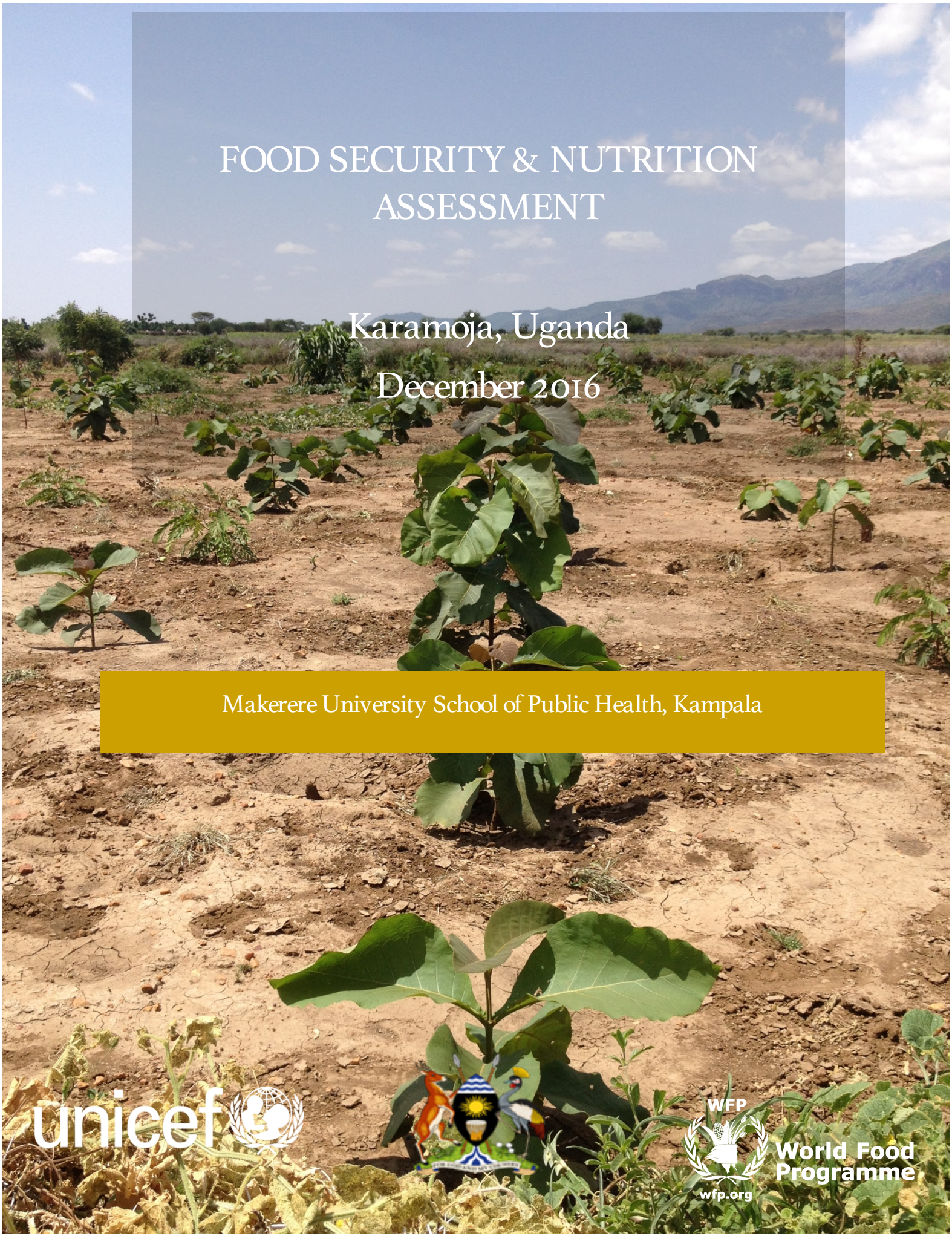

FOOD SECURITY & NUTRITION ASSESSMENT

Karamoja, Uganda

December 2016

Makerere University School of Public Health, Kampala

unicef

WFP
World Food Programme
wfp.org

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ACRONYMS

AME	Assessment, Monitoring and Evaluation Unit
ARI	Acute Respiratory Infection
CSOs	Civil Society Organisations
DDS	Dietary Diversity Score
EVH	Extremely Vulnerable Household
FCS	Food Consumption Score
FES	Food Expenditure Share
FGDs	Focus Group Discussions
FHH	Female Headed Households
GAM	Global Acute Malnutrition
IDIs	In-Depth Interviews
KIIs	Key Informant Interviews
MAD	Minimum Acceptable Diet
MAM	Moderate Acute Malnutrition
METU	Malnutrition Eradication Therapy Uganda
MCHN	Maternal Child Health and Nutrition
MUAC	Mid Upper Arm Circumference
NGOs	Non-Governmental Organisations
NUSAF	Northern Uganda Social Action Fund
RCSI	Reduced (or 'Food Consumption) Coping Strategy Index
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SLEAC	Simplified LQAS Evaluation of Access and Coverage
SQUEAC	Semi-Quantitative Evaluation of Access and Coverage
TLU	Total Livestock Units
WASH	Water, Sanitation and Health

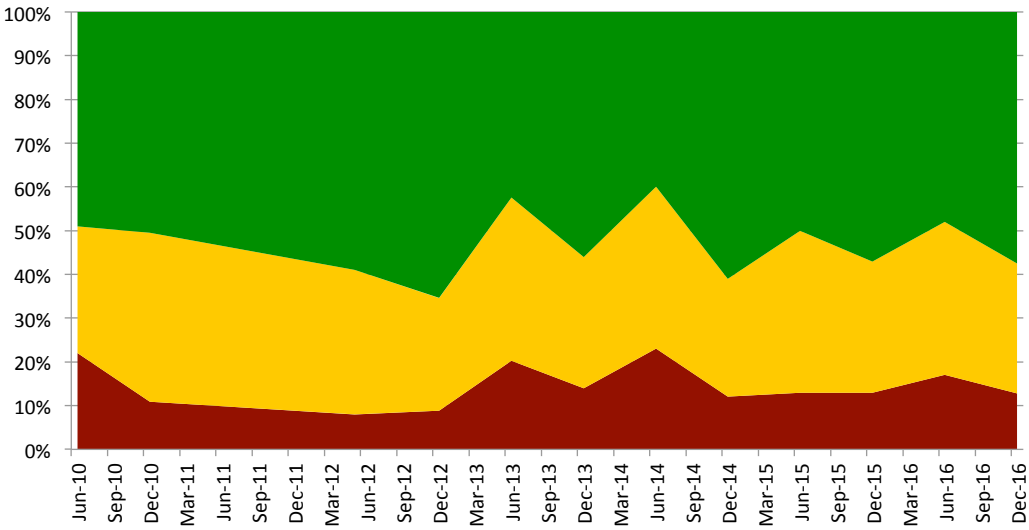
TABLE OF CONTENTS

1. Executive Summary

1.1 Food security situation

- Based on the overall food security analyses, up to 45% of the households in Karamoja region were food-insecure out of which 9% were severely food-insecure. The food security status for Karamoja region had neither significant improvements nor reductions. However, districts such as Kaabong and Abim are on a declining path compared to how they were in previous years. The main factors driving food insecurity in the region were: i) unpredictable climate and low rainfall leading to poor crop yields and low pasture for animals; ii) sale of food (cereals and seeds) since they form the greatest income to households; iii) high food prices; iv) diseases and pests to livestock farming which is major source of livelihood in the region.

- Trends analysis over the past 10 years **(Figure 1)** shows that food consumption patterns for December are similar but there are spikes occurring around June, which is a lean season.



	Jun-10	Dec-10	May-12	Dec-12	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16
Acceptable	49	51	59	66	42	56	40	61	50	57	48	58
Borderline	29	39	33	26	37	30	37	27	37	30	35	30
Poor FCS	22	11	8	9	20	14	23	12	13	13	17	13

Figure 1: Food consumption trends in Karamoja (2010 – 2016)

- Global Acute Malnutrition (GAM) was at serious levels i.e. above 10% in all districts except Abim (8.3%) and Nakapiripirit (9.4%). The regional GAM prevalence was 12.5%, which was similar to what was observed in the past 4 years **(Figure 2)**.

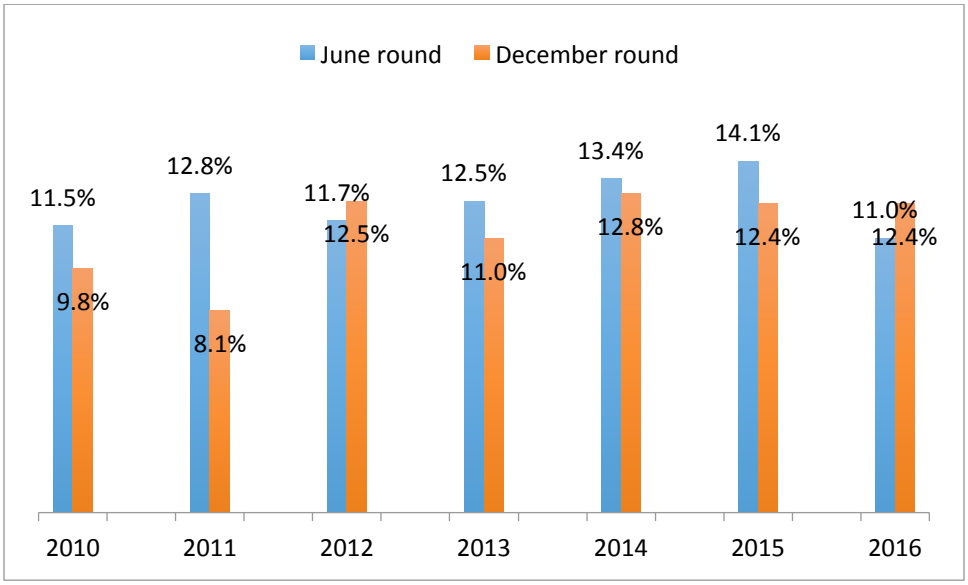


Figure 2: Trends of GAM in Karamoja region (2010-2016)

- Anemia prevalence among children 6-59 months is declining in the region. Anemia in the region was 59% in December 2014, 57% in December 2015 and was 29% in December 2016. However anemia prevalence in mothers was 42% in December 2014, 33% in December 2015 and 40% in December 2016. Any interventions to reduce anemia in children have been successful.

- Initiation of breastfeeding (85%) and exclusive breastfeeding (91%) is usually good for Karamoja region. However, there is always a challenge of late introduction of complementary foods (36%, starting after 6 months) and poor quality or inadequacy of complementary foods. Only 1.1% of the children in Kotido, 0.7% in Moroto and 0.7% in Napak met the minimum dietary diversity (MDD) while the rest of the districts had not a single child. Likewise none of the districts had any child meeting the minimum acceptable diet (MAD), although 36% of the children received the minimum meal frequency while 28% of the non-breastfeeding children were able to access at least 2 milk feeds a day. There has generally been poor quality of infant and young child feeding practices 2%, 3% and now 0% MAD observed in December 2014, 2015, 2016, respectively.

- Enrollment in the Maternal and Child Health Nutrition (MCHN) program was 53% with the highest coverage (>70%) observed in Amudat and Nakapiripirit districts while Abim, Moroto, Kotido were among the lowest (<50%). Enrollment into the MCHN program has steadily increased over the years, which could depict improved service delivery at health facilities where this service is provide.

- However, at the community level feeding programs were not performing well. Up to 69% of all the children who were assessed and had GAM had not been enrolled in any of the feeding programs. This implies that program coverage for feeding programs was about 31%, corroborating with the SLEAC and SQUEAC findings of 2016 where the regional coverage was 35.9%. Nakapiripirit district

had over 55% of the children with GAM enrolled in a feeding program while Amudat and Napak had only 20% and 23% of children with GAM enrolled.

- Similar to previous assessments over the past five years, immunization coverage rates for Karamoja region have been above the global target of 90%. Despite the relatively high immunization coverage rate, up to 65% of the children had suffered at least one illness in the two weeks preceding the assessment. The largest burden of common childhood illness was in Abim, Kaabong, Kotido and Nakapiripirit.

- Additionally mosquito net coverage amongst children in Karamoja region has been low since 2014. Unfortunately the trend has continued downward from 90%, 70% and 57% for December 2014, 2015 and 2016, respectively. Amudat, Moroto and Nakapiripirit are largely responsible for the poor performance in bed net use in most of the rounds.

- While crude and child mortality were within normal limits for the majority of the districts, Kaabong and Nakapiripirit had mortality above the threshold. Crude Mortality Rate (CMR) was 1.2 and 1.1 deaths/10000/day for Kaabong and Nakapiripirit, respectively while Under-five Mortality rate (U5MR) was 2.1/10,000/day – serious trouble – for Kaabong district. Kaabong district had the highest rates of both GAM and stunting, had a high burden of common childhood illness, which could be contributing to the high mortality.

- Access to safe water in Karamoja has been high – above 80% - above the national average (70%) for a period beyond five years. In this survey up to 91% of households in the region reported use of water from safe water sources mainly the boreholes and protected wells. However, 31% of households in Amudat district used unsafe water for drinking due to the low coverage of boreholes compared to other districts. Moreover, the water treatment practices Amudat district was poor (1%). Likewise, the total amount of water used at household level has slowly improved in the region. Up to 37% of the households reportedly used 15 liters per person per day, which was an improvement from a previous average of about 25%. However the median was still 12 liters per person per day and was least in Amudat (10 liters) and Kotido (11 liters).

- Use of toilet facilities in the Karamoja region is still low with prevalence in December 2015 (69%) similar to that of December 2016. As in all previous surveys, the highest rate of ownership was observed in Abim where 2 in every 3 households had access to toilet facilities. Open defecation Karamoja is still common practice in many parts of Karamoja.

- Numerous factors were associated with both food insecurity and malnutrition in the Karamoja region. Children who reported some illnesses in the two weeks prior the survey, those in households with high livelihood coping, in homes belonging to parents of low or no formal education, the socioeconomically poor and female headed homes were at higher risk of being malnourished or

food insecure. There were also poor infant and young child feeding practices like feeding children on some local brew called ebutya, which is believe to be healthy for children.

