (11.2-13.4)	14.4 (12.5-16.6)	13.5 (11.2-16.2)	6.2 (4.7-8.1)	12.3 (8.3-17.8)	11.3 (10.1-12.8)	13.2 (11.8-14.7)
Moderate acute malnutrition (MAM)	WHZ (-3.0≤WHZ <-2.0)	10.9 (10.1-11.7)	12.2 (11.0-13.6)	9.0 (7.7-10.5)	9.6 (7.5-12.2)	12.3 (7.7-18.9)	13.0 (11.9-14.1)	8.9 (8.0-9.9)
	MUAC (11.5cm≤MUAC<12.5)	9.9 (8.9-10.9)	11.6 (10.0-13.6)	10.4 (8.4-12.9)	4.7 (3.5-6.3)	8.2 (5.1-12.9)	9.4 (8.2-10.8)	10.4 (9.1-11.8)
Severe acute malnutrition (SAM)	WHZ (<-3.0 and or oedema)	3.0 (2.5-3.5)	3.6 (2.8-4.6)	3.0 (2.4-3.9)	4.5 (3.1-6.5)	2.2 (0.7-7.3)	3.9 (3.2-4.9)	2.0 (1.5-2.6)
	MUAC (<11.5cm and or oedema)	2.4 (1.9-2.9)	2.8 (2.2-3.5)	3.0 (2.2-4.1)	1.5 (0.9-2.5)	4.1 (1.8-8.9)	2.0 (1.5-2.6)	2.8 (2.2-3.5)
Stunting	HAZ (<-2.0)	32.6 (31.2-34.0)	41.5 (39.3-43.8)	35.9 (33.0-38.9)	30.3 (26.8-34.0)	44.2 (34.6-54.4)	34.9 (33.4-36.5)	30.4 (28.3-32.5)
Severe stunting	HAZ (<-3.0)	12.7 (11.9-13.5)	20.3 (18.6-22.1)	15.1 (13.2-17.3)	10.9 (9.2-12.9)	21.2 (16.2-27.2)	14.6 (13.3-15.9)	10.8 (9.9-11.9)
Underweight	WAZ (<-2.0)	28.6 (27.2-30.1)	34.5 (32.3-36.9)	29.7 (26.8-32.7)	23.5 (20.5-26.7)	35.1 (25.1-46.6)	31.6 (29.9-33.3)	25.7 (23.7-27.9)
Severe underweight	WAZ (<-3.0)	8.6 (8.0-9.2)	13.2 (11.9-14.5)	9.7 (8.1-11.5)	7.4 (6.0-9.1)	12.3 (7.4-19.8)	10.2 (9.3-11.3)	6.9 (6.0-7.9)

Karamoja June 2017 FSNA- Statistical associations between nutritional status of children and household indicators

Risk factors associated with undernutrition among children 0-59 months (FSNA June 2017)							
				Wasting		Stunting	
Risk Factor	N	n	%	p-value	Unadjusted odds ratio (95%CI)	p-value	Unadjusted odds ratio (95%CI)
Diseases							
Malaria	6,525	3,502	53.67	0.008	1.23 (1.06-1.42)**	0.075	1.10 (0.99-1.23)
Diarrhoea	6,525	1,953	29.93	0.000	1.38 (1.18-1.60)***	0.001	1.23 (1.09-1.38)**
ARI/Cough	6,525	2,448	37.52	0.622	0.96 (0.83-1.12)	0.068	1.11 (0.99-1.24)
Measles	6,525	154	2.36	0.333	0.78 (0.47-1.29)	0.150	1.28 (0.92-1.79)
Health and Nutrition factors							
Health facility							
Government	6,446	6,217	96.45		1		1
VHT	6,446	153	2.37	0.969	0.99 (0.61-1.60)	0.009	0.59 (0.40-0.88)**
Other	6,446	76	1.18	0.111	0.48 (0.19-1.19)	0.674	0.90 (0.53-1.50)
Mosquito net use							
Net not used	6,525	368	5.64		1		1
Net used	6,525	6,157	94.36	0.089	0.77 (0.58-1.04)	0.653	1.06 (0.83-1.34)
Deworming (>12 months)							
Dewormed	6,525	5,198	79.66		1		1
Not dewormed	6,525	1,327	20.34	0.878	0.98 (0.80-1.21)	0.000	0.60 (0.51-0.72)***
Measles vaccination							
Vaccinated	6,525	5,704	87.42		1		1
Not vaccinated	6,525	821	12.58	0.115	0.78 (0.58-1.06)	0.000	0.46 (0.36-0.58***
DPT Vaccination							
Vaccinated	6,525	6,191	94.88		1		1
Not vaccinated	6,525	334	5.12	0.214	1.38 (0.83-2.27)	0.218	0.76 (0.49-1.18)
Vitamin A supplementation							
Received	6,525	5,596	85.76		1		1
Not received	6,525	929	14.24	0.860	0.98 (0.75-1.28)	0.000	0.68 (0.55-0.84)***
Mental Health and care practices							

Early initiation of breast feeding (1 hour)							
Not within first hour of birth	6,525	1,156	17.72		1		1
Within first hour of birth	6,525	5,369	82.28	0.003	0.76 (0.63-0.91)**	0.245	1.09 (0.94-1.26)
Exclusive breast feeding							
No	2,043	1,986	97.21		1		1
Yes	2,043	57	2.79	0.050	1.81 (1.00-3.26)	0.973	1.01 (0.57-1.80
Minimum dietary diversity							
No	6,525	6,187	94.82		1		1
Yes	6,525	338	5.18	0.773	1.05 (0.76-1.44)	0.223	0.86 (0.67-1.10)
Minimum acceptable diet							
No	6,525	6,278	96.21		1		1
Yes	6,525	247	3.79	0.666	1.08 (0.75-1.56)	0.391	0.88 (0.67-1.17)
Minimum meal frequency							
No	6,525	5,315	81.46		1		1
Yes	6,525	1,210	18.54	0.095	1.16 (0.97-1.39)	0.000	0.70 (0.61-0.81)***
Food security and livelihood factors							
Food availability (availability of food stocks)							
No	6,446	4,882	75.74		1		1
Yes	6,446	1,564	24.26	0.002	0.75 (0.63-0.90)**	0.070	1.12 (0.99-1.28)
Main source of food stock/ food access							
Own production	1,564	557	35.61		1		1
Markets	1,564	741	47.38	0.568	1.12 (0.77-1.63)	0.572	1.07 (0.84-1.37)
Others	1,564	266	17.01	0.012	1.77 (1.14-2.77)*	0.070	1.34 (0.98-1.84)
Food availability (livestock ownership)							
No	6,446	2,797	43.39		1		1
Yes	6,446	3,649	56.61	0.001	0.78 (0.67-0.90)**	0.001	0.83 (0.75-0.93)**
Food aid							
Food aid not received	6,446	4,794	74.37		1		1
Food aid received	6,446	1,652	25.63	0.392	0.93 (0.78-1.10)	0.778	1.02 (0.90-1.15)
Dietary diversity (Vitamin A rich fruits & vegetables)							
No	2,389	2,054	85.98		1		1