General Recommendations

i) The community components of the current interventions should be redesigned to improve coverage of service delivery while minimizing targeting of individuals. First, coverage for feeding programs was as low as 31%; second, up to 77% of households currently classified as EVH have had one or more income earner, which dispels the criterion that EVHs lack labor capacity; third, anecdotal information mainly from field supervisors suggest instances where mother and caregivers get excited whenever MUAC measurements on a child get below 11.5 cm. These observations suggest the need to improve the community component of the current programs. In addition, the common phenomenon associated with targeted programs i.e. wrong targets benefiting from the intervention instead of the right target could be happening in Karamoja region; and finally that individual targeting especially of the vulnerable children has increased dependency or is being abused by households at the expense of children. Therefore the community programs should be redesigned to target households instead of individuals especially for livelihood programs. Karamoja region is no longer homogeneous; preferably geographical parameters should guide targeting of the households.

ii) Strengthening the community components of interventions should be done hand in hand with scale up of behavior change communication, community dialogue and sensitization to increase awareness and knowledge on the importance of adequate feeding for children, food security, sanitation and environmental protection to control dependency charcoal and firewood.

iii) Promote increased agricultural and livestock based livelihoods. Given high prevalence of anemia in the region especially in women, and the finding that majority of households had not consumed iron rich foods, it is recommended to introduce bio-fortified varieties of crops that would contribute to improved nutrition of households for example iron bio-fortified beans. Unpredictability in seasons should also be managed by teaching farmers to prepare gardens in the dry seasons so that crops are planted with first rains. Improved livestock farming will also increase the chances of households consuming proteins and hem-iron whose intake was low. Scale up distribution of small animals especially goat and sheep to promote nutrition. Milk value chain should be addressed to promote access of milk to children because currently it's very low. Poultry should be promoted as well alongside promotion on the consumption of eggs. Veterinary services and medicines should be availed as well as involving Agricultural research organizations to support the improvement of farming practices.

iv) There is need for interventions to promote Climate Smart Agricultural Practices among households through extension and training, particularly in the green belt areas to further enhance crop production. Furthermore, given the recurrent dry spells in the region, introduce drought resistant varieties of staple crops to contribute to improved food availability amidst erratic and unpredictable rains.

v) Given that household food stocks are expected to run out by end of March 2017, and that food prices are expected to increase as the lean season progresses, it is recommended to scale up

food/cash for work programs for in the region, particularly in Moroto, Napak, and Kotido districts where access to food was relatively lower.

vi) Since GAM prevalence has persistently remained high over many years, there is need to ascertain extent of incidence and relapse of SAM and MAM both at community and facility level.

vii) Gender roles were important in determining education opportunities for children. Girls were kept out of school due to domestic chores while boys due to lack of resources to care for needs at School including fees. There is need for continuous sensitization of households on the importance of educating and keeping both boys and girls in Schools. This will strengthen the universal primary education program.

District Specific Recommendations (After validation meeting)

2. OBJECTIVES OF THE FOOD SECURITY AND NUTION ASSESSMENT

The purpose was to carry out the December round of the Food and Nutrition Security Assessments (FNSA) using SMART Methodology in the 7 districts of Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit and Napak to establish current status with key food security, nutrition, health and WASH indicators, and provide data for program planning and evaluation of any achievements.

Specific objectives

- Determine the prevalence of malnutrition (wasting, stunting and underweight) among children aged 6-59 months (and/or measuring 65-110 cm in length or height - A sensitivity analysis of indicators by age category most likely to responding to interventions is required);
- Determine the coverage of health interventions (e.g., routine immunization coverage (DPT, Measles, polio and de-worming) and vitamin A supplementation among children under five;
- Determine the prevalence of common diseases (diarrhoea, measles and ARI) among the target population, two weeks prior to the assessment and access to/ uptake of health services for treatment;
- Assess current IYCF practices
- Analyse factors associated with malnutrition;
- Assess the current food security status of households including food consumption, dietary diversity (using 7-day dietary recall methods), and coping strategies;
- Analyse factors that determine household food security status;
- Analyse gender issues affecting household food security and child nutrition status
- Assess anaemia status in children and women
- Assess ECD related behavioural indicators
- Program relevance/targeting of interventions
- Recommend appropriate course of action by the Government, UNICEF, WFP and other stakeholders based on the findings of the assessment.

3. METHODOLOGY

Scope

The assessment covered all 7 districts of Karamoja viz. Napak, Moroto, Kaabong, Nakapiripirit, Kotido, Abim, & Amudat. A two stage cross-sectional cluster sampling methodology[1] was used, with the village as the geographical unit, based on the SMART methodology and Sampling guidelines.

Sampling

At the first stage a probability sample of clusters was selected using an updated list of parishes that constitute a district (probability proportional to population size approach); at the second stage, households were selected using systematic random sampling methodology. Representative samples of households were therefore selected at district level.

Data collection

Quantitative data was collected using a standardized questionnaire uploaded on mobile tablets (ODK). The Food Security module was administered to all household heads (or adult person present at time of interview) through face-to-face interviews while the Nutrition module was administered to mothers/caregivers of children under 5 years.

Note:

i) Age determination of children was done preferentially using child health cards. However, in their absence, discussions with the mothers/caregivers using a local events calendar were used.

ii) Children with physical disabilities were assessed but findings on anthropometry excluded.

Qualitative Data was collected using Focus Group Discussions (FGDs) with men (household heads) and women (mothers); In-depth Interviews (IDIs) with mothers and Key Informant Interviews (KIIs) with district health officers, health facility managers mainly in charge of Maternal, Child Health and Nutrition and nutritional health care providers all at different levels. Further, we interviewed the sub-region developmental partners, ranging from Non-Governmental Organizations (NGOs) to Civil Society Organizations (CSOs) who currently implement nutrition interventions in the area. While in the field and during data collection two experienced researchers collected the qualitative data. Data was captured using a digital audio recorder and the note taker ensured that notes were taken during the interview. From the field, data was transcribed verbatim. Coding started with a trial process that involved randomly sampling five of the transcripts; this pre-test was aimed at identifying the key issues that were emerging from each of the questions asked during the interview.

Quality assurance

i) **Pre-coded skip patterns** were pre-programmed into ODK to prevent the need for removing irrelevant fields at the analysis stage

[1] Methodology used was consistent with previous Food Security and Nutrition Assessments in the region

ii) **Pre-coded ranges and restrictions** were also used, tailored to the assessment, in order to reduce errors during data collection.

iii) Seamless integration with excel: Data from the tablets converts easily to an Excel file and can then be exported to analysis software, eliminating data entry errors.

iv) Several steps were put in place to ensure that the quality of the qualitative data is not compromised, below are the steps we took to ensure good quality data:

- Identified graduate level researchers with relevant skills of managing qualitative data.
- Pre-tested the coding process using Atlas ti, by randomly sampling 5 transcripts, which was aimed at getting a feel of what issues would emerge from the data.
- All the transcripts from the field were typed into word documents, under close supervision of the principle investigator.
- Preliminary results were first shared and discussed within the analysis team and later with the PI to ensure that it represented the true picture of the data that was collected.

Data analysis

Quantitative data was exported from ODK to excel and subsequently to ENA for SMART (Nutrition analysis) and SPSS (Food Security analysis).

With qualitative data, deductive coding was adopted, we used codes generated based on the preliminary analysis of the quantitative data. A framework analysis technique was adopted for analysis. Having established the codes, two qualitative researchers on the team then familiarized themselves with the data by reading through a sample of transcripts from which thematic frameworks were identified. Emerging themes formed the basis for the thematic frameworks from which the data was classified. Textual data from the transcribed interviews was then indexed on the corresponding themes. Thereafter a representative sample of the indexed textual data was lifted and placed under the subheadings that were drawn to represent different aspects of the thematic framework. Interpretation of the data was then made following the analysis of the key characteristics. Selected interesting quotations representing each of the sub-themes have been extracted from the transcripts and used in the report to bring out the voices of the respondents.

3. Household demographic profile

Gender of household head

Up to 20% of households were female headed –within the regional average of about 25% and lower than what was observed in June 2016 (36%). In addition, all districts had high polygamy rate above 40% except Abim (28%) (**Figure 3**).

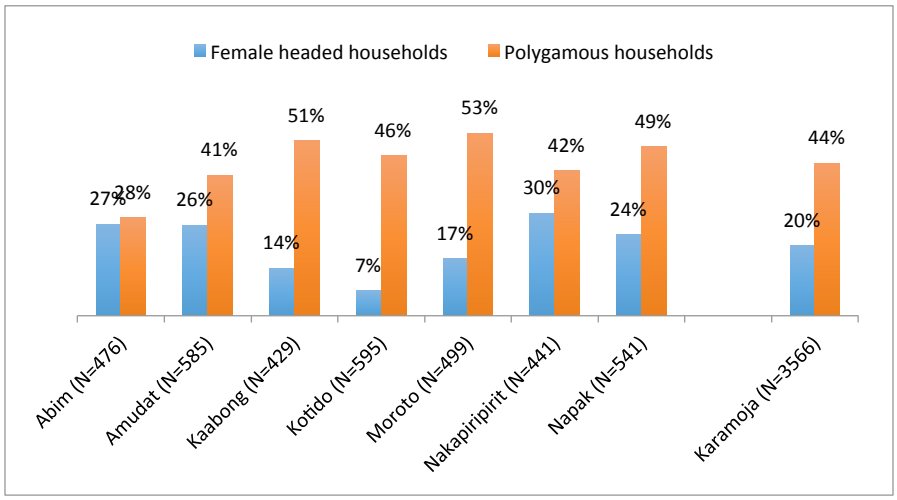


Figure 3: Proportion of female-headed households and polygamy status

Physical condition of household head

Up to 10% of household heads were either disabled or chronically ill in the region (**Figure 4**). In previous studies, Kotido, Moroto and Napak usually presents with highest percentages of disabled and/or chronically ill household heads. However in the current assessment, Abim, Nakapiripirit and Kaabong had the highest prevalence. Disability/chronic illness renders households unable to produce enough food through agriculture, and reduces their ability to participate in income earning activities. It is thus a strong predisposing factor for food insecurity rendering households highly vulnerable to food insecurity.

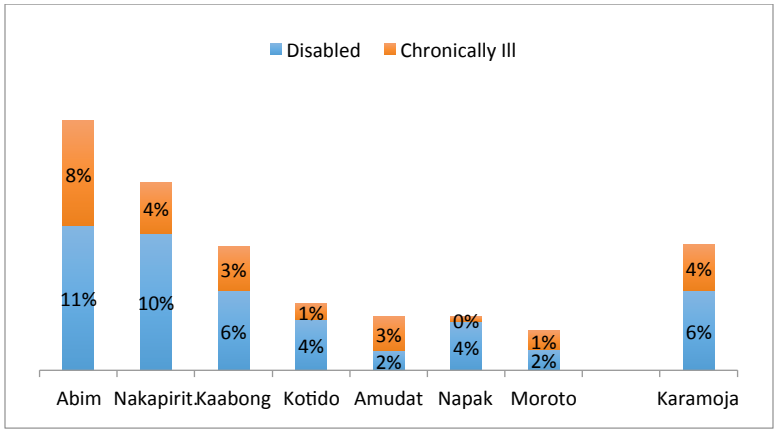


Figure 4: Prevalence of disability and chronic illness amongst household heads

Education level of household head

Similar to findings in previous assessments, the majority of household heads (74%) had never attended formal school (**Figure 5**). The percentage of households with heads of zero years of formal education was high in all districts except Abim (32%).

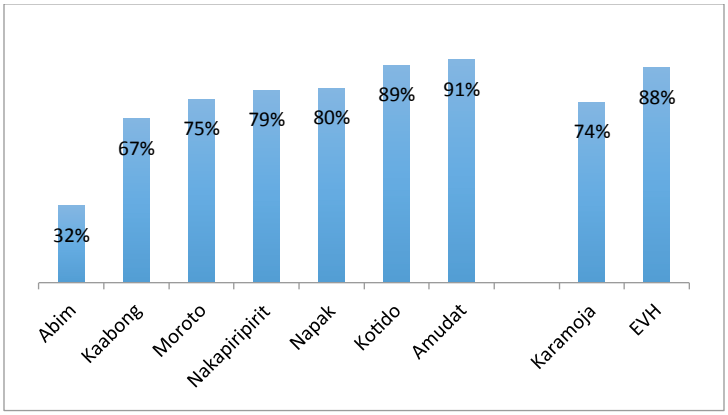


Figure 5: Proportion of household heads who had zero years of formal education

Close linkages between the household head education level and the Food Security/Nutrition status (see **Section 10**) suggests households in Abim are more likely to be food secure compared to their counterparts in other districts.

Factors affecting child education

Almost equal percentages of households reported having at least one boy or girl that did not regularly attend school (12%). There was no significant difference in irregular attendance between boys and girls for all districts except Kaabong, **Figure 6**. The highest percentage of boys and girls that did not attend school was in Kaabong, Kotido, Napak and Abim districts.

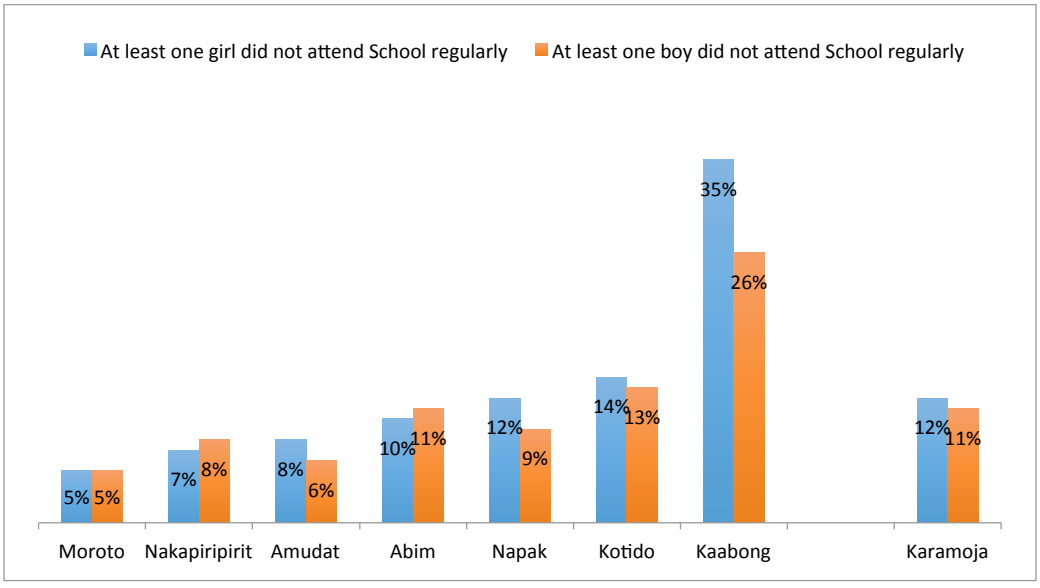


Figure 6: Irregular School attendance amongst children of School going age

Main reasons for not attending school

The two main reason for irregular school attendance among both girls and boys were i) direct costs of school i.e. Inability to pay for fees, uniform, books, etc. especially for boys and ii) opportunity costs i.e. domestic chores, especially for girls **(Figures 7 and 8).** Findings show that gender roles are an important determining factor in education opportunities for children. Similar to previous findings girls are kept out of school due to 'responsibilities' and boys due to 'resources' (e.g. school fees). This should be a consideration when intervention is made in strengthening the universal primary education program.