Yes	2,389	335	14.02	0.638	0.93 (0.68-1.27)	0.202	0.84 (0.65-1.10
Use of income non-beneficial to nutrition status							
Alcohol, palm wine, tobacco							
No	6,446	3,222	49.98		1		1
Yes	6,446	3,224	50.02	0.002	1.27 (1.10-1.47)**	0.000	1.46 (1.31-1.63)***
Celebrations/social events/funeral							
No	6,446	6,295	97.66		1		1
Yes	6,446	151	2.34	0.932	0.98 (0.60-1.60)	0.147	0.75 (0.52-1.10)
Main income source							
Own crop produce	6,446	691	10.72		1		1
Income from livestock sales	6,446	551	8.55	0.685	1.08 (0.75-1.54)	0.100	0.81 (0.62-1.04)
Wage labour (agric and non-agric)	6,446	2,247	34.86	0.187	1.20 (0.92-1.58)	0.359	1.09 (0.90-1.32
Sale of firewood/charcoal	6,446	1,376	21.35	0.002	1.57 (1.18-2.08)**	0.057	1.22 (0.99-1.49
Trade	6,446	757	11.74	0.185	1.24 (0.90-1.71)	0.214	0.86 (0.68-1.09)
Formal employment	6,446	431	6.69	0.143	0.73 (0.48-1.11)	0.002	0.64 (0.48-0.85)**
Others	6,446	393	6.1	0.064	1.43 (0.98-2.08)	0.046	1.32 (1.01-1.74)
Coping capacity (rCSI)							
Low coping	6,446	707	10.97		1		
Medium	6,446	1,496	23.21	0.788	1.04 (0.78-1.38)	0.072	1.22 (0.98-1.51)
High coping	6,446	4,243	65.82	0.148	1.20 (0.94-1.55)	0.000	1.63 (1.34-1.97) ***
Access to agricultural land							
No	6,446	776	12.04		1		1
Yes	6,446	5,670	87.96	0.816	0.97 (0.78-1.22)	0.120	1.15 (0.96-1.37)
Water, Sanitation and Hygiene Factors							
Water sources (safe/unsafe)							
Safe	6,446	5,837	90.55		1		1
Unsafe	6,446	609	9.45	0.628	1.06 (0.83-1.36)	0.483	1.07 (0.89-1.28)
Use of 15 litres per person per day							
<15 ltrs per person per day	6,439	4,304	66.84		1		1
≥15 ltrs per person per day	6,439	2,135	33.16	0.059	0.86 (0.73-1.01)	0.004	0.84 (0.75-0.95)**
Treatment of water before use							

No	6,446	5,816	90.23		1		1
Yes	6,446	630	9.77	0.588	0.93 (0.72-1.20)	0.413	0.93 (0.77-1.11)
Access to toilets							
No	6,446	3,770	58.49		1		1
Yes	6,446	2,676	41.51	0.032	0.85 (0.73-0.99)*	0.003	0.85 (0.76-0.94)**
Gender factors							
Gender of household head							
Male	6,446	4,676	72.54		1		1
Female	6,446	1770	27.460	0.024	1.20 (1.02-1.41)*	0.001	1.23 (1.09-1.39)**
Maternal BMI							
Underweight	5,676	2,180	38.41		1		1
Overweight	5,676	102	1.8	0.008	0.35 (0.16-0.75)**	0.004	0.47 (0.28-0.79)**
Obese	5,676	80	1.41	0.004	0.18 (0.06-0.58)**	0.019	0.51 (0.29-0.90)*
Maternal MUAC							
MAM	6,525	9	0.14		1		1
Normal	6,525	6,516	99.86	0.900	1.14 (0.14-9.31)	0.089	0.29 (0.07-1.21)
Decision making on livestock production (women)							
Man (Spouse)	3,649	2,287	62.67		1		1
Woman (Spouse)	3,649	333	9.13	1.000	1.00 (0.70-1.43)	0.762	0.96 (0.74-1.25)
Jointly by spouse	3,649	991	27.16	0.541	0.93 (0.73-1.18)	0.003	0.77 (0.65-0.92)**
Other	3,649	38	1.04	0.914	1.05 (0.41-2.73)	0.479	1.27 (0.65-2.50)
Child is from Extremely Vulnerable Household (EVH)							
No	6,446	5,565	86.33		1		1
Yes	6,446	881	13.67	0.069	1.21 (0.99-1.49	0.000	1.38 (1.18-1.61)***

*p<0.05 **p<0.01 ***p<0.001

Karamoja January 2018 FSNA

Nutritional status and prevalence of anaemia among children in Karamoja sub-region, January 2018

Indicator	Criteria	Karamoja	Sorghum livestock	Mixed crop	Maize livestock	Apiary potato	Boys	Girls
Global acute malnutrition (GAM)	WHZ (<-2.0 and or oedema)	10.4 (9.6-11.2)	11.3 (9.9-12.9)	7.4 (5.9-9.2)	13.0 (11.3-15.0)	12.6 (7.0-21.5)	12.0 (10.6-13.5)	8.8 (7.8-9.9)
	MUAC (<12.5cm and or oedema)	9.6 (8.8-10.4)	11.9 (10.2-13.9)	7.6 (6.1-9.3)	7.4 (5.0-7.3)	17.0 (10.0-21.8)	8.5 (7.5-9.6)	10.7 (9.6-11.9)
Moderate acute malnutrition (MAM)	WHZ (-3.0≤WHZ <-2.0)	7.9 (7.1-8.7)	8.7 (7.5-10.1)	5.5 (4.5-6.8)	9.4 (7.9-11.1)	10.8 (5.7-19.5)	9.1 (7.8-10.5)	6.7 (5.9-7.5)
	MUAC (11.5cm≤MUAC<12.5)	7.9 (7.3-8.6)	10.2 (8.7-11.9)	6.1 (4.9-7.6)	5.4 (3.5-5.5)	15.2 (9.1-19.2)	7.0 (6.2-7.9)	8.9 (8.0-9.8)
Severe acute malnutrition (SAM)	WHZ (<-3.0 and or oedema)	2.5 (2.1-3.0)	2.6 (2.0-3.4)	1.8 (1.2-2.8)	3.6 (2.7-4.8)	1.8 (0.5-6.3)	2.9 (2.4-3.6)	2.1 (1.5-2.9)
	MUAC (<11.5cm and or oedema)	1.7 (1.3-2.1)	1.7 (1.3-2.4)	1.5 (1.0-2.2)	2.1 (1.1-2.4)	1.8 (0.6-3.9)	1.5 (1.0-2.1)	1.9 (1.3-2.6)
Stunting	HAZ (<-2.0)	34.0 (32.6-35.5)	36.5 (33.9-39.0)	34.2 (31.0-37.4)	28.8 (26.3-31.4)	32.3 (27.4-37.5)	36.9 (34.9-38.9)	31.3 (29.6-33.0)
Severe stunting	HAZ (<-3.0)	11.1 (10.2-12.1)	12.3 (10.6-14.2)	12.5 (10.7-14.6)	7.7 (6.3-9.3)	7.2 (5.4-9.5)	12.3 (11.1-13.6)	10.0 (8.8-11.3)
Underweight	WAZ (<-2.0)	23.3 (22.3-24.2)	24.8 (22.7-27.1)	20.4 (17.5-23.7)	23.2 (21.0-25.7)	27.8 (21.7-34.8)	25.6 (24.1-27.1)	21.0 (19.4-22.7)
Severe underweight	WAZ (<-3.0)	5.5 (4.9-6.2)	6.4 (5.3-7.7)	5.0 (3.5-7.1)	5.2 (4.1-6.6)	4.9 (2.4-10.1)	6.4 (5.6-7.3)	4.7 (3.9-5.7)
Anaemia	Hb<11g/dl	59%						
Severe anaemia	Hb <8g/dl	4%						

Karamoja January 2018 FSNA- Statistical associations between nutritional status of children and household indicators

Risk factors associated with malnutrition among children 0-59 months (FSNA Jan 2018)									
				Wasting		Stunting		Anaemia	
Risk Factor	N	N	%	p-value	Unadjusted odds ratio (95%CI)	p-value	Unadjusted odds ratio (95%CI)	p-value	Unadjusted odds ratio (95%CI)
Diseases									
No malaria	6,389	3,369	52.73		1		1		1
Malaria	6,389	3,020	47.27	0.982	1.01 (0.84-1.18)	0.003	1.18 (1.06-1.31)**	0.105	1.15 (0.97-1.36)
No diarrhoea	6,389	4,761	74.52		1		1		1
Diarrhoea	6,389	1,628	25.48	0.001	1.35 (1.13-1.62)**	0.000	1.30 (1.14-1.46)***	0.170	1.15 (0.94-1.41)
No ARI/ cough	6,389	4,248	66.49		1		1		1
ARI/Cough	6,389	2,141	33.51	0.819	1.02 (0.85-1.22)	0.030	1.14 (1.01-1.27)*	0.304	1.10 (0.92-1.32)
No measles	6,389	6,350	99.39		1		1		1
Measles	6,389	39	0.61	0.157	0.24 (0.03-1.74)	0.876	1.06 (0.54-2.08)	0.757	0.84 (0.28-2.56)
Health and Nutrition factors									
Main health facility									
Government	6,754	6,305	93.35		1		1		1
VHT	6,754	342	5.06	0.136	1.31 (0.92-1.87)	0.001	0.63 (0.48-0.82)**	0.010	1.62 (1.12-2.34)*
Other	6,754	107	1.58	0.271	1.40 (0.77-2.52)	0.165	1.34 (0.89-2.02)	0.108	1.78 (0.88-3.59)
Mosquito net use									
Net not used	6,389	837	13.1		1		1		1
Net used	6,389	5,552	86.9	0.078	0.81 (0.64-1.02)	0.469	0.94 (0.80-1.11)	0.973	1.00 (0.79-1.27)
Deworming (>12 months)									
Dewormed	6,389	4,745	74.27		1		1		1
Not dewormed	6,389	1,644	25.73	0.177	1.15 (0.94-1.42)	0.000	0.68 (0.59-0.79)***	0.004	1.37 (1.11-1.69)**
Measles vaccination									
Vaccinated	6,389	5,449	85.29		1		1		1
Not vaccinated	6,389	940	14.71	0.021	1.38 (1.05-1.81)*	0.000	0.56 (0.45-0.69)***	0.000	1.96 (1.44-2.68)***
DPT Vaccination									
Vaccinated	6,389	5,860	91.72		1		1		1