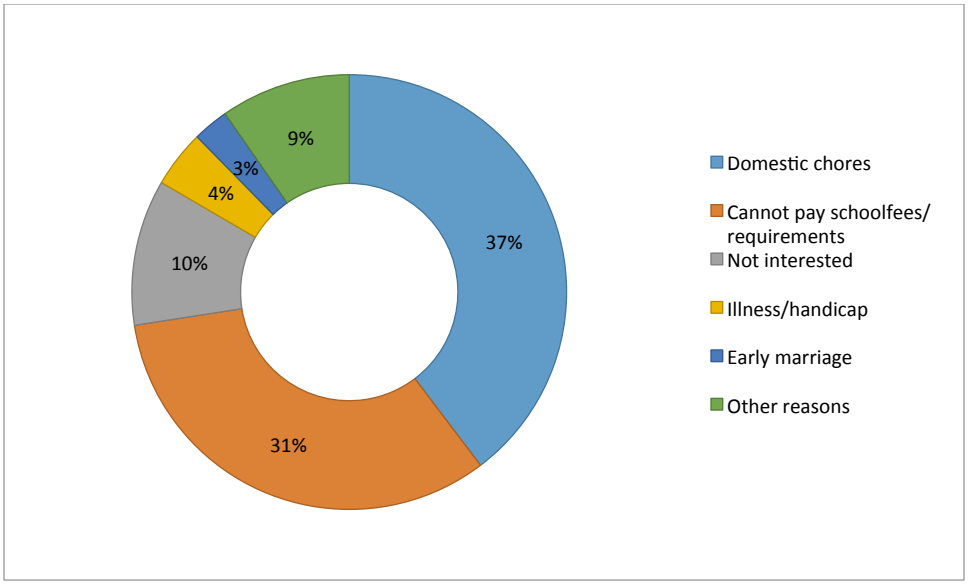


Figure 7: Reasons for not attending School regularly among girls

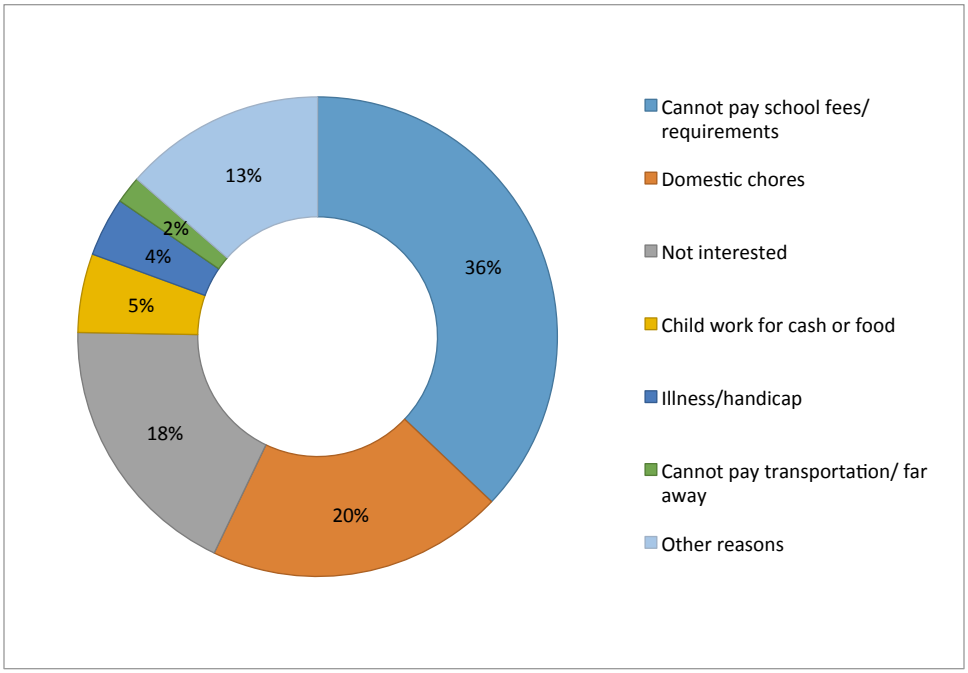


Figure 8: Reasons for not attending School regularly among boys

Household asset ownership

The median number of assets owned across the Karamoja region was 3 out of the 16 enumerated household assets[2]. Up to 35% of the household have nothing, one or two assets (**Figure 9**). The four most commonly owned assets in the region were the hoe (86%), the panga (71%), the axe (45%), and a mattress (27%). This asset profile is similar to previous asset ownership patterns observed in the region.

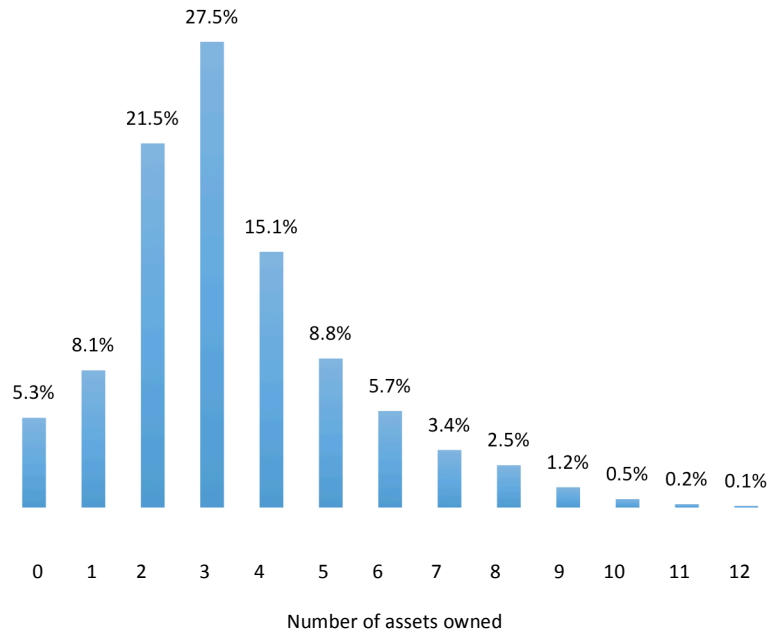


Figure 9: Number of household assets owned

The assets owned by households were used to construct a household socioeconomic index using principle components analysis. When the socioeconomic index was categorized into quintiles, it indicated that Abim district had the highest number of households (50%) in the top-most (wealthiest) quintile while Kaabong was leading in the poorest quintile (35%) **(Table 1)**.

Table 1: Household socioeconomic status quintiles according to district

District (N)	Poorest	Poorer	Poor	Less poor	Rich
Abim (N=476)	1.5%	6.1%	12.4%	30.3%	49.8%
Amudat (N=585)	8.0%	34.0%	19.3%	22.6%	16.1%
Kaabong (N=429)	35.0%	20.0%	14.9%	14.9%	15.2%
Kotido (N=595)	25.5%	16.5%	22.7%	20.7%	14.6%
Moroto (N=499)	28.3%	18.0%	23.0%	11.4%	19.2%
Nakapirit. (N=441)	32.0%	21.1%	23.6%	13.2%	10.2%
Napak (N=541)	19.6%	17.4%	23.8%	24.2%	15.0%

Ownership of seed and food stores

A food store is an infrastructure in place to keep food for consumption. These are normally traditional granaries or modern or simple silos. The seed stores mainly keep seeds for future use especially to replant. The number of households owning food stores increased in Karamoja region from an average of

[2] Enumerated assets were: Bed, Table, Chair, Mattress, Radio, Cellphone, Sewing machine, Bicycle, Car, Motorcycle, Television, Axe, Panga, Hoe, Oxplough, Water tank, Seed store, Food Store, Beehive, Watering can, and irrigation equipment.

20% to 55% of the households owning a food store e.g. granary, and 32% owned a seed store (**Figure 10**). The highest ownership level of food stores was observed in Abim, Kotido and Amudat at 74%, 64% and 64% respectively, while seed stores were most common in Nakapiripirit (49%) and Moroto (47%).

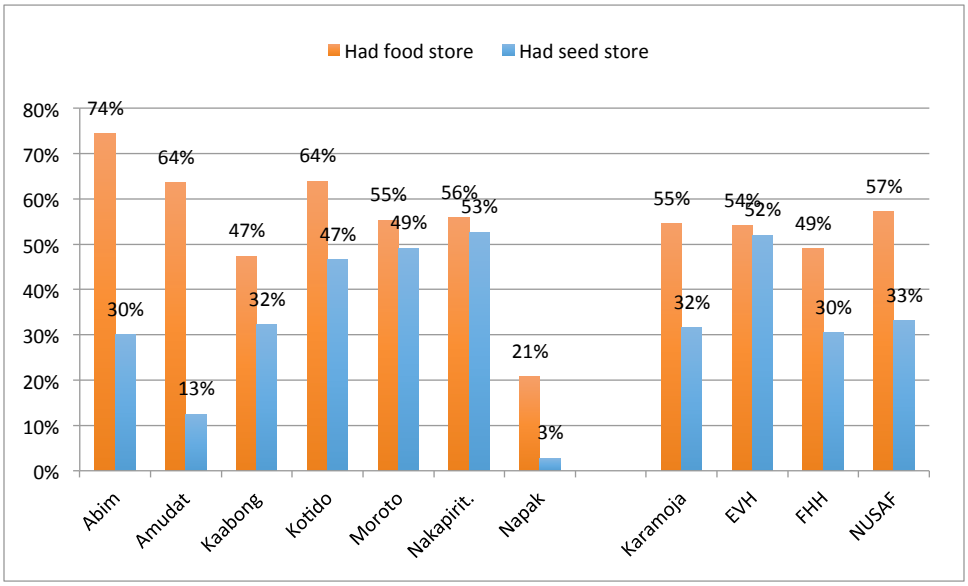


Figure 9: Household ownership of food and seed store according to district

Owning a food store was however not significantly associated with many indicators of food security and nutrition except for the food consumption scores. Households that owned a food store were significantly more likely to have had acceptable food consumption score. There is need to support more agricultural production so that food stores can be optimally used for post harvest food handling.

4. Food availability

Access to agricultural land and crops grown

Access to agricultural land is usually not an issue in the Karamoja region with the majority (82%) indicating access to enough land for production (**Figure 11**).

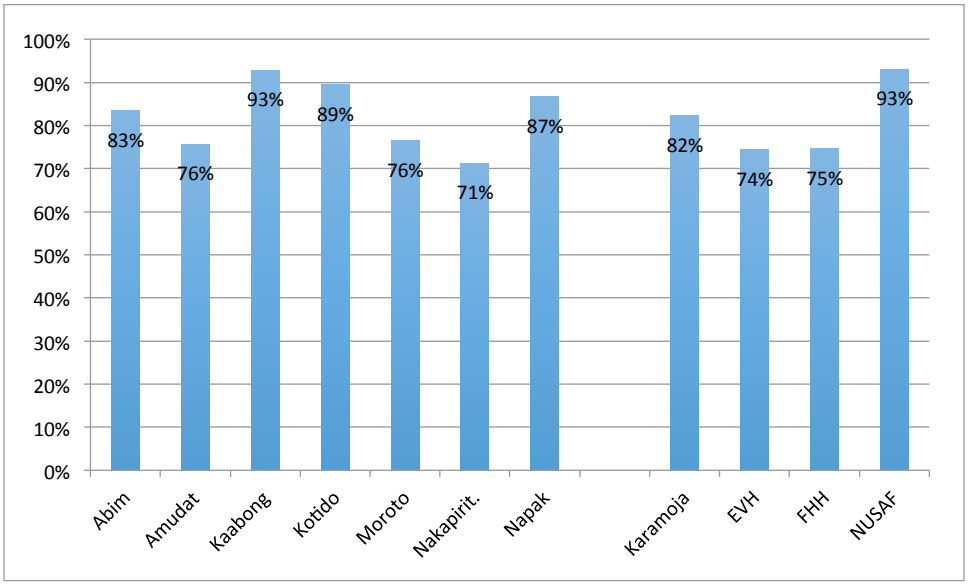


Figure 10: Access to agricultural land

Sorghum (73%) and maize (44%) were the crops that were mainly cultivated, followed by beans at 21% **(Table 2)**. There is limited number of crops grown and there was reported mono cropping. This practice predisposes households to the risk of crop failure and constrains the ability to diversify diets for better nutrition. There is need for interventions to promote Good Agricultural Practices among households through extension and training in all districts in the region.

Table 2: Main crops grown according to district

District	Sorghum	Maize	Beans	Millet	Cassava
Abim	83%	21%	32%	21%	16%
Amudat	2%	96%	15%	1%	0%
Kaabong	87%	62%	17%	5%	1%
Kotido	96%	16%	13%	12%	0%
Moroto	80%	65%	30%	1%	0%
Nakapirit.	69%	19%	11%	17%	1%
Napak	93%	28%	32%	2%	2%
Karamoja	73%	44%	21%	8%	3%

Constraints to agricultural production

This survey was done after harvest and Karamoja region has a unimodal rainfall pattern. Whereas according to meteorology, the total rainfall may not have varied much, the onset of seasons and distribution pattern was not as usual. Therefore the main constraint to agriculture reported by 87% of the households engaged in agriculture across the region was largely low rainfall **(Figure 12)**. Poor rainfall performance has historically been a major factor affecting agricultural production in the region. As emphasized by one in KII, *"All in all, things are going wrong in nature. Nature is unfriendly. There is persistent drought, which man has little power over. Even if you come from Makerere and you begin studying the climate here, you will fail control draught. When God says no is no". Climatic changes are well recognized in Karamoja: "The rain pattern here does not favor agriculture. Some years back, we used to have one rainy season where by rains used to start by March and by July to August the rains have stopped to rain again until next year around March but I think because of global warming we started receiving rains beyond September to December"* This observation from a key Informant seem to suggest that there is generally increased rainfall in Karamoja although the seasons are not predictable and therefore the changes have not been used beneficially.