Not vaccinated	6,389	529	8.28	0.959	1.10 (0.64-1.52)	0.011	0.68 (0.51-0.92)*	0.016	1.63 (1.09-2.43)*
Vitamin A supplementation									
Received	6,389	5,316	83.21		1		1		1
Not received	6,389	1,073	16.79	0.258	1.17 (0.90-1.53)	0.005	0.76 (0.63-0.92)**	0.372	1.12 (0.87-1.44)
Mental Health and care practices									
Early initiation of breast feeding (1 hour)									
Not within first hour of life	6,389	970	15.18		1		1		1
Within first hour of life	6,389	5,419	84.82	0.392	0.90 (0.72-1.14)	0.507	1.05 (0.90-1.23)	0.104	1.21 (0.96-1.51)
Exclusive breast feeding									
No	2,660	616	23.16				1		1
Yes	2,660	2,044	76.84	0.799	0.97 (0.74-1.26)	0.388	1.09 (0.91-1.33)	0.353	0.86 (0.62-1.18)
Minimum dietary diversity									
No	2,503	2,270	90.69		1		1		1
Yes	2,503	233	9.31	0.603	1.11 (0.76-1.62)	0.094	0.77 (0.57-1.05)	0.092	0.69 (0.45-1.06)
Food security and livelihood factors									
Food availability (availability of food stocks)									
No	6,754	3,339	49.44		1		1		1
Yes	6,754	3,415	50.56	0.000	0.72 (0.61-0.86)***	0.499	1.04 (0.93-1.16)	0.001	1.32 (1.12-1.57)**
Main source of food stock/ food access									
Own production	3,415	40	1.17		1		1		1
Markets	3,415	3,069	89.87	0.500	1.17 (0.74-1.83)	0.149	1.23 (0.93-1.62)	0.161	0.74 (0.49-1.12)
Others	3,415	34	1	0.040	2.08 (1.03-3.85)*	0.015	1.82 (1.12-2.93)*	0.128	0.68 (0.31-1.16)
Food availability (livestock ownership)									
No	6,754	2,939	43.51		1		1		1
Yes	6,754	3,815	56.49	0.551	0.95 (0.80-1.13)	0.209	0.93 (0.83-1.04)	0.036	1.28 (1.01-1.41)*
Food aid									
Food aid not received	6,754	6,207	91.9		1		1		1
Food aid received	6,754	547	8.1	0.564	1.09 (0.81-1.47)	0.060	1.20 (1.10-1.46)	0.849	0.97 (0.78-1.35)
Dietary diversity (Vitamin A rich fruits & vegetables)									
No	2,660	2,500	93.98		1		1		1
Yes	2,660	160	6.02	0.757	1.07 (0.68-1.71)	0.887	1.03 (0.73-1.44)	0.009	0.53 (0.33-0.85)**

Use of income non-beneficial to nutrition status									
Alcohol, palm wine, tobacco									
No	6,754	3,391	50.21		1		1		1
Yes	6,754	3,363	49.79	0.126	1.14 (1.10-1.35)	0.000	1.27 (1.14-1.42)***	0.947	0.99 (0.84-1.18)
Celebrations/social events/funeral									
No	6,754	5,804	85.93		1		1		
Yes	6,754	950	14.07	0.217	1.16 (0.92-1.46)	0.012	1.22 (1.04-1.42)*	0.157	0.84 (0.66-1.07)
Main income source									
Own crop produce	6,754	847	12.54		1		1		1
Income from livestock sale	6,754	659	9.76	0.050	1.42 (1.11-2.01)	0.008	0.72 (0.56-0.92)**	0.918	1.02 (0.68-1.53)
Wage labour (agric and non-agric)	6,754	1,243	18.4	0.757	0.95 (0.69-1.31)	0.816	1.11 (0.81-1.19)	0.621	0.92 (0.66-1.28)
Sale of firewood/charcoal	6,754	1,926	28.52	0.431	1.12 (0.84-1.51)	0.057	1.21 (1.10-1.44)	0.790	1.04 (0.77-1.42)
Trade	6,754	1,286	19.04	0.336	0.85 (0.62-1.18)	0.769	1.10 (0.80-1.18)	0.205	0.81 (0.68-1.12)
Formal employment	6,754	377	5.58	0.543	0.87 (0.55-1.37)	0.823	1.11 (0.73-1.28)	0.201	0.76 (0.50-1.15)
Others	6,754	416	6.16	0.413	1.19 (0.79-1.81)	0.443	1.11 (0.85-1.46)	0.332	0.81 (0.53-1.24)
Coping capacity (rCSI)									
Low coping	6,754	1,269	18.79		1		1		1
Medium	6,754	1,694	25.08	0.121	1.24 (0.94-1.63)	0.865	0.99 (0.83-1.17)	0.393	0.91 (0.71-1.15)
High coping	6,754	3,791	56.13	0.013	1.36 (1.07-1.73)*	0.249	1.09 (0.94-1.26)	0.020	0.78 (0.63-0.96)*
Access to agricultural land									
No	6,754	1,300	19.25		1		1		1
Yes	6,754	5,454	80.75	0.013	0.77 (0.63-0.95)*	0.156	0.90 (0.79-1.04)	0.005	1.33 (1.09-1.62)**
Water, Sanitation and Hygiene Factors									
Water sources (safe/unsafe)									
Safe	6,754	6,084	90.08		1		1		1
Unsafe	6,754	670	9.92	0.204	1.19 (0.91-1.56)	0.961	1.00 (0.83-1.20)	0.606	1.07 (0.82-1.41)
Use of 15 litres per person per day									
<15 ltrs per person per day	6,779	6,724	99.19		1		1		1

≥15 ltrs per person per day	6,779	55	0.81	0.182	0.38 (0.09-1.57)	0.364	0.74 (0.39-1.41)	0.854	0.92 (0.40-2.13)
Treatment of water before use									
No	6,754	6,018	89.1		1		1		1
Yes	6,754	736	10.9	0.086	0.77 (0.57-1.04)	0.132	0.87 (0.73-1.04)	0.837	0.97 (0.75-1.27)
Access to toilets									
No	6,754	4,429	6558		1		1		1
Yes	6,754	2,325	34.42	0.000	0.71 (0.59-0.85)***	0.003	0.84 (0.75-0.94)**	0.463	0.94 (0.79-1.12)
Gender factors									
Gender of household head									
Male	6,754	5,606	83		1		1		1
Female	6,754	1,148	17	0.390	0.90 (0.72-1.14)	0.788	1.02 (0.88-1.18)	0.833	1.02 (0.82-1.27)
Maternal BMI									
Underweight	5,600	1,073	19.16		1		1		1
Normal	5,600	4,304	76.86	0.000	0.42 (0.34-0.51)***	0.993	1.00 (0.86-1.16)	0.497	0.92 (0.73-1.16)
Overweight	5,600	134	2.39	0.000	0.21 (0.08-0.49)***	0.135	0.72 (0.47-1.11)	0.001	0.40 (0.23-0.67)**
Obese	5,600	89	1.59	0.444	0.78 (0.41-1.47)	0.004	0.42 (0.23-0.76)**	0.225	0.66 (0.34-1.29)
Maternal MUAC									
MAM	6,552	13	0.2		1		1	NA	1
Normal	6,552	6,539	99.8	0.482	0.58 (0.13-2.65)	0.573	0.72 (0.22-2.27)	NA	1
Decision making on livestock production (women)									
Man (Spouse)	3,815	2,331	61.1		1		1		1
Woman (Spouse)	3,815	280	7.34	0.101	0.68 (0.42-1.08)	0.026	0.71 (0.53-0.96) *	0.087	1.52 (0.94-2.47)
Jointly by spouse	3,815	1,162	30.46	0.000	0.53 (0.40-0.70)***	0.035	1.19 (1.01-1.39)*	0.163	1.20 (0.93-1.55)
Other	3,815	42	1.1	0.956	0.97 (0.34-2.78)	0.984	0.99 (0.48-2.05)	0.187	0.55 (0.22-1.34)
Child is from Extremely Vulnerable Household (EVH)									
No	6,754	6,129	90.75		1		1		1
Yes	6,754	625	9.25	0.954	1.01 (0.76-1.35)	0.058	1.19 (0.99-1.43)	0.194	1.21 (0.91-1.63)

*p<0.05 **p<0.01 ***p<0.001

West Nile July 2019 FSNA

Prevalence of undernutrition and anaemia in West Nile, by livelihood zone and sex

			Livelihood zone			Gender	
Indicator	**Criteria**	**West Nile (%)**	**Simsim Sorghum and Livestock Zone (Moyo, Adjumani, Nebbi)**	**Arabica Coffee -Banana Zone (Zombo)**	**Tobacco Cassava Sorghum zone (Yumbe, Koboko)**	**Boys (%)**	**Girls (%)**
Global acute malnutrition (GAM)	WHZ (<-2.0 and or oedema)	3.4 (2.7-4.3)	3.3 (2.4-4.7)	4.0 (2.2-7.2)	3.4 (2.3-4.9)	3.5 (2.5-4.8)	3.4 (2.5-4.7)
	MUAC (<12.5cm and or oedema)	2.3 (1.8-2.8)	2.2 (1.5-2.9)	1.3 (0.6-2.9)	2.8 (2.0-3.8)	2.1 (1.5-2.8)	2.5 (1.8-3.3)
Moderate acute malnutrition (MAM)	WHZ (-3.0≤WHZ <-2.0)	1.8 (1.3-2.5)	2.1 (1.4-3.2)	2.4 (1.1-5.1)	1.4 (0.8-2.5)	1.9 (1.2-3.0)	1.8 (1.1-2.8)
	MUAC (11.5cm≤MUAC<12.5)	1.4 (1.1-1.8)	1.5 (1.0-2.2)	0.4 (0.1-1.6)	1.6 (1.0-2.4)	1.2 (0.8-1.9)	1.6 (1.1-2.3)
Severe acute malnutrition (SAM)	WHZ (<-3.0 and or oedema)	1.6 (1.1-2.2)	1.3 (0.7-2.2)	1.6 (0.6-4.0)	2.0 (1.2-3.2)	1.5 (0.9-2.5)	1.7 (1.0-2.6)
	MUAC (<11.5cm and or oedema)	0.9 (0.6-1.2)	0.6 (0.4-1.1)	0.9 (0.3-2.3)	1.2 (0.7-1.9)	0.8 (0.5-1.4)	0.9 (0.6-1.4)
Stunting	HAZ (<-2.0)	27.8 (25.9-29.8)	22.4 (19.9-25.1)	41.9 (36.0-48.2)	29.9 (26.9-33.2)	31.3 (28.4-34.3)	24.5 (22.0-27.3)
Severe stunting	HAZ (<-3.0)	9.4 (8.2-10.7)	6.6 (5.2-8.3)	14.5 (10.7-19.4)	11.2 (9.2-13.6)	10.0 (8.3-12.1)	8.8 (7.2-10.7)
Underweight	WAZ (<-2.0)	11.7 (10.7-12.8)	9.5 (8.2-11.0)	17.5 (14.2-21.3)	12.7 (11.0-14.6)	13.3 (11.8-15.0)	10.1 (8.8-11.6)
Severe underweight	WAZ (<-3.0)	2.9 (2.4-3.5)	2.0 (1.5-2.8)	6.1 (4.2-8.7)	3.1 (2.3-4.2)	3.1 (2.4-4.1)	2.8 (2.1-3.6)
Anaemia	Hb<11g/dl	62.2	60.5	62.6	64.6	61.1	63.3
Severe anaemia	Hb <8g/dl	3.3	2.3	8.2	2.3	2.9	3.7

West Nile July 2019 FSNA- Statistical associations between nutritional status of children and household indicators

Risk factors associated with malnutrition among children 6-59 months in West Nile (DINU 2019)									
				Wasting		Stunting		Anaemia (Chn)	
Risk Factor	**N**	**n**	**%**	**p-value**	**Unadjusted odds ratio (95%CI)**	**p-value**	**Unadjusted odds ratio (95%CI)**	**p-value**	**Unadjusted odds ratio (95%CI)**
Food consumption scores (FCS)									
Acceptable	3831	3,208	83.74		1		1		1
Borderline	3831	514	13.42	0.675	0.90 (0.54-1.49)	0.875	1.02 (0.82-1.27)	0.315	1.16 (0.87-1.56)
Poor	3831	109	2.85	0.994	1.00 (0.36-2.78)	0.206	1.32 (0.86-2.05)	0.012	2.90 (1.27-6.61)*
Health and Nutrition factors									
Main health facility									
Government	3,831	3,634	94.86		1		1		1
VHT	3,831	26	0.68		1	0.224	1.67 (0.73-3.84)	0.290	1.85 (0.59-5.76)
Other	3,831	171	4.46	0.133	0.34 (0.08-1.39)	0.161	1.30 (0.90-1.89)	0.465	1.21 (0.73-1.99)
Deworming (>12 months)									
Not dewormed	3508	514	14.65		1		1		1
Dewormed	3508	2,994	85.35	0.089	0.69 (0.45-1.06)	0.012	1.34 (1.07-1.68)*	0.007	0.65 (0.48-0.89)**
Measles vaccination									
Not vaccinated	3,508	310	8.84		1		1		1
Vaccinated	3,508	3,198	91.16	0.028	0.58 (0.36-0.94)*	0.351	1.14 (0.87-1.50)	0.002	0.55 (0.38-0.81)**
DPT Vaccination									
Not vaccinated	3,508	140	3.99		1		1		1
Vaccinated	3,508	3,368	96.01	0.306	0.68 (0.33-1.42)	0.042	0.69 (0.48-0.99)*	0.089	0.65 (0.39-1.07)
Vitamin A supplementation (at 6 months)									
Not received	3,834	3,518	91.76		1		1		1
Received	3,834	316	8.24	0.089	0.61 (0.35-1.08)	0.437	1.14 (0.82-1.56)	0.092	0.70 (0.47-1.06)
Mental Health and care practices									
Early initiation of breast feeding (1 hour)									
Not within first hour of life	2,893	462	15.97		1		1		1
Within first hour of life	2,893	2,431	84.03	0.505	1.19 (0.71-2.01)	0.421	0.91 (0.73-1.14)	0.008	0.63 (0.45-0.89)**
Exclusive breast feeding									