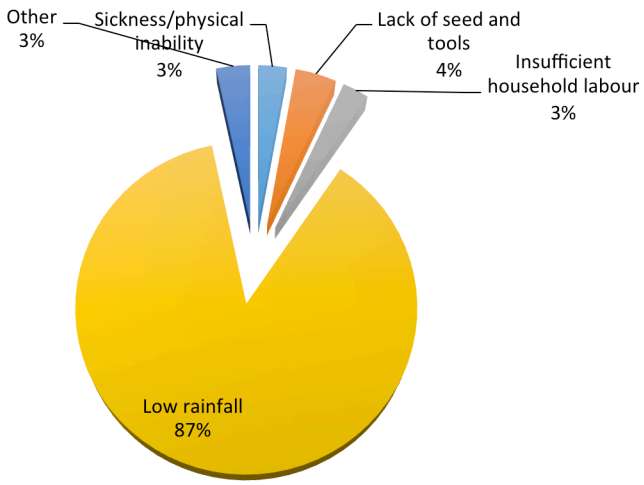


Figure 11: Constraints to agriculture

There is therefore need for continued sensitization on climate change; draught related agricultural practices; and invest in expanded irrigation schemes, valley dams, and other water harvesting/conservation solutions in order to improve food availability and stabilize the region in the medium to long term.

Household Food stocks

Availability of food stocks was generally better than similar periods over the past 2-3 years. The highest percentage of households with food stocks was found in Kaabong (74%) and the lowest in Moroto (15%), (**Table 3**). However, there were mixed feelings on amount of food in households from key informant interviews: "*…I think as per now, things are not so, so bad but this will be short lived, you know this is December. And people have just harvested, those few who harvested, still have something in the community where people share things. So maybe that is why it is like that. But I know it is a short leaved thing. This particular year, the harvest has not been the best except in some few isolated places. Traditionally Karamoja grows mostly sorghum, but this year I never saw sorghum widespread like it used to be. And I think some few places here and there, yeah. So I don't know, if can I say the food situation is*

good". Indeed the food stocks available in homes would only last an average of 2 months. By the end of February 2017, households will not have enough food. There is need to sensitize communities about the need to ration food in stock and the dangers of excessive sale of food reported in the district like Nakapiripirit.

Table 3: Household food stocks and the expected duration food will last

District	Have food stocks	Months stock will last
Kaabong	74%	2.7
Kotido	65%	2.3
Napak	60%	1.5
Abim	48%	3.0
Amudat	45%	1.9
Nakapiripirit	24%	2.0
Moroto	15%	2.1
Karamoja	48%	2.2
EVH	38%	2.0
FHH	33%	2.4
NUSAF	62%	2.4

Livestock ownership

Compared to more than 3 years ago, the livestock ownership status in Karamoja is increasing. However, up to 42% of the households still do not own any livestock, which is a drop from over 50% reported in previous studies. As in previous surveys the highest levels of livestock were found in Amudat, followed by Kaabong, **Figure 13**. Many of the households that own livestock have low holding, except in Amudat where up to 24% had high holding. Livestock holding in Nakapiripirit showed a decline. This might need to be investigated further.

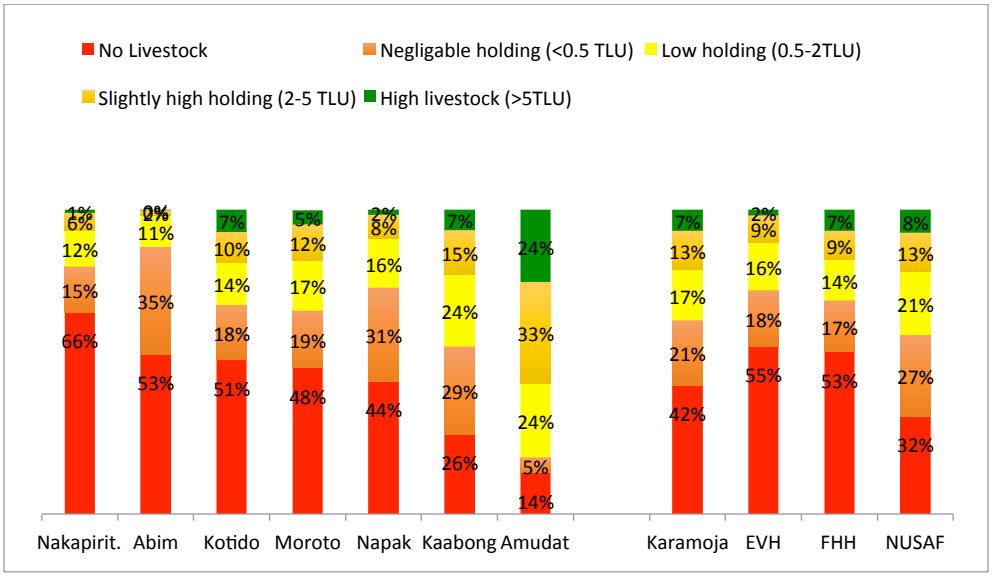


Figure 12: Livestock ownership

Constraints to livestock ownership

A number of constraints threaten livestock, with parasites and disease (43%), lack of pasture (14%) and lack of veterinary services (14%) being the most common **(Figure 14)**. Even in the qualitative assessment, there were suggestions that livestock disease is a key constraint. *"…mostly, you know Karamoja used to be predominantly pastoralist. But nowadays because of diseases, cattle rustling and different things, its now agro-pastoral and others are mostly even agriculturalists. In the lower belt of Nakapiripirit, you see mostly agriculture"* Although some parts of Karamoja are in transition, the importance of livestock to the Karamojong communities cannot be underestimated. There is therefore an urgent need to strengthen district veterinary services as a way to improve animal health.

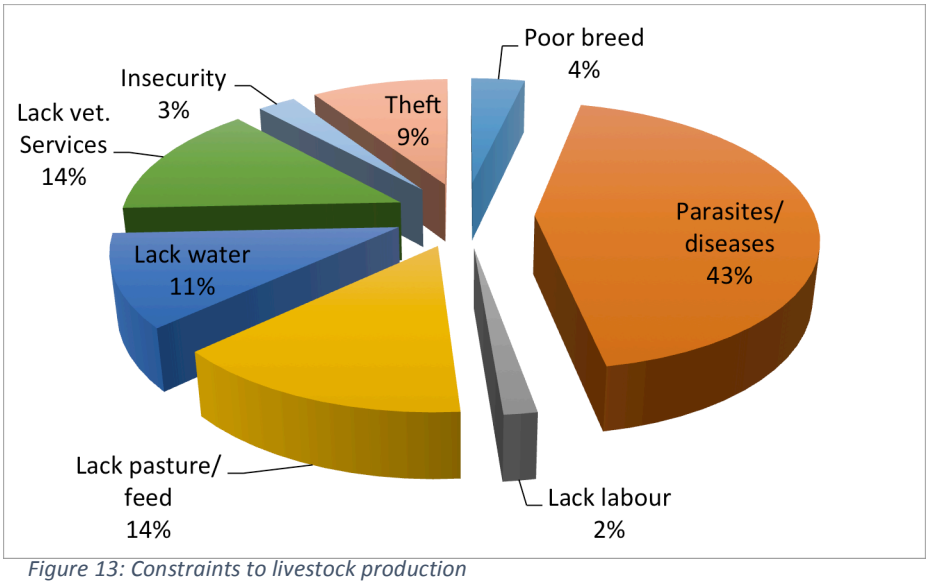


Figure 13: Constraints to livestock production

5. Household access to food

Household income earners

Income earners were categorized as any person earning any amount of money at the time of the assessment. About 22% of the households did not have an income earner (**Figure 15**). Abim district had the highest households (45%) without an income earner.

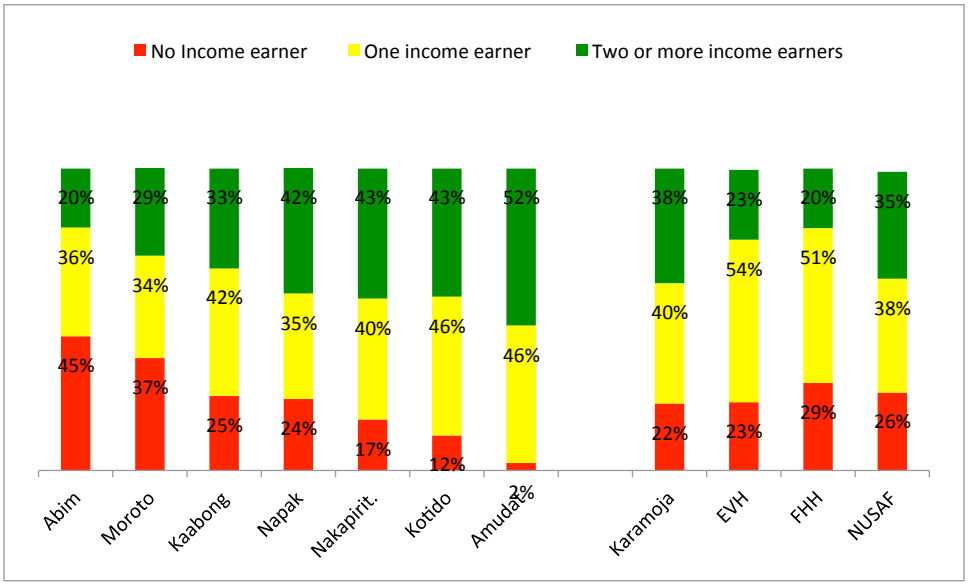


Figure 14: Household income earners

Main income sources

The main income sources for the majority of the districts was sale of natural resources especially firewood and/or charcoal. This was particularly true for Nakapiripirit, Moroto, Napak and Kotido (**Figure 16**). Amudat and Kaabong were mainly dependent on livestock and sale of agricultural crops, respectively. Whereas the majority of households had at least one income earner, it is expected that income levels are generally low as most of the income earning activities are ad-hoc, sporadic and low paying. In particular, households dependent on agriculture are worse off given the generally poor performance of cropping season, potentially constraining access to food. In addition, most of the work is left to women, which constrains household income. "*It's a cultural practice because here after marrying a woman, it's like a man has done everything in his life. The woman is now going to-do everything for the man. The mothers leave the children asleep very early in the morning to look for firewood to sell in the market so as to buy food for the family and if the firewood is not sold, the children will sleep hungry and the child's sickness then begins there.* **Focus Group Discussion**

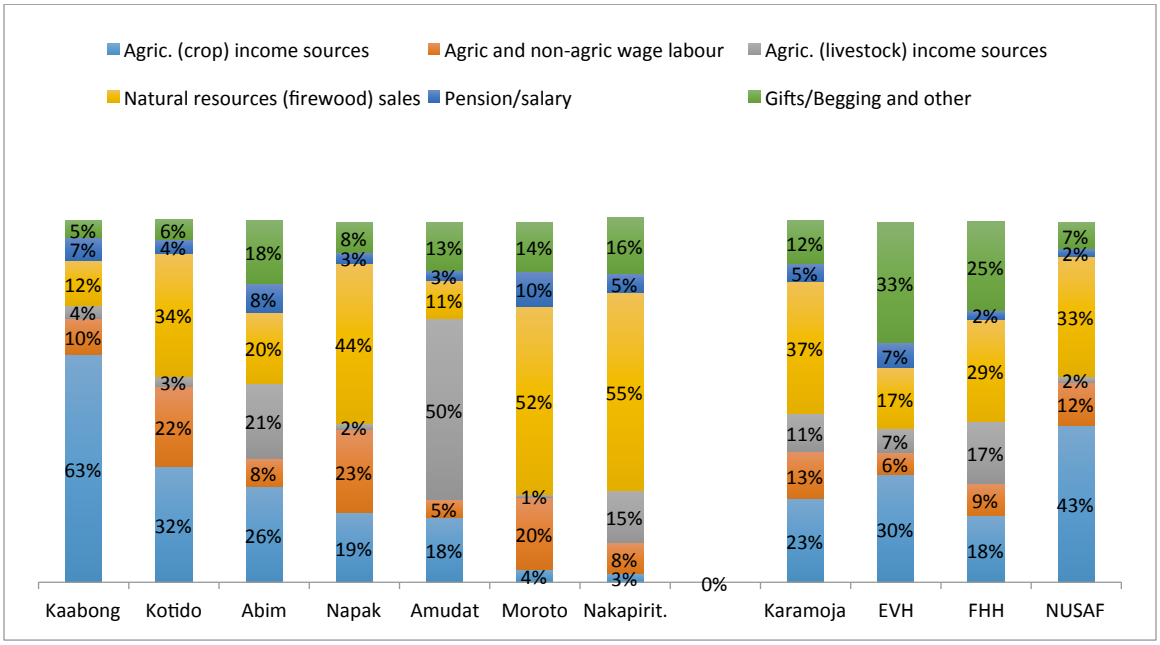


Figure 15: Main income sources according to district

Debt prevalence

About 31% of households reported having debt in the region. The highest prevalence of debt was observed in Abim, Napak, Moroto and Nakapiripirit districts (**Figure 17**). While debt is not necessarily bad for households (as it can potentially be used to augment agricultural production and other income generating activities), it is indicative of stress when used to meet essential household needs, including for purchase of food.

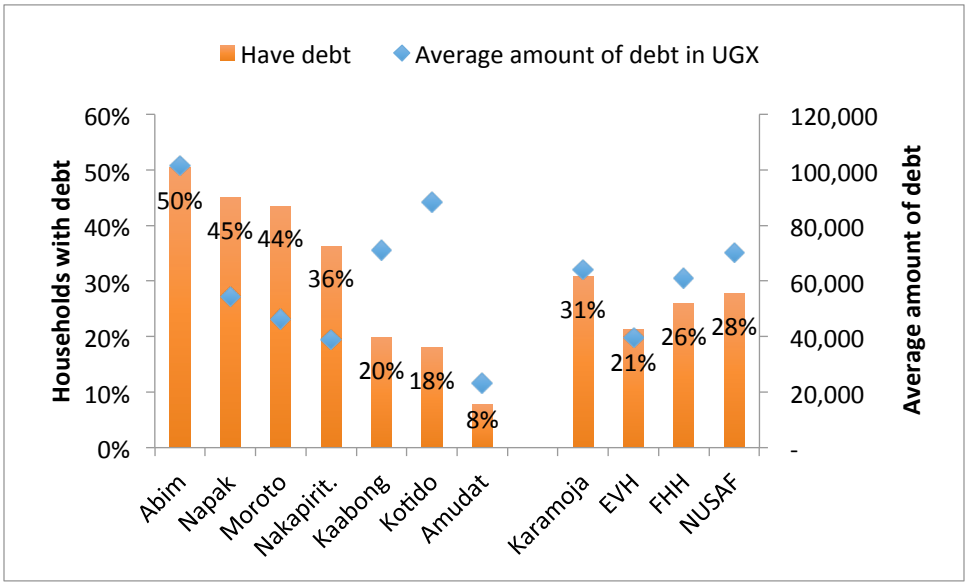


Figure 16: Prevalence of debt

Main reasons for debt

For the majority of households that had debt, up to 52% borrowed to buy food, while 22% did so to cover health expenses (**Figure 18**). This further shows stress in acquisition of food for household consumption.