No									
Yes									
Minimum dietary diversity									
No	3,834	3,010	78.51		1		1		1
Yes	3,834	824	21.49	0.127	1.34 (0.92-1.94)	0.155	0.88 (0.73-1.05)	0.022	1.34 (1.04-1.72)*
Minimum meal frequency									
No	1,429	894	62.56		1		1		1
Yes	1,429	894	37.44	0.600	1.13 (0.72-1.78)	0.408	0.90 (0.70-1.16)	0.278	1.21 (0.86-1.72)
Minimum acceptable diet									
No	1,435	1,093	76.17		1		1		1
Yes	1,435	342	23.83	0.240	1.34 (0.82-2.20)	0.945	1.00 (0.74-1.32)	0.524	1.14 (0.76-1.70)
Diet diversity (Vit. A rich fruits and vegetables)									
No									
Yes									
Food security and livelihood factors									
Food availability (availability of food stocks)									
No	3,831	1,844	48.13		1		1		1
Yes	3,831	1,987	51.87	0.371	0.86 (0.61-1.20)	0.142	1.12 (0.96-1.30)	0.531	0.94 (0.77-1.15)
Main source of food stock/ food access									
Own production	1,987	1,557	78.36		1		1		1
Markets	1,987	347	17.46	0.367	0.73 (0.37-1.45)	0.016	0.71 (0.53-0.94)*	0.979	1.00 (0.70-1.43)
Others		83	4.18	0.261	0.32 (0.04-2.34)	0.250	0.72 (0.42-1.26)	0.834	1.10 (0.45-2.66)
Food availability (livestock ownership)									
No	3,831	1,416	36.96		1		1		1
Yes	3,831	2,415	63.04	0.540	0.90 (0.64-1.27)	0.197	0.90 (0.77-1.05)	0.010	1.31 (1.07-1.62)*
Constraints to crop farming									
No constraint	3312	293	8.85		1		1		1
Insecurity/land conflict	3312	162	4.89	0.240	1.90 (0.65-5.52)	0.962	0.99 (0.62-1.57)	0.136	0.65 (0.36-1.15)
Physical inability/sickness	3312	278	8.39	0.079	2.29 (0.91-5.77)	0.011	1.63 (1.12-2.37)*	0.843	1.05 (0.64-1.73)
Inadequate inputs	3312	407	12.29	0.637	1.26 (0.49-3.23)	0.338	1.19 (0.84-1.69)	0.668	1.11 (0.69-1.80)
Drought/low rainfall	3312	1,628	49.15	0.201	1.68 (0.76-3.69)	0.552	0.91 (0.68-1.23)	0.861	1.04 (0.70-1.54)

Others	3312	544	16.43	0.115	1.98 (0.85-4.65)	0.507	0.89 (0.63-1.25)	0.589	0.88 (0.56-1.39)
Use of income non-beneficial to nutrition status									
Alcohol, palm wine, tobacco									
No	3,831	3,450	90.05		1		1		1
Yes	3,831	381	9.95	0.038	1.68 (1.03-2.73)*	0.002	1.48 (1.15-1.89)**	0.990	1.00 (0.73-1.37)
Celebrations/social events/funeral									
No	3,831	1,442	37.64		1		1		1
Yes	3,831	2,389	62.36	0.251	0.82 (0.58-1.15)	0.687	0.97 (0.83-1.13)	0.949	1.01 (0.82-1.24)
Main income source									
Own crop produce	3,831	1,447	37.77		1		1		1
Income from livestock sale	3,831	61	1.59		1	0.033	0.44 (0.20-0.93)*	0.618	0.83 (0.39-1.75)
Wage labour (agric and non-agric)	3,831	743	19.39	0.282	1.28 (0.82-1.99)	0.456	0.92 (0.75-1.14)	0.011	1.48 (1.09-2.01)*
Sale of firewood/charcoal	3,831	152	3.97	0.914	1.05 (0.44-2.49)	0.570	0.90 (0.61-1.31)	0.004	2.63 (1.37-5.05)**
Trade	3,831	758	19.79	0.794	1.06 (0.67-1.69)	0.015	0.77 (0.62-0.95)*	0.589	1.08 (0.82-1.42)
Formal employment	3,831	425	11.09	0.439	0.78 (0.41-1.47)	0.002	0.66 (0.50-0.86)**	0.436	0.87 (0.61-1.24)
Others	3,831	245	6.40	0.475	1.28 (0.65-2.49)	0.267	0.83 (0.60-1.15)	0.501	1.15 (0.76-1.74)
Coping capacity (rCSI)									
Low coping	3,831	3,095	80.79		1		1		1
Medium	3,831	569	14.85	0.275	0.75 (0.45-1.26)	0.033	1.25 (1.02-1.54)*	0.008	1.49 (1.11-1.99)**
High coping	3,831	167	4.36	0.604	0.79 (0.32-1.95)	0.063	1.40 (0.98-2.00)	0.484	1.20 (0.73-1.97)
Access to agricultural land									
No	3,831	519	13.55		1		1		1
Yes	3,831	3,312	86.45	0.113	1.60 (0.90-2.85)	0.620	1.06 (0.85-1.32)	0.004	1.55 (1.15-2.10)**
Water, Sanitation and Hygiene Factors									
Water sources (safe/unsafe)									
Unsafe	3,831	447	11.67		1		1		1
Safe	3,831	3,384	88.33	0.150	1.58 (0.85-2.95)	0.000	0.50 (0.40-0.63)***	0.704	0.94 (0.70-1.27)
Use of 15 litres per person per day									
<15 ltrs per person per day	3831	1,197	31.25		1		1		1
≥15 ltrs per person per day	3831	2,634	68.75	0.421	0.86 (0.61-1.23)	0.001	0.76 (0.65-0.90)**	0.302	0.89 (0.72-1.11)
Treatment of water before use									

No	3,831	3,458	90.26		1		1		1
Yes	3,831	373	9.74	0.556	0.83 (0.44-1.55)	0.695	1.05 (0.81-1.37)	0.783	1.05 (0.74-1.48)
Distance of handwashing place from toilet									
Less than 10 paces	2,691	1,380	51.28		1		1		1
10 paces or more	2,691	973	36.16	0.445	0.84 (0.53-1.33)	0.063	1.21 (0.99-1.47)	0.624	1.07 (0.83-1.37)
Toilet not in dwelling/plot/yard	2,691	338	12.56	0.038	1.76 (1.03-3.01)*	0.000	1.95 (1.48-2.56)***	0.307	1.21 (0.84-1.72)
Access to toilets									
No	3,831	372	9.71		1		1		1
Yes	3,831	3,459	90.29	0.944	0.98 (0.56-1.72)	0.001	0.67 (0.53-0.85)**	0.239	0.82 (0.59-1.14)
Gender factors									
Gender of household head									
Male	3,713	3,308	89.09		1		1		1
Female	3,713	405	10.91	0.591	1.16 (0.68-1.97)	0.620	0.94 (0.73-1.21)	0.930	0.99 (0.71-1.36)
Maternal BMI									
Underweight	3,279	429	13.08		1		1		1
Normal	3,279	2,562	78.13	0.002	0.50 (0.33-0.78)**	0.813	0.97 (0.77-1.23)	0.003	0.61 (0.44-0.85)**
Overweight	3,279	227	6.92	0.098	0.49 (0.21-1.14)	0.068	0.69 (0.46-1.03)	0.000	0.39 (0.24-0.65)***
Obese	3,279	61	1.86	0.353	0.5 (0.12-2.16)	0.041	0.44 (0.20-0.97)*	0.003	0.28 (0.12-0.64)**
Maternal MUAC									
MAM	3,709	0	0.00						
Normal	3,709	3,709	100.00		NA		NA		NA
Decision making on livestock production (cattle)									
Woman	961	45	4.68		1		1		1
Man	961	568	59.11	0.786	0.81 (0.18-3.60)	0.694	0.87 (0.42-1.78)	0.008	4.46 (1.47-13.52)**
Both	961	332	34.55	0.596	0.66 (0.14-3.11)	0.836	0.93 (0.44-1.93)	0.011	4.33 (1.40-13.37)*
Other	961	16	1.66	0.793	1.39 (0.12-16.58)	0.634	1.36 (0.38-4.89)		1
Decision making on livestock production (sheep/goats)									
Woman	1,948	2,014	10.47		1		1		1
Man	1,948	894	45.89	0.486	1.40 (0.54-3.64)	0.286	0.82 (0.57-1.18)	0.198	1.42 (0.83-2.40)
Both	1,948	820	42.09	0.901	1.06 (0.40-2.83)	0.163	0.77 (0.53-1.11)	0.083	1.60 (0.94-2.71)
Other	1,948	30	1.54		1	0.445	1.39 (0.60-3.26)	0.414	0.60 (0.17-2.07)