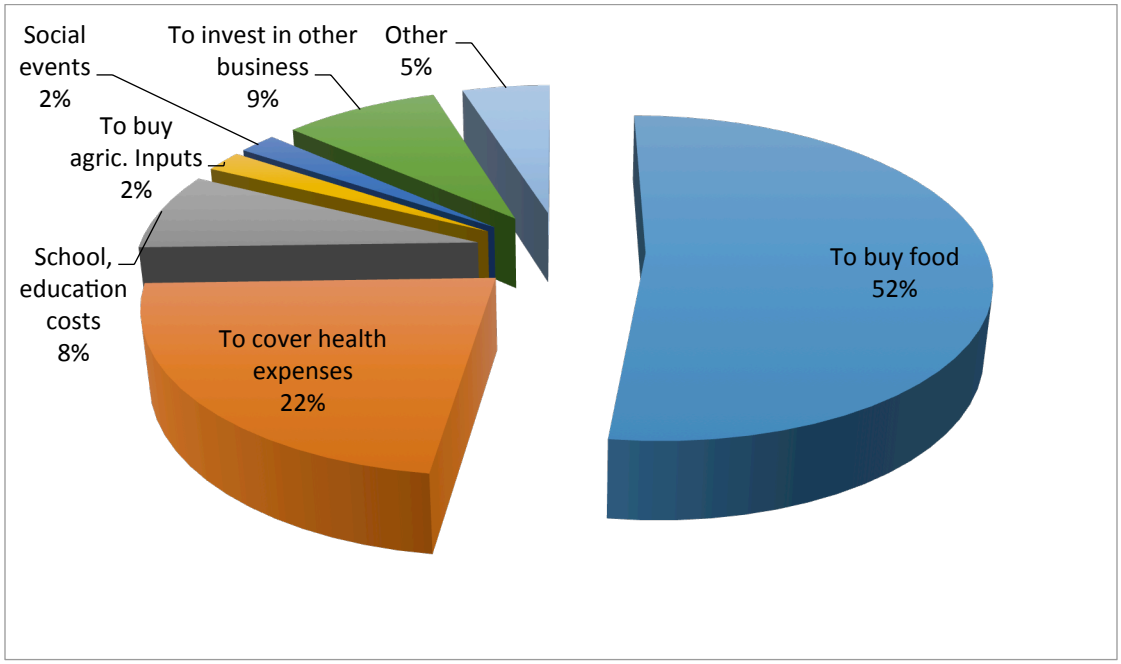


Figure 17: Main reason for debt

Food expenditure profiles

Up to the 31% of the households borrowed as seen in figure 15 above, and the reason for half of them was to buy food as seen in figure 16. However, almost all households were engaged in buying food. The staples such as cereals and pulses took the highest amount of money (**Table 4**). On average households spent UGX 33,000 (Approximately USD 10) on cereals a month preceding the survey. While approximately $10 sounds little, in the context of Karamoja where income is very low, that constitutes a relatively large expenditure.

Table 4: Average amount of money spent on buying food a month before the survey

District	Cereals & Tubers	Pulses	Fruits & vegetables	Meats	Dairy	All other foods
Abim (N=477)	40,585	24,724	4,597	9,342	5,625	19,398
Amudat (N=585)	57,233	9,392	6,829	6,193	20,344	30,142
Kaabong (N=428)	26,596	13,684	6,858	5,908	3,531	14,773
Kotido (N=593)	36,052	14,621	3,956	7,954	11,753	19,857
Moroto (N=501)	32,696	17,927	8,921	13,188	7,855	28,185
Nakapirit. (N=442)	26,007	11,320	5,069	7,613	4,406	16,326
Napak (N=540)	27,890	10,391	4,834	5,844	3,064	9,372
Karamoja (N=3566)	33,794	14,813	5,516	7,977	6,098	19,841

Dependence on markets for food

There was a drop from an average of 40% in June 2016 to 14% in the number of households that heavily depended on markets to get food. Only 14% of the households in the region derived over 75% of food consumed in the households from markets (**Figure 19**). To an extent, heavy reliance on markets for food could have reduced due to the presence the food stocks compared to June, which was a lean season. However, food stocks may not be the absolute reason for all districts since many households in Kaabong (74%) had food stocks – see table 3 above, and yet the district had the largest proportion of households depending on markets.

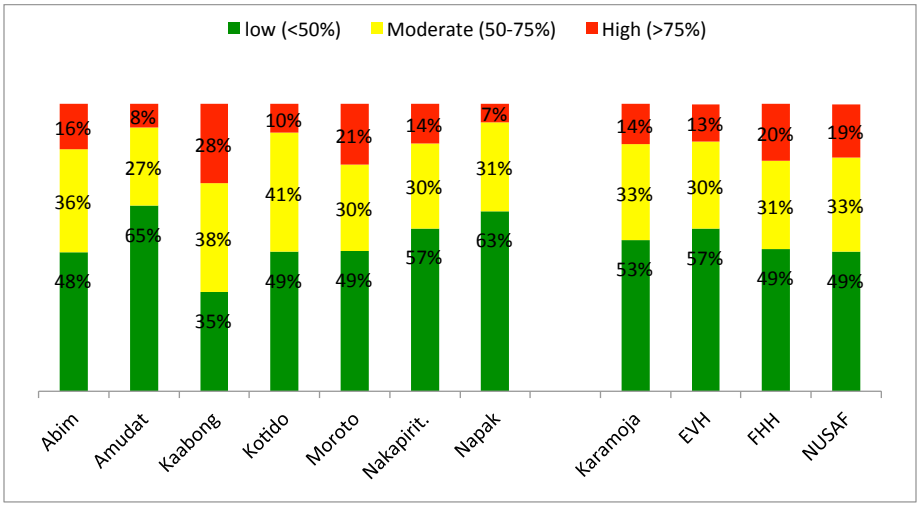


Figure 18: Dependence on markets for food among households

Food Expenditure Share

Likewise the number of households spending proportionately more on food than other essential non-food items reduced from 47% in June 2016 to 34%, that is, households with Food Expenditure Share[3] >65% (**Figure 20**). The household food expenditure share inn December 2016 was also lower than the 55% observed in December 2015. This indicates improvement in food access in the region.

[3] The Food Expenditure Share, FES, is the percentage of total household expenditure that is allocated to food. The higher the percentage of total expenditure that is allocated to food by a household, the more food insecure the household. Thus, households that spend *less than 50%* of total household expenditure on food are regarded as food secure; *50-<65%* as marginally food secure; *65-<75%* as moderately food insecure; and *>75%* as severely food insecure.

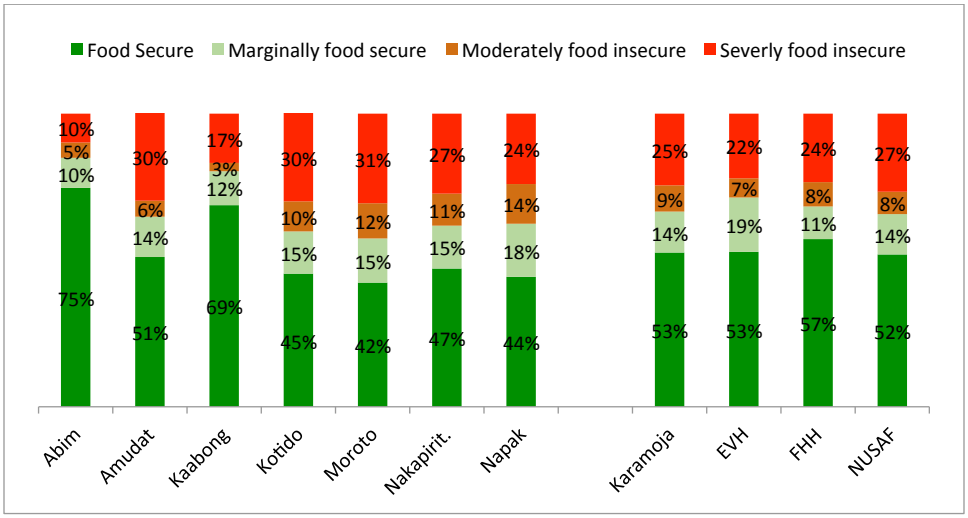


Figure 19: Food expenditure share categories

6.Food utilization

Food Consumption

Up to 58% of the households in the region had acceptable FCS[4], an improvement from 47% observed in June 2016 but similar to what was observed in December 2015 (57%). Those with poor FCS also reduced from 17% in June to 13% in December 2016 **(Figure 21)**. This improvement could be explained by the large amount of food stocks and the fact that December is a post harvest period. Households with acceptable FCS were less likely to have malnourished children compared to those with poor FCS.

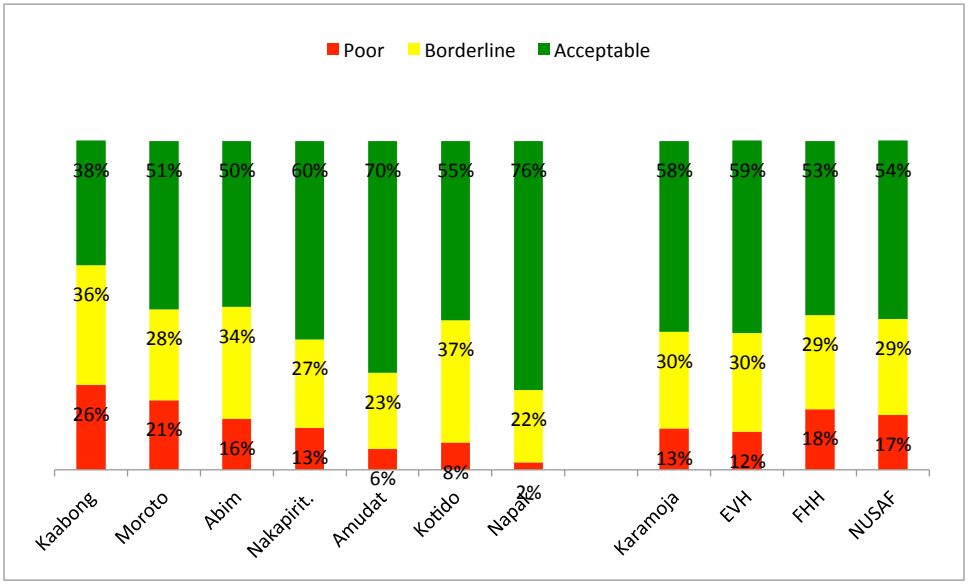


Figure 20: Food Consumption Scores according to district

However, 14% of the households that had acceptable FCS borrowed money to buy food **(Figure 22)**. Up to 29% of the households with acceptable FCS in Moroto borrowed to buy food. According to the multi-dimensional analysis of the food security situation, Amudat district appears to be most stable than any other district in the region.

[4] The Food Consumption Score (FCS) is a composite score based on dietary diversity, food frequency and relative nutrition importance of different food groups.

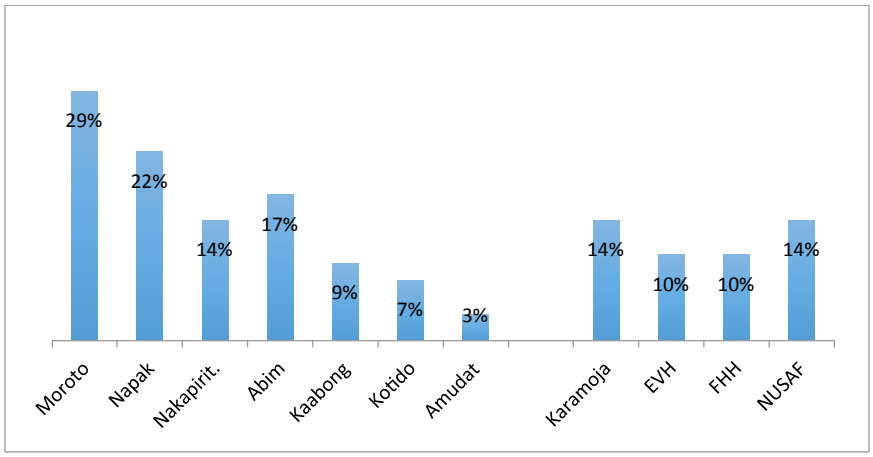


Figure 21: Households with Acceptable FCS that borrowed to buy food

Diet diversity

The percentage of households found to have low diet diversity score[5] (DDS) was 49%. Three districts of Kotido, Kaabong and Amdat had over 50% of the households having low DDS (**Figure 23**).

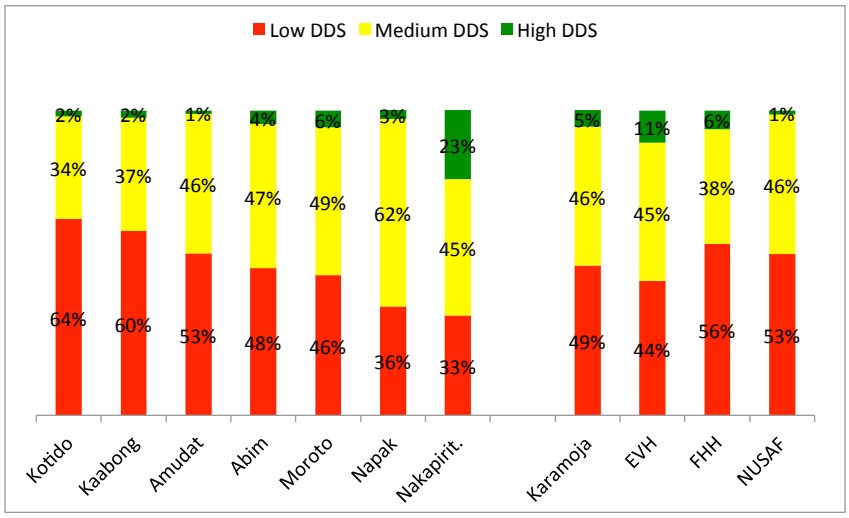


Figure 22: Household dietary diversity

However, consumption of protein rich foods was relatively high with 92% of the households in the region reported taking protein at least once a week and 39% taking protein rich foods daily. Households that had not consumed any protein rich foods in the 7 days prior to the survey were highest (17%) in Kaabong, a district with worst indicators of nutrition, (**Figure 24**).

[5] The Household Diet Diversity Score (HDDS) is a simple count of food categories consumed in the household in the past 7 days, based on 7 food groups. Based on IFPRI classification, HDDS is then classified as Low (HDDS <4.5), Medium (4.5<HDDS<6) or High (HDDS > 6).

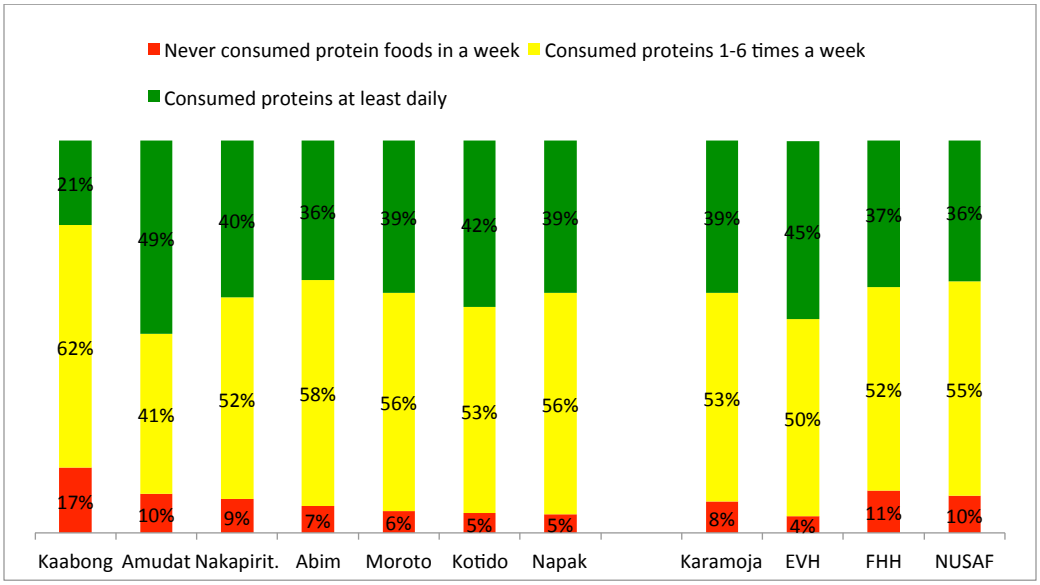


Figure 23: Consumption of protein foods

Further analysis showed that nearly half of households had not consumed any foods rich in hem-iron (meat-based sources of iron) in the 7 days preceding the survey (**Figure 25**). Over 50% of households in Abim, Amudat, Kaabong and Kotido never consumed any hem-iron rich food. This is a critical issue as consumption of hem-iron is a key factor in reducing child stunting and anemia.

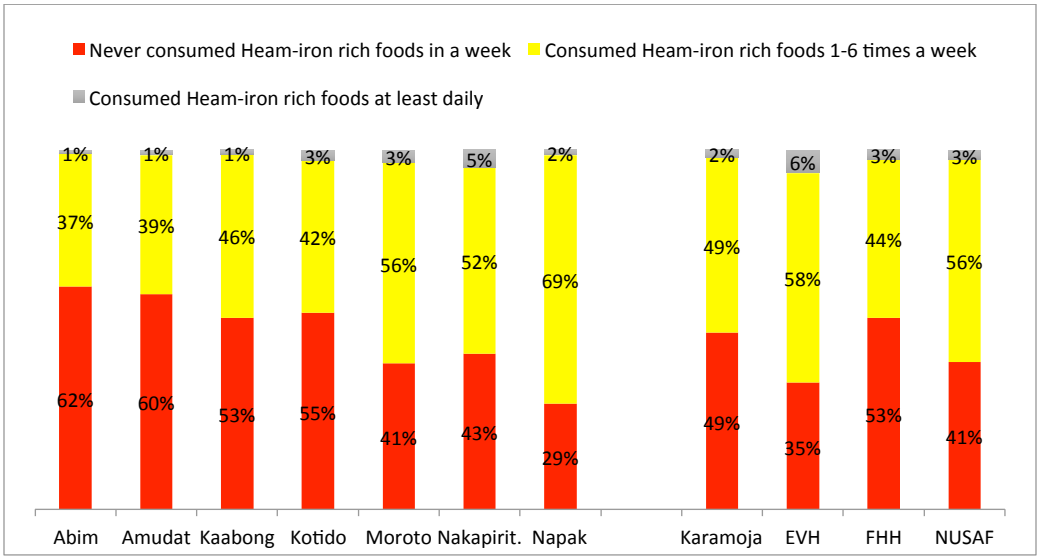


Figure 24: Consumption of hem-iron rich foods

7.Stability

Main shocks to household food security

As in previous surveys, the main shocks to household food security across the region were cited as high food prices and harsh weather (**Figure 26**). Maize and sorghum prices in the region have been increasing since 2015. According to WFP market price bulletin, the price of maize flour alone increase by an average of UGX 200 between June and December 2016.

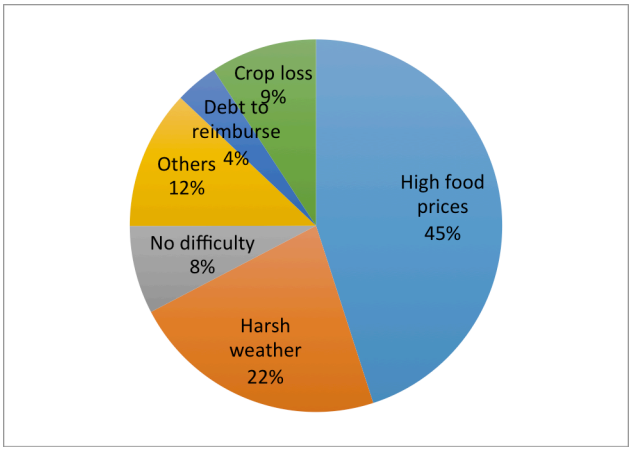


Figure 25: Main shocks to household food security

Food Consumption Coping Strategies

There was significant reduction in the percentage of households found to have high food consumption coping[6] from an average 23% in June 2016 and 19% in December 2015, to 7% in December 2016. This reduction is likely due to the harvest that increased household food stocks. The lowest levels of food consumption coping were observed in Amudat, Napak and Abim districts (**Figure 27**). Districts such as Kaabong, Moroto and Kotido have continued exhibit high food coping strategies.

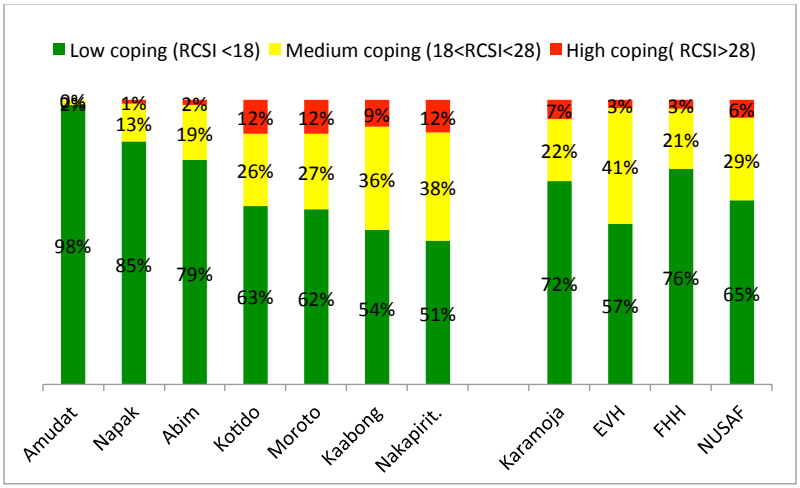


Figure 26: Food consumption coping strategies

[6] The Food Consumption or 'Reduced' Coping Strategy Index (RCSI) measures the behaviors adopted by households when they have difficulties covering their food needs. It is calculated using standard food consumption-based strategies (reliance on less preferred, less expensive food; borrowing food or relying on help from friends/relatives; reduction in the number of meals eaten per day; reduction in portion size of meals; and reduction in the quantities of food consumed by adults/mothers for young children) and severity weighting.

The most commonly applied food consumption coping strategies were the consumption of less preferred food and reduced number of meals consumed per day. Dangerous forms of coping raised during focus group discussions include the practice of feeding children on alcohol residue and a local brew from maize called "Kwete". In addition, households were reported to be almost solely dependent on food rations obtained from mainly health facilities, *"……., but like I have told you the biggest challenge is that most of these communities are depending on food rations they get from the health facilities, which are definitely not enough because if you are getting a ration for one child or two and its feeding about 10 people and you have to wait for the next two weeks or another month, it becomes challenging".*

Livelihood coping strategies

About 25% of households did not adopt any of the enumerated livelihood coping strategies[7], while 45% applied emergency coping strategies (**Figure 28**). Thus up to 75% applied some form of livelihood coping. Persistence of high levels of livelihood coping is indicative of chronic food insecurity in the region with households negatively adapting to frequent dry spells and below average harvests.

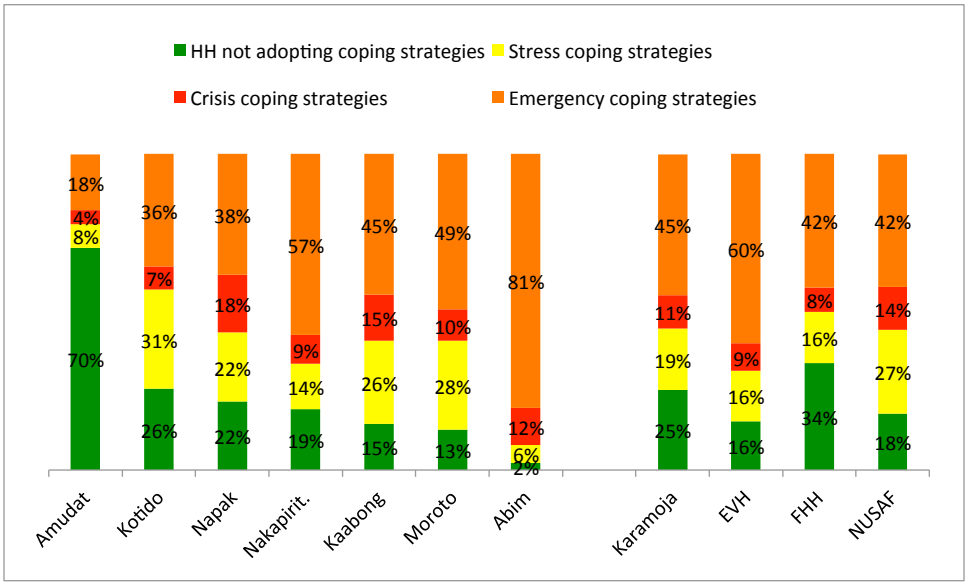


Figure 27: Livelihood coping strategies

The most common livelihood coping strategies were spending savings, borrowing, consuming seed stock and begging **(Figure 29).** It can be noted that the majority of the households in Abim district were involved in different forms of coping. This indicates that Abim district is slowly degenerating compared

[7] Livelihoods-based coping strategies reflect longer term coping capacity of households. The various strategies applied by households can be categorized as stress, crisis or emergency coping strategies depending on the severity weights. Stress coping strategies indicate reduced ability to deal with future shocks due to a current reduction in resources or increase in debts. They include borrowing money, spending savings, selling household goods or animals. Crisis coping strategies, such as selling productive assets, reduction of essential non-food expenditure, and consumption of seed stock directly reduce future productivity, including human capital formation. Emergency coping strategies, such as selling one's house or land, engaging in illegal income activities, and begging also affect future productivity, but are more difficult to reverse or more dramatic in nature.

to the findings in previous years where it used to be better than almost all the district in the region. Therefore these findings suggest the need for close monitoring of the food security situation especially in Abim, Moroto and Kaabong districts.

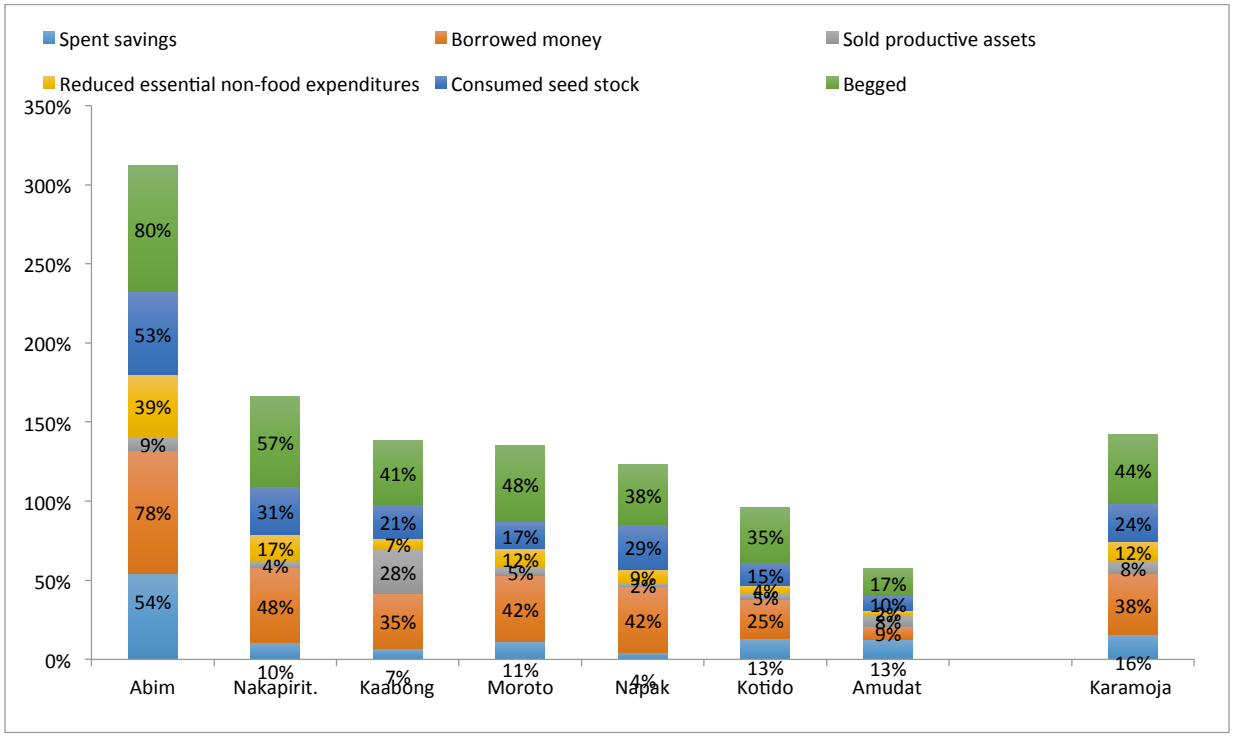


Figure 28: Common livelihood coping strategies according to district

8.Final food security classification

Summative findings as per the Food Security Index[8] that combines the Food Expenditure Share, Food Consumption Score, and Livelihood coping strategies showed that only 55% of households are food secure (Food secure + marginally food secure) and 45% food insecure (**Figure 30**). Lowest levels of food insecurity were observed in Amudat and Napak districts, while the rest of the districts had significant food insecurity in over 45% of their households. Compared to findings in December 2015, the situation in the region was similar in all districts except Abim, which has declined from 26% food insecure households in 2015 to 54% in the current study.