Decision making on livestock production (poultry)									
Woman	1,870	527	28.18		1		1		1
Man	1,870	304	16.26	0.993	1.00 (0.49-2.01)	0.290	1.19 (0.86-1.66)	0.995	1.00 (0.62-1.60)
Both	1,870	1,018	54.44	0.482	0.82 (0.48-1.41)	0.177	0.84 (0.65-1.08)	0.318	1.19 (0.85-1.66)
Other	1,870	21	1.12		1	0.031	2.70 (1.10-6.65)*	0.720	0.78 (0.20-3.00)
Polygamy									
No	3,831	3,231	84.34		1		1		1
Yes	3,831	600	15.66	0.089	0.62 (0.36-1.08)	0.029	1.25 (1.02-1.53)*	0.831	1.03 (0.79-1.35)
Background characteristics									
Age of child (months)									
6-11	3497	521	14.90		1		1		1
12-23	3497	918	26.25	0.467	0.85 (0.54-1.33)	0.000	1.75 (1.34-2.29)***	0.010	0.62 (0.43-0.89)*
24-35	3497	804	22.99	0.012	0.52 (0.31-0.86)*	0.000	1.82 (1.38-2.38)***	0.000	0.45 (0.31-0.66)***
36-47	3497	711	20.33	0.000	0.27 (0.14-0.51)***	0.000	1.72 (1.31-2.28)***	0.000	0.48 (0.33-0.69)***
48-59	3497	543	15.53	0.007	0.44 (0.24-0.80)**	0.000	1.79 (1.34-2.40)***	0.000	0.38 (0.26-0.57)***
District									
Nebbi	3834	521	13.59		1		1		1
Zombo	3834	552	14.40	0.331	1.40 (0.71-2.78)	0.007	1.46 (1.11-1.93)**	0.007	1.58 (1.13-2.22)**
Adjumani	3834	704	18.36	0.299	1.40 (0.74-2.63)	0.000	0.48 (0.36-0.63)***	0.000	2.12 (1.49-3.02)***
Yumbe	3834	748	19.51	0.939	1.03 (0.53-1.98)	0.413	0.90 (0.70-1.16)	0.000	2.81 (1.96-4.05)***
Moyo	3834	632	16.48	0.268	1.43 (0.76-2.72)	0.000	0.51 (0.38-0.68)***	0.006	1.60 (1.14-2.24)**
Koboko	3834	677	17.66	0.363	1.35 (0.71-2.58)	0.656	0.94 (0.72-1.23)	0.363	1.17 (0.84-1.62)
Livelihood zone									
Simsim Sorghum and Livestock Zone (Moyo, Adjumani, Nebbi)	3834	1,857	48.44		1		1		1
Arabica Coffee Banana Zone (Zombo)	3834	552	14.40	0.777	1.08 (0.65-1.78)	0.000	2.40 (1.92-3.00)***	0.555	1.09 (0.82-1.45)
Tobacco Cassava Sorghum Zone (Yumbe, Koboko)	3834	1,425	37.17	0.571	0.90 (0.62-1.30)	0.000	1.51 (1.28-1.78)***	0.129	1.19 (0.95-1.50)
Other risk factors									
Child sex									
Male	3508	1,719	49.00		1		1		1
Female	3,508	1,789	51.00	0.736	0.94 (0.68-1.32)	0.000	0.62 (0.54-0.73)***	0.379	1.09 (0.89-1.34)

Education level of mother									
No formal education	3,834	999	26.06		1		1		1
Primary	3,834	2,312	60.30	0.029	1.63 (1.05-2.53)*	0.014	0.81 (0.68-0.96)*	0.248	0.87 (0.68-1.10)
Secondary	3,834	436	11.37	0.787	1.10 (0.56-2.16)	0.000	0.51 (0.38-0.68)***	0.027	0.66 (0.46-0.95)*
Higher or above	3,834	87	2.27	0.614	1.37 (0.40-4.63)	0.001	0.30 (0.15-0.61)**	0.098	0.56 (0.28-1.11)
Education level of household head									
No formal education	3792	957	25.24		1		1		1
Primary	3792	2,297	60.570	0.120	1.40 (0.92-2.13)	0.014	0.80 (0.68-0.96)*	0.241	0.87 (0.68-1.10)
Secondary	3792	483	12.740	0.637	0.85 (0.44-1.66)	0.000	0.54 (0.41-0.71)***	0.077	0.72 (0.51-1.04)
Higher or above	3792	55	1.450	0.581	0.57 (0.08-4.25)	0.022	0.41 (0.19-0.88)*	0.037	0.40 (0.17-0.95)*

*p<0.05 **p<0.01 ***p<0.001

Mid-North, May 2019 FSNA

Indicator	Criteria	Mid-North	Acholi	Lango	Simsim Groundnut Sorghum Cattle Zone (Pader)	Mid-North Simsim Maize Cassava Zone (Omoro, Otuke, Kole)	Boys	Girls
Global acute malnutrition (GAM)	WHZ (<-2.0 and or oedema)	4.4 (3.3-5.7)	3.9 (2.6-5.9)	4.8 (3.4-6.7)	2.8 (1.3-6.0)	4.7 (3.5-6.2)	6.0 (4.3-8.3)	2.9 (1.9-4.6)
	MUAC(<12.5cm and or oedema)	4.1 (3.1-4.7)	4.5 (3.3-5.9)	2.4 (1.6-3.5)	5.9 (3.9-8.5)	3.3 (2.4-4.0)	3.2 (2.1-4.2)	4.9 (3.5-5.9)
Moderate acute malnutrition (MAM)	WHZ (-3.0≤WHZ <-2.0)	2.2 (1.5-3.2)	2.2 (1.3-3.8)	2.2 (1.3-3.7)	1.9 (0.7-4.8)	2.3 (1.5-3.5)	3.1 (1.9-4.9)	1.5 (0.8-2.7)
	MUAC (11.5cm≤MUAC<12.5)	2.8 (2.0-3.4)	3.2 (2.2-4.5)	1.7 (1.1-2.7)	4.9 (3.2-7.4)	2.0 (1.3-2.6)	2.2 (1.3-3.1)	3.4 (2.3-4.3)
Severe acute malnutrition (SAM)	WHZ (<-3.0 and or oedema)	2.1 (1.5-3.1)	1.7 (0.9-3.1)	2.5 (1.6-4.1)	0.9 (0.3-3.4)	2.4 (1.6-3.6)	2.9 (1.8-4.7)	1.5 (0.8-2.7)
	MUAC (<11.5cm and or oedema)	1.3 (0.8-1.7)	1.3 (0.7-2.2)	0.7 (0.3-1.4)	1.0 (0.4-2.5)	1.4 (0.8-1.9)	1.0 (0.5-1.8)	1.5 (0.9-2.2)
Stunting	HAZ (<-2.0)	17.2 (15.2-19.5)	18.5 (15.4-22.0)	16.3 (13.6-19.4)	23.7 (18.3-30.2)	16.0 (13.8-18.4)	18.0 (15.0-21.5)	16.6 (13.8-19.7)
Severe stunting	HAZ (<-3.0)	7.3 (5.9-8.9)	8.1 (6.0-10.7)	6.7 (5.0-8.9)	9.3 (5.9-14.2)	6.9 (5.5-8.7)	6.3 (4.6-8.7)	8.1 (6.2-10.5)
Underweight	WAZ (<-2.0)	9.3 (8.2-10.6)	10.3 (8.5-12.4)	9.4 (7.7-11.4)	10.0 (7.4-13.4)	9.3 (8.0-10.8)	10.5 (8.8-12.6)	8.3 (6.8-10.0)
Severe underweight	WAZ (<-3.0)	2.9 (2.3-3.7)	2.4 (1.6-3.6)	3.6 (2.6-4.9)	2.3 (1.2-4.3)	3.0 (2.3-3.9)	3.3 (2.3-4.5)	2.5 (1.8-3.6)
Anaemia	Hb<11g/dl	52.8	61.7	44.5	64.4	48.4	54.7	51.2
Severe anaemia	Hb <8g/dl	4.9	6.9	3.1	4.2	4.3	4.8	5.0