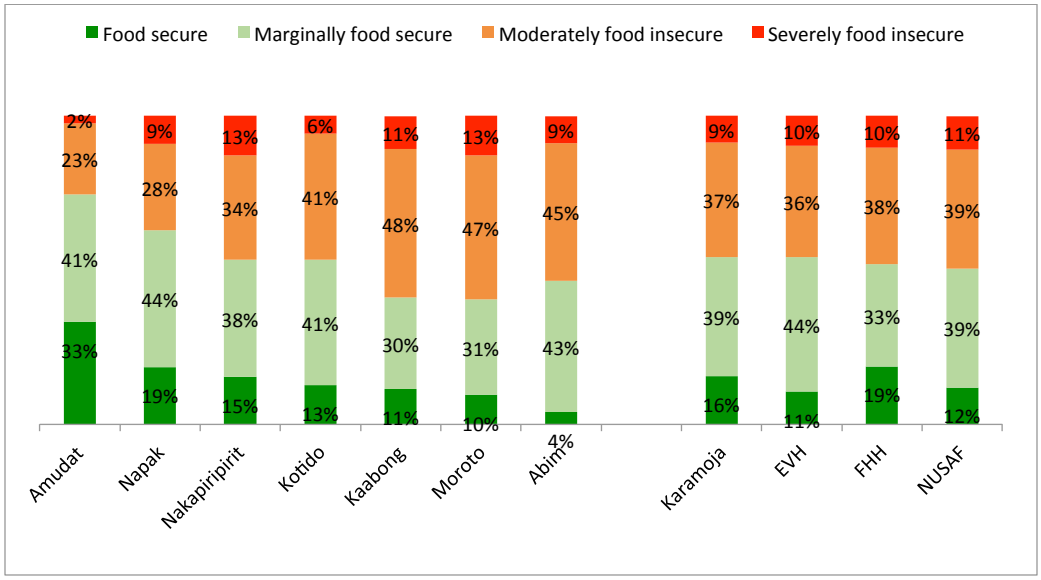


Figure 29: Final food security classification

[8] See Annex 1 for a description of the Food Security Index

9.Nutrition

Mothers' education level

Similar to findings in all the previous studies the majority of the mothers (83%) did not have any formal education (**Figure 31**). At least in Abim district the majority of the mothers had had up to one year of formal education and above. This is a fundamental problem reflected and discussed in all previous assessments. Mothers' education is important because of its strong correlation with child nutrition status. Even in the current survey mothers' education was significantly associated with all the three indicators of malnutrition (**Table 5**).

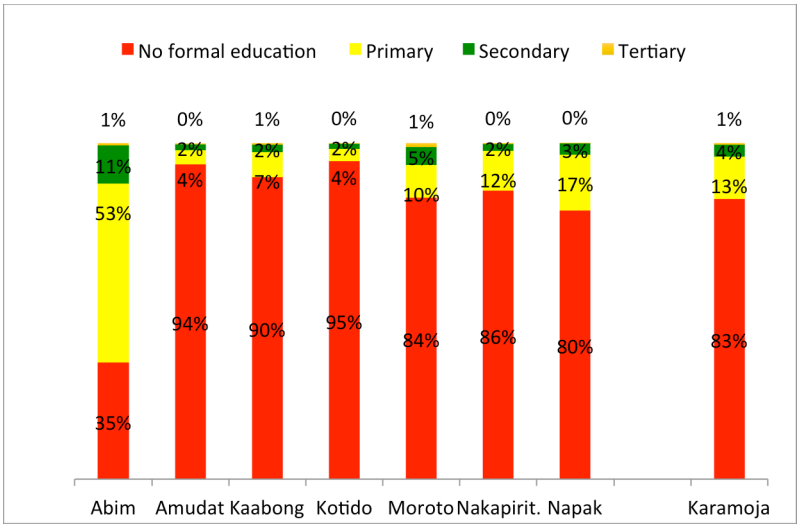


Figure 31: Education level of mothers

Table 5:Relationship between mothers' education status and malnutrition

Education stattus	Wasting	Stunting	Underweight
No formal education	13%	35%	28%
Primary level	9%	26%	17%
Secondary level	11%	28%	13%
Tertiary level	0%	8%	0%

Mothers' nutritional status

The proportion of underweight mothers based on Body mass index (BMI) was 23% (**Figure 32**), a reduction from 30% in June 2016, but the same level (23%) as in December 2015. All districts were at similar level as in December 2015. According to previous surveys in Karamoja, underweight mothers are significantly likely to have malnourished children. Also other empirical studies have shown that

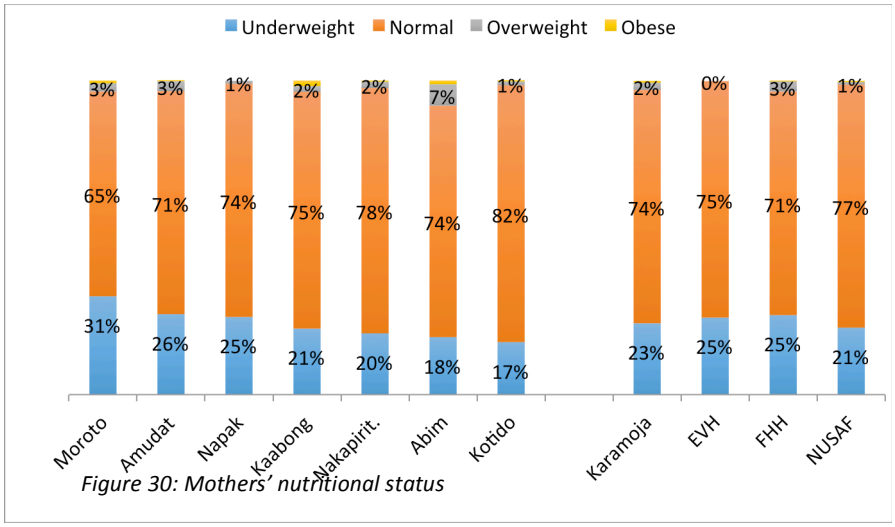


Figure 30: Mothers' nutritional status

underweight mothers are more likely to give birth to babies with low birth weight, which is a strong predictor of stunted growth among children. The situation of mothers' underweight status in all districts of Karamoja is unacceptable.

Anemia prevalence in women 15-49 years has increased from 33.1% in December 2015 to the current level of 40.3%, **(Table 6)**. Amudat district, 34.9% Vs. 17.2%, Napak 33.7% Vs. 17.5% and Kaabong 37.7% Vs. 32.8%, have improved from December 2015 to December 2016 while Kotido 25.9% Vs. 48.8%, Moroto 38.4% Vs. 45.9% and Abim 31.1% Vs. 34.8% have worsened in the same period.

Table 6: Anemia status among mother aged 15-49 years

	Severe Anemia	Moderate Anemia	Mild Anemia	Total Anemia	No Anemia
Abim (N=382)	0.0%	6.8%	28.0%	34.8%	65.3%
Amudat (N=299)	0.0%	2.8%	14.4%	17.2%	82.9%
Kaabong (N=173)	1.1%	12.2%	19.6%	32.8%	67.2%
Kotido (N=422)	0.0%	13.2%	35.6%	48.8%	51.2%
Moroto (N=287)	3.5%	13.8%	28.7%	45.9%	54.1%
Nakapirit. (N=186)	0.0%	12.4%	31.7%	44.1%	55.9%
Napak (N=272)	0.0%	1.7%	15.8%	17.5%	82.6%
Karamoja (N=2021)	0.8%	11.0%	28.6%	40.3%	59.7%

Child nutritional status

GAM prevalence based on weight-for-height z-scores in Karamoja region has plateaued at "serious" levels between 10-13% over the past 3 years. There are some variations in the point prevalence between assessment rounds and within districts but the differences are not statistically significant. The highest GAM rates were in Amudat (15.5%), Kaabong (14.6%) and Kotido (14.2%) **(Table 6).**

Table 7: Prevalence of malnutrition according to district (WHO flags)

	GAM % *(95% CI)*	SAM % *(95% CI)*	Stunting % *(95% CI)*	Underweight % *(95% CI)*
Abim (N=368)	**8.4 %** *(5.1 - 13.4)*	**2.2 %** *(1.1 - 4.3)*	**23.6 %** (18.4 - 29.7)	**5.2 %** (11.8 - 19.4
Amudat (N=462)	**15.5 %** (11.7 - 20.2)	**5.1 %** (3.1 - 8.3)	**26.6 %** (21.9 - 31.8)	**23.2 %** (20.1 - 26.6)
Kaabong (N=348)	**14.6 %** (11.0 - 19.1)	**2.0 %** (0.9 - 4.4)	**52.9 %** (47.1 - 58.6)	**38.9 %** (33.6 - 44.4)
Kotido (N=659)	**14.2 %** (11.6 - 17.3)	**4.6 %** (3.1 - 6.9)	**37.3 %** (32.7 - 42.2)	**27.1 %** (22.7 - 32.1)
Moroto (N=593)	**11.6 %** (9.0 - 14.9)	**3.5 %** (2.2 - 5.6)	**38.8 %** (33.8 - 44.0)	**29.5 %** (25.4 - 34.0)
Nakapiripirit (N=373)	**9.4 %** (6.8 - 13.0)	**2.2 %** (1.0 - 4.5)	**34.6 %** (28.1 - 41.8)	**24.1 %** (18.3 - 31.1)
Napak (N=517)	**11.2 %** (8.5 - 14.5)	**2.7 %** (1.4 - 5.1)	**27.9 %** (22.8 - 33.6)	**32.7 %** (27.2 - 38.7)

	GAM % *(95% CI)*	SAM % *(95% CI)*	Stunting % *(95% CI)*	Underweight % *(95% CI)*
Karamoja (N=3320)	**12.4%** (11.4 - 13.6)	**3.4%** (2.9 - 4.0)	**34.9%** (33.0 - 36.9)	**26.6%** (24.5 - 28.7)

Table 8: Prevalence of acute malnutrition based on MUAC

	GAM	SAM
Abim	**3.3 %** *(1.9 - 5.6)*	**0.5 %** *(0.1 - 2.2)*
Amudat	**4.4 %** *(2.9 - 6.6)*	**0.9 %** *(0.3 - 2.3)*
Kaabong	**19.8 %** *(15.0 - 25.6)*	**2.8 %** *(1.5 - 5.2)*
Kotido	**12.5 %** *(9.9 - 15.7)*	**3.9 %** *(2.5 - 5.9)*
Moroto	**14.6 %** *(11.3 - 18.8)*	**4.2 %** *(2.2 - 7.7)*
Nakapiripirit	**12.3 %** *(8.8 - 16.9)*	**1.3 %** *(0.6 - 3.1)*
Napak	**21.3 %** *(16.6 - 26.8)*	**5.4 %** *(3.2 - 8.9)*

Likewise prevalence of acute malnutrition based on MUAC for 2016 were comparable with findings of December 2015 for some districts such as Amudat 4.4% Vs. 3.5%, Kotido 12.5% Vs. 10.2%, Nakapiripirit 12.3% Vs. 13.5% and Moroto 14.6 Vs. 14.6%; while in other districts there were large differences such as Abim 3.3% Vs. 7.2%, Kaabong 19.8 Vs. 13.8% and Napak 21.3% Vs. 14.3%. This indicates that over the past 12 months the nutrition status of children in Kaabong and Napak has worsened. There is need to improve case-finding of children with a MUAC of less than 11.5cm to ensure they are receiving therapeutic treatment as children with a low MUAC are at a high risk of dying.

The prevalence of both underweight and stunting remains high in the region, also at "serious" levels. Stunting level in Kaabong has remained high but comparable to finding in December 2015 (50.4%). Concerted efforts are required to address the causal factors of malnutrition.