Risk factors associated with malnutrition among children 6-59 months in Mid-North (DINU 2019)									
				Wasting		Stunting		Anaemia	
Risk Factor	N	n	%	p-value	Unadjusted odds ratio (95%CI)	p-value	Unadjusted odds ratio (95%CI)	p-value	Unadjusted odds ratio (95%CI)
Food consumption scores (FCS)									
Acceptable	2267	1,405	61.98		1		1		1
Borderline	2267	687	30.30	0.778	0.94 (0.62-1.44)	0.243	1.16 (0.90-1.49)	0.678	0.95 (0.74-1.22)
Poor	2267	175	7.70	0.646	1.17 (0.59-2.33)	0.096	1.42 (0.94-2.14)	0.004	0.53 (0.35-0.82)**
Health and Nutrition factors									
Main health facility									
Government	2,267	2,076	91.57		1		1		1
VHT	2,267	46	2.03	0.372	0.40 (0.05-2.96)	0.274	1.50 (0.72-3.11)	0.693	1.18 (0.51-2.72)
Other	2,267	145	6.40	0.168	0.49 (0.18-1.35)	0.844	0.95 (0.60-1.52)	0.211	1.43 (0.82-2.50)
Deworming (>12 months)									
Not dewormed	1959	306	15.62		1		1		1
Dewormed	1959	1,653	84.38	0.753	0.92 (0.55-1.53)	0.734	1.06 (0.77-1.46)	0.223	0.82 (0.59-1.13)
Measles vaccination									
Not vaccinated	1,959	186	9.49		1		1		1
Vaccinated	1,959	1,773	90.51	0.211	1.65 (0.75-3.590	0.175	1.34 (0.88-2.06)	0.008	0.57 (0.37-0.86)
DPT Vaccination									
Not vaccinated	1,959	111	5.67		1		1		1
Vaccinated	1,959	1,848	94.33	0.303	1.71 (0.62-4.72)	0.625	0.89 (0.55-1.44)	0.122	0.67 (0.40-1.11)
Vitamin A supplementation (at 6 months)									
Not received	1,959	216	11.03		1		1		1
Received	1,959	1,743	88.97	0.185	0.70 (0.41-1.19)	0.627	1.10 (0.75-1.60)	0.342	1.20 (0.83-1.74)
Mental Health and care practices									
Early initiation of breast feeding (1 hour)									
Not within first hour of life	1,357	365	26.90		1		1		1
Within first hour of life	1,357	992	73.10	0.184	1.44 (0.84-2.45)	0.902	0.98 (0.72-1.34)	0.330	0.85 (0.62-1.18)
Exclusive breast feeding									
No									

Yes									
Minimum dietary diversity									
No	2,267	1,946	85.84		1		1		1
Yes	2,267	321	14.16	0.031	1.64 (1.05-2.57)*	0.884	0.98 (0.72-1.33)	0.000	1.96 (1.42-2.72)
Minimum meal frequency									
No	756	593	78.44		1		1		1
Yes	756	163	21.56	0.172	0.60 (0.29-1.25)	0.731	0.93 (0.60-1.44)	0.543	1.16 (0.72-1.86)
Minimum acceptable diet									
No	764	679	88.87		1		1		1
Yes	764	85	11.13	0.700	0.84 (0.35-2.02)	0.143	0.62 (0.33-1.18)	0.194	1.58 (0.79-3.16)
Diet diversity (Vit. A rich fruits and vegetables)									
No									
Yes									
Food security and livelihood factors									
Food availability (availability of food stocks)									
No	2,267	1,683	74.24		1		1		1
Yes	2,267	584	25.76	0.349	1.22 (0.80-1.86)	0.861	1.02 (0.79-1.33)	0.005	1.45 (1.12-1.89)**
Main source of food stock/ food access									
Own production	584	495	84.76		1		1		1
Markets	584	54	9.25	0.481	1.49 (0.49-4.46)	0.377	1.40 (0.66-2.98)	0.419	1.39 (0.63-3.06)
Others	594	35	5.99	0.964	1.03 (0.23-4.57)	0.408	1.50 (0.58-3.90)	0.083	0.46 (0.19-1.11)
Food availability (livestock ownership)									
No	2,267	715	31.54		1		1		1
Yes	2,267	1,552	68.46	0.158	0.75 (0.51-1.12)	0.600	0.94 (0.73-1.20)	0.471	0.91 (0.71-1.17)
Constraints to crop farming									
No constraint	2100	92	4.38		1		1		1
Insecurity/land conflict	2100	44	2.10	0.319	2.31 (0.45-12.03)	0.621	0.76 (0.25-2.28)	0.588	0.75 (0.26-2.14)
Physical inability/sickness	2100	57	2.71	0.129	3.14 (0.72-13.77)	0.216	0.48 (0.15-1.54)	0.343	0.61 (0.22-1.69)
Inadequate inputs	2100	113	5.38	0.677	1.36 (0.32-5.88)	0.856	0.93 (0.42-2.04)	0.001	0.24 (0.11-0.55)**
Drought/low rainfall	2100	1,619	77.10	0.387	1.68 (0.52-5.43)	0.473	1.24 (0.69-2.24)	0.042	0.50 (0.26-0.97)*
Others	2100	175	8.33	0.551	1.51 (0.39-5.85)	1.000	1 (0.49-2.05)	0.090	0.51 (0.24-1.11)

Dietary diversity (Vitamin A rich fruits & vegetables)									
No									
Yes									
Use of income non-beneficial to nutrition status									
Alcohol, palm wine, tobacco									
No	2,267	2,102	92.72		1		1		1
Yes	2,267	165	7.28	0.697	1.15 (0.57-2..33)	0.671	1.10 (0.71-1.71)	0.027	1.74 (1.07-2.84)*
Celebrations/social events/funeral									
No	2,267	1,480	65.28		1		1		1
Yes	2,267	1,480	34.72	0.365	0.83 (0.55-1.24)	0.865	1.02 (0.80-1.30)	0.027	1.74 (1.07-2.84)*
Main income source									
Own crop produce	2,267	862	38.02		1		1		1
Income from livestock sale	2,267	44	1.94	0.485	0.49 (0.07-3.65)	0.671	0.82 (0.34-2.02)	0.050	0.42 (0.17-1.00)
Wage labour (agric and non-agric)	2,267	703	31.01	0.387	1.22 (0.78-1.92)	0.608	0.93 (0.71-1.23)	0.048	0.76 (0.58-1.00)
Sale of firewood/charcoal	2,267	57	2.51	0.326	0.37 (0.05-2.72)	0.030	2.00 (1.07-3.73)*	0.527	1.26 (0.62-2.58)
Trade	2,267	345	15.22	0.874	1.05 (0.58-1.88)	0.322	0.84 (0.59-1.19)	0.342	0.85 (0.60-1.19)
Formal employment	2,267	161	7.10	0.443	1.34 (0.63-2.83)	0.239	0.73 (0.43-1.23)	0.663	1.12 (0.68-1.85)
Others	2,267	95	4.19	0.289	1.62 (0.66-3.97)	0.970	1.01 (0.55-1.87)	0.098	0.58 (0.30-1.11)
Coping capacity (rCSI)									
Low coping	2,267	1,237	54.57		1		1		1
Medium	2,267	559	24.66	0.836	0.95 (0.61-1.50)	0.502	1.10 (0.83-1.45)	0.009	0.69 (0.52-0.91)
High coping	2,267	471	20.78	0.477	0.83 (0.51-1.37)	0.455	1.12 (0.84-1.49)	0.106	0.79 (0.59-1.05)
Access to agricultural land									
No	2,267	167	7.37		1		1		1
Yes	2,267	2,100	92.63	0.697	0.87 (0.43-1.76)	0.939	1.02 (0.65-1.60)	0.421	0.82 (0.51-1.32)
Water, Sanitation and Hygiene Factors									
Water sources (safe/unsafe)									
Unsafe	2,267	393	17.34		1		1		1
Safe	2,267	1,874	82.66	0.501	1.19 (0.71-2.00)	0.747	0.95 (0.71-1.28)	0.833	0.97 (0.72-1.30)
Use of 15 litres per person per day									
<15 ltrs per person per day	2267	997	43.98		1		1		1

≥15 ltrs per person per day	2267	1,270	56.02	0.765	1.06 (0.72-1.56)	0.204	0.86 (0.68-1.08)	0.356	0.90 (0.71-1.13)
Treatment of water before use									
No	2,267	2,121	93.56		1		1		1
Yes	2,267	146	6.44	0.001	2.55 (1.46-4.48)**	0.413	0.81 (0.50-1.33)	0.940	0.98 (0.63-1.54)
Access to toilets									
No	2,267	390	17.20		1		1		1
Yes	2,267	1,877	82.80	0.273	1.38 (0.78-2.44)	0.182	0.81 (0.60-1.10)	0.015	0.69 (0.51-0.93)*
Gender factors									
Gender of household head									
Male	2,127	1,775	83.45		1		1		1
Female	2,127	352	16.55	0.790	0.93 (0.53-1.62)	0.882	1.03 (0.73-1.43)	0.764	1.05 (0.76-1.45)
Maternal BMI									
Underweight	1,908	241	12.63		1		1		1
Normal	1,908	1,470	77.04	0.057	0.61 (0.37-1.02)	0.129	0.76 (0.54-1.08)	0.906	1.02 (0.71-1.48)
Overweight	1,908	160	8.39	0.010	0.20 (0.06-0.69)*	0.013	0.47 (0.26-0.85)*	0.149	0.68 (0.40-1.15)
Obese	1,908	37	1.94	0.307	0.34 (0.04-2.66)	0.306	0.56 (0.19-1.70)	0.320	1.77 (0.57-5.47)
Maternal MUAC									
MAM (<12.4cm)	2,095	2	0.10		1		1		1
Normal (≥12.5cm)	2,095	2,093	99.90		1		1		1
Decision making on livestock production (cattle)									
Woman	779	80	10.27		1		1		1
Man	779	335	43.00	0.968	0.97 (0.21-4.51)	0.905	0.95 (0.44-2.09)	0.376	1.44 (0.65-3.20)
Both	779	357	45.83	0.469	1.73 (0.39-7.64)	0.919	0.96 (0.44-2.10)	0.127	1.87 (0.84-4.15)
Other	779	7	0.90		1	0.952	0.933 (0.97-8.98)	0.191	4.91 (0.45-53.27)
Decision making on livestock production (sheep/goats)									
Woman	814	129	15.85		1		1		1
Man	814	310	38.08	0.834	0.88 (0.27-2.88)	0.222	0.70 (0.39-1.25)	0.529	0.82 (0.45-1.52)
Both	814	367	45.09	0.265	1.85 (0.63-5.48)	0.148	0.66 (0.37-1.16)	0.351	0.75 (0.41-1.37)
Other	814	8	0.98		1	0.622	0.58 (0.07-5.08)	0.859	0.77 (0.05-13.02)
Decision making on livestock production (poultry)									
Woman	1,281	319	24.90		1		1		1
Man	1,281	297	23.19	0.638	1.21 (0.55-2.63)	0.495	0.86 (0.56-1.32)	0.697	0.92 (0.59-1.42)

Both	1,281	654	51.05	0.653	1.17 (0.59-2.32)	0.117	0.74 (0.51-1.08)	0.300	1.22 (0.84-1.76)
Other	1,281	11	0.86	0.515	2.03 (0.24-17.21)	0.252	2.10 (0.59-7.42)	0.367	2.86 (0.29-28.05)
Polygamy									
No	2,267	1,972	86.99		1		1		1
Yes	2,267	295	13.01	0.263	1.34 (0.80-2.23)	0.634	1.08 (0.78-1.51)	0.556	1.11 (0.79-1.54)
Background characteristics									
Age of child (months)									
6-11	1959	245	12.51		1		1		1
12-23	1959	466	23.79	0.424	1.26 (0.71-2.25)	0.036	1.56 (1.03-2.38)	0.069	0.67 (0.44-1.03)
24-35	1959	431	22.00	0.244	0.68 (0.36-1.30)	0.089	1.45 (0.95-2.22)	0.000	0.43 (0.28-0.65)***
36-47	1959	452	23.07	0.020	0.43 (0.21-0.88)*	0.288	1.26 (0.82-1.94)	0.000	0.39 (0.26-0.59)***
48-59	1959	365	18.63	0.161	0.61 (0.31-1.22)	0.733	1.08 (0.69-1.70)	0.000	0.20 (0.13-0.32)***
District									
Pader	2267	544	24.00		1		1		1
Omoro	2267	584	25.76	0.279	1.39 (0.77-2.51)	0.028	0.69 (0.50-0.96)*	0.134	0.77 (0.55-1.08)
Otuke	2267	576	25.41	0.015	2.02 (1.14-3.55)*	0.262	0.83 (0.60-1.15)	0.000	0.21 (0.16-0.30)***
Kole	2267	563	24.83	0.897	0.96 (0.50-1.82)	0.006	0.62 (0.44-0.87)**	0.733	1.06 (0.76-1.49)
Livelihood zone									
Simsim-Groundnut-Sorghum-Cattle zone (Pader)	2267	544	24.00		1		1		1
Mid-North -Simsim-Maize-Cassava zone (Omoro, Otuke, Kole)	2267	1,723	76.00	0.159	1.45 (0.86-2.43)	0.015	0.71 (0.54-0.94)*	0.000	0.52 (0.40-0.68)***
Other risk factors									
Child sex									
Male	1959	928	47.37		1		1		1
Female	1,959	1,031	52.63	0.002	0.54 (0.37-0.80)**	0.254	0.87 (0.70-1.10)	0.220	0.87 (0.69-1.09)
Education level of mother									
No formal education	2,267	686	30.26		1		1		1
Primary	2,267	1,321	58.27	0.991	1.00 (0.65-1.54)	0.833	1.03 (0.80-1.33)	0.060	1.27 (0.99-1.64)
Secondary	2,267	209	9.22	0.398	1.33 (0.69-2.59)	0.049	0.61 (0.37-1.00)	0.953	0.99 (0.63-1.53)
Higher or above	2,267	51	2.25	0.695	1.28 (0.37-4.35)	0.433	0.70 (0.29-1.71)	0.952	1.03 (0.43-2.43)

Education level of household head									
No formal education	2247	645	28.70		1		1		1
Primary	2247	1,337	59.50	0.933	0.98 (0.64-1.51)	0.433	1.11 (0.85-1.45)	0.228	1.17 (0.91-1.51)
Secondary	2247	233	10.37	0.797	0.91 (0.45-1.84)	0.335	0.80 (0.51-1.25)	0.811	0.95 (0.62-1.45)
Higher or above	2247	32	1.42	0.574	0.56 (0.07-4.24)	0.290	0.52 (0.15-1.75)	0.326	0.62 (0.23-1.62)

*p<0.05 **p<0.01 ***p<0.001

V. COMMUNITY PERCEPTIONS OF MALNUTRITION

Condition	Locality	Local name	Meaning	Possible causes	Other information
Marasmus	South-eastern Cattle Maize Zone	Kipoi	Child with swollen stomach	Overeating	Such cases are not so many in our community
	Sorghum and Livestock Zone	Akorod	Child that lacks enough food to feed on and also has worms and diarrhoea (Akiwurot)	Diarrhoea, which is caused by drinking dirty water, eating cold foods and poor storage of household utensils; Poor child spacing; Delaying taking a sick child to the hospital	3 out of 10 children have this condition and there are no seasonal variations
	Western Mixed Crop Farming Zone	Erogo / Lukorod	A child who lacks food that could have given her/him strength	Giving the child the same type of food after which the child loses appetite and stops eating well; Not eating well results in thinness but with a swollen stomach	Common in the months March - December
	North-eastern Highland Apiculture & Potato Zone	Erogo / Lotebu / Imana-Ikaral	Thin child (Ekaret), born with HIV/AIDS or TB or malaria	Lack of enough breast milk; Child might have been born with HIV/AIDS; Poor feeding; Untreated diarrhoea and poor hygiene (not bathing a child well)	Orphans are most likely to suffer condition
Kwashiorkor	South-eastern Cattle Maize Zone	Kosikei		Not breastfeeding well; Not having enough care from the mothers; Eating cold food and poor hygiene. Child was 'bewitched' or cursed by step-mother	
	Sorghum and Livestock zone	Odek	Pancreatic problem caused by less blood in the body or lack of balanced deity	Could have taken water from the dam and they might be having a liver problem	Some of these children are normal but God just gave them big stomachs
	Western Mixed Crop Farming Zone	Lubuyet or Lobulbul	A child that has water and no blood in the body	Poor child spacing; Poor breastfeeding and poor food diet	Illness has existed since past generations

	North-eastern Highland Apiculture & Potato Zone	Itebukon	Child does not feed well and might be having a problem with the pancreas; Child with a swollen stomach (Lotebu)	Worms in the stomach; Poor feeding, eating food not cooked well, not eating a balanced diet	About five children in every 10 households suffer from illness
Stunting	All localities	No definitive local name except in one locality where stunted children are nicknamed “Namede”	Child does not grow due to poor genes of the grandparents or if the mother has light breast milk. Child is very thin, not strong and has taken long to grow	Child is being overworked by carrying heavy things on the head; Not feeding well for example having the same diet every day; Genes of their grandparents were of short people; Mother’s breastmilk makes the child grow slowly; Mother conceived when still breastfeeding	Most of the short children are normal and should not be treated Children with condition used to be common but have reduced

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