Table 9: Prevalence of malnutrition per sub-county

District	Sub-County (N)	GAM	Stunting
Abim	ABIM T.C (N=52)	9.6%	19.2%
	Alerek (N=79)	16.5%	21.8%
	Lotuke (N=139)	6.5%	24.3%
	Morulem (N=65)	7.7%	26.2%
	Nyakwae (N=31)	6.5%	25.8%
Amudat	Amudat (N=86)	10.5%	26.4%
	Amudat town council (N=37)	10.8%	25.0%
	Karita (N=164)	23.2%	19.9%
	Loroo (N=167)	12.0%	33.3%
Kaabong	Kaabong East (N=27)	18.5%	63.0%
	Kaabong West (N=32)	21.9%	53.3%
	Kalapata (N=69)	15.9%	52.1%
	Kamion (N=24)	16.7%	50.0%
	Kapedo (N=35)	14.3%	34.2%

District	Sub-County (N)	GAM	Stunting
	Karenga (N=25)	8.0%	60.0%
	Kathile (N=28)	21.4%	50.0%
	Kawalakol (N=22)	9.1%	31.8%
	Lobalangit (N=22)	9.1%	61.9%
	Lolelia (N=12)	8.3%	66.7%
	Loyoro (N=16)	0.0%	56.3%
	Sidok (N=33)	18.2%	72.7%
Kotido	Kacheri (N=97)	14.4%	39.8%
	Kotido (N=146)	12.3%	34.5%
	Kotido Town Council (N=47)	12.8%	32.7%
	Nakapelimoru (N=96)	16.7%	38.9%
	Panyangara (N=144)	18.8%	38.6%
	Rengen (N=135)	13.3%	37.1%
Moroto	Katikekile (N=38)	18.4%	50.0%
	Nadunget	15.5%	40.5%
	North division (N=32)	0.0%	18.8%
	Rupa (N=184)	12.0%	40.7%
	South division (N=47)	6.4%	30.4%
	Tapac (N=61)	4.9%	36.1%
Nakapirit.	Kakomongole (N=59)	5.1%	44.8%
	Lolachat (N=68)	10.3%	32.8%
	Loregae (N=123)	5.5%	38.6%
	Lorengedwat (N=28)	17.9%	33.3%
	Nabilatuk (N=32)	9.4%	21.9%
	Nakap. Town Council (N=11)	18.2%	45.5%
	Namalu (N=50)	12.0%	38.0%
Napak	Iriiri (N=94)	10.6%	43.6%
	Lokopo (N=83)	10.8%	34.9%
	Lopeei (N=71)	11.3%	28.2%
	Lorengechora S/C (N=40)	10.0%	30.0%
	Lorengechora Town Council (N=32)	3.1%	25.0%
	Lotome (N=75)	12.0%	37.8%
	Matany (N=73)	9.6%	30.1%
	Ngoleriet (N=51)	15.7%	19.6%

Infant and Young Child feeding

Timely initiation of breastfeeding (85%) and exclusive breastfeeding assessed using a 24-hour recall (90%) was commendable (**Figure 33**). However when mothers were asked about the age at which they initiated complementary foods using a historical recall, it was observed that there was still a high rate of early introduction of complementary foods which therefore compromises the findings of the 24-hour exclusive breastfeeding rates.

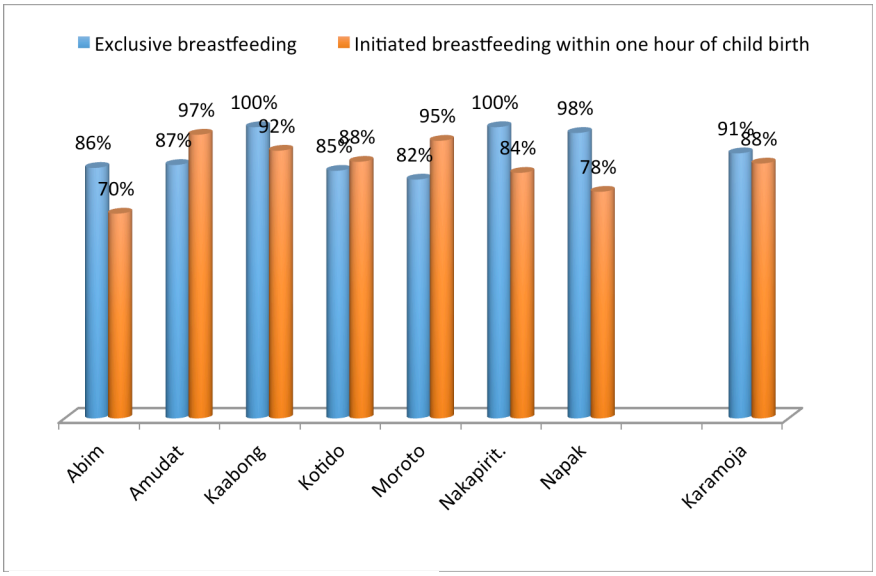


Figure 33: Breastfeeding practices

Likewise based on recall of mothers it could be noted that a higher percentage of mothers reported late introduction of complementary foods i.e. after six months (**Figure 34**). The balance between breastfeeding and complementary feeding is a delicate one and depending on age too much of one is not necessarily better. There is therefore need to sensitize mothers on the importance of exclusive breastfeeding and need for timely introduction of complementary foods.

Diet adequacy for children 6-23 months

Only 1.1% of the children in Kotido, 0.7% in Moroto and 0.7% in Napak met the minimum dietary diversity (MDD) while the rest of the districts had not a single child. Likewise none of the districts had any child meeting the minimum acceptable diet (MAD). However, 36% of the children received the minimum meal frequency while 28% of the non-breastfeeding children were able to access at least 2 milk feeds a day **(Table 8)**. There has been a reduction in the quality of feeding infants and young children from about 3% MAD observed in December 2015 to 0% in the current survey. The findings of the survey depicts a mother who is

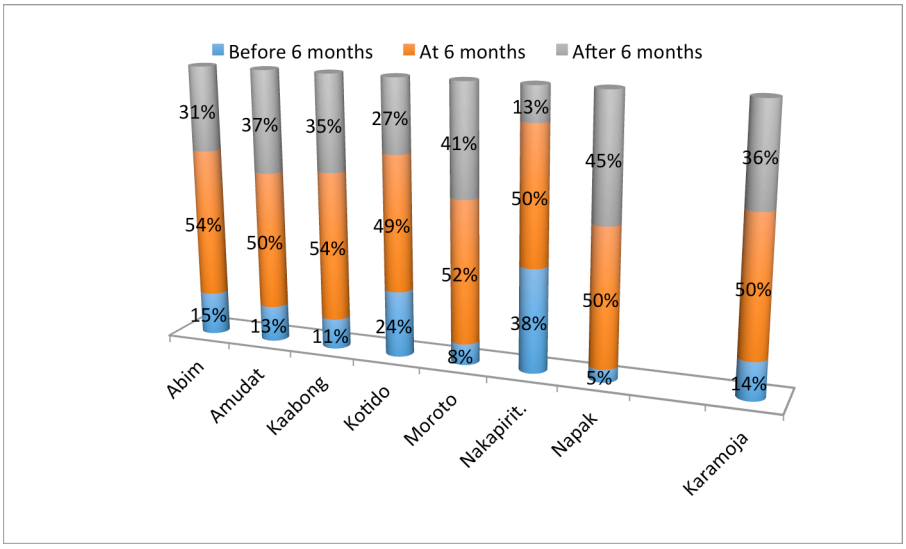


Figure 34: Age of introduction of complementary foods

interested in feeding her child as exhibited by the relatively better meal frequency rates observed. However, the mother seems to be limited by the availability or lack of knowledge of quality foods to provide to her child. Together with other important determinants of malnutrition, chronic deprivation of essential macro- and micro- nutrients might contribute to the malnutrition observed in the region since it has been poor even in the previous assessments.

Table 10: Infant and Young Child feeding practices

	Meets minimum Meal Frequency	Meets at least 2 milk feeds
Abim	33%	53%
Amudat	50%	35%
Kaabong	63%	10%
Kotido	44%	35%
Moroto	24%	21%
Nakapiripirit	38%	35%
Napak	13%	0%
Karamoja	36%	28%

A key Informant had this to say: "*The way children are looked after is very poor, most of the parents' knowledge on IYCF is very low. Basically when they go to hospital for immunization even when they are given nutrition education, adhering to advice is very difficult. A parent will wake up in the morning and will feed the child once, early morning, and next time the child gets a meal will be porridge late in the evening and the child is about one year or two years. You find a child who is at six months is given local brew called ebutya, they believe this is very healthy for the child. There is a general tendency of not really caring that much*"**.**

And another Key Informant: *"Actually to mothers, balancing diet of children is not a priority. But getting what to eat is a priority, because you do not have what to even balance but are you able to get something to eat in that day. The majority of the families are depending on one meal a day. That means that you have to struggle in order for you to be able to take that one meal in a day.*

Anemia Status of Children 6-59 months

Anemia prevalence in the region among children 6-59 months was 29.3%, **(Table 10)**. Unlike the anemia prevalence amongst mothers, which worsened in the past one year, the prevalence of anemia in children improved from 57.2% in December 2015 to 29.3% in December 2016. This improvement is commendable. There was improvement in all districts although Abim had the least percentage improvement i.e. from 45.7% to 39.1%.

Table 11: Anemia prevalence among children 6-59 months according to district

	Severe Anemia	Moderate Anemia	Mild Anemia	Total Anemia	No Anemia
Abim (N=369)	1.4%	15.7%	22.0%	39.1%	61.0%
Amudat (N=460)	0.7%	13.0%	17.2%	30.9%	69.1%
Kaabong (N=354)	2.8%	9.3%	8.5%	20.6%	79.4%
Kotido (N=696)	0.7%	17.4%	13.2%	31.3%	68.7%
Moroto (N=604)	1.5%	10.8%	9.4%	21.7%	78.3%
Nakapirit. (N=374)	2.7%	15.2%	14.2%	32.1%	67.9%
Napak (N=517)	1.2%	14.7%	15.7%	31.6%	68.5%
Karamoja (N=3374)	1.4%	13.9%	14.0%	29.3%	70.6%

Enrollment in MCHN program

The Maternal and Child Health Nutrition (MCHN) program is one of the nutrition intervention programs supported by WFP in seven districts of Karamoja region with the objective to prevent stunting. The program is to target Pregnant and Lactating Women (PLW) and children under 2 years old. Specialized Nutritious Foods (SNF) is provided such as *Super Cereal Plus* (CSB++) for children and super cereal, oil and sugar for PLW. The program is implemented at mostly health facility level 3 or level 2 where the services for maternal and child health are available. Findings show that 53% of the eligible children were enrolled in the MCHN program (**Figure 35**). The highest coverage (>70%) is in Amudat and Nakapiripirit districts while Abim, Moroto, and Kotido are among the lowest (<50%). There has been a steady and significant increase in the proportion of children enrolled in the MCHN program over the last 3 years, even between June 2016 (47%) and now. District showing great improvement from June 2016 were Amudat, Nakapiripirit and Napak, which were at 53%, 57% and 40%, respectively, while Moroto declined from 59%.

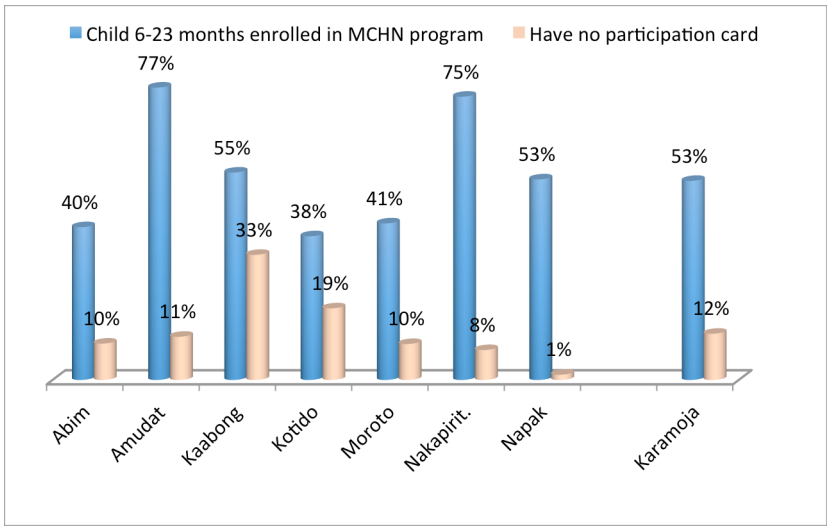


Figure 35: Enrollment in the MCHN program

The MCHN program is mostly implemented at Health center III and a few HC II that have MCH services. As such there are limited health centers that qualify to implement the program. It is therefore not surprising that the coverage is only 50% because the target is only the population who can have an access to those health facilities since it is not community based program but health facility based program.

Given the high prevalence of malnutrition in the region, there is need to undertake a study to fully understand the causes of the low coverage/enrolment, address the causation (as well as the probabilities noted above), and simultaneously scale up this program to reach more beneficiaries.

Enrollment in feeding programs (OTC, ITC CSB++)

The Integrated Management of Acute Malnutrition (IMAM) has been implementing in Karamoja region since several years ago

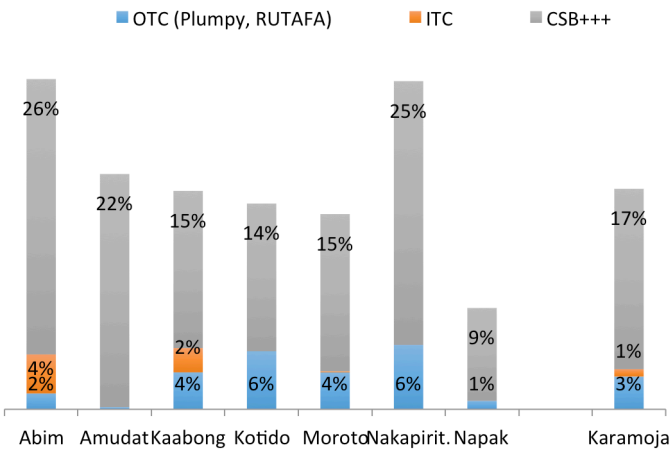


Figure36: Child enrollment in feeding programs

with the main objective to treat acute malnutrition. Under IMAM program, there are three main components including In-patients Therapeutic Centre (ITC) to treat severe acute malnutrition with medical complication, Out-patient Therapeutic Centre (OTC) to treat severe acute malnutrition without medical complication and Supplementary Feeding Program e (SFP) to treat Moderate Acute Malnutrition (MAM). The interventions provide Specialized Nutritious Foods (SNF) such as F75, F100 for ITC, plumpy nut for OTC and *Super Cereal* (CSB+) or *Super Cereal plus* (CSB++) for SFP programs.

Whereas prevalence of malnutrition is still high and at serious levels in the Karamoja region, program coverage for key nutrition interventions is still low. Only two districts had up to 30% of the sampled children participating in any of the feeding programs such as those providing Outpatient therapeutic care (OTC), Inpatient therapeutic care (ITC) and supplementary feeding program **(Figure 36)**.

Further analysis of all the malnourished children indicated that 69% of all the children with GAM were not enrolled in any of the feeding programs **(Figure 37)**. This implies that program coverage for feeding programs was about 31%, which corroborates the SLEAC and SQUEAC findings of 2016 where the regional coverage was 35.9%. Nakapiripirit district had over 55% of the children with GAM enrolled in a feeding program while Amudat and Napak had only 20% and 23% of children with GAM enrolled. Nampak's coverage was equally low in the SQUEAC assessment.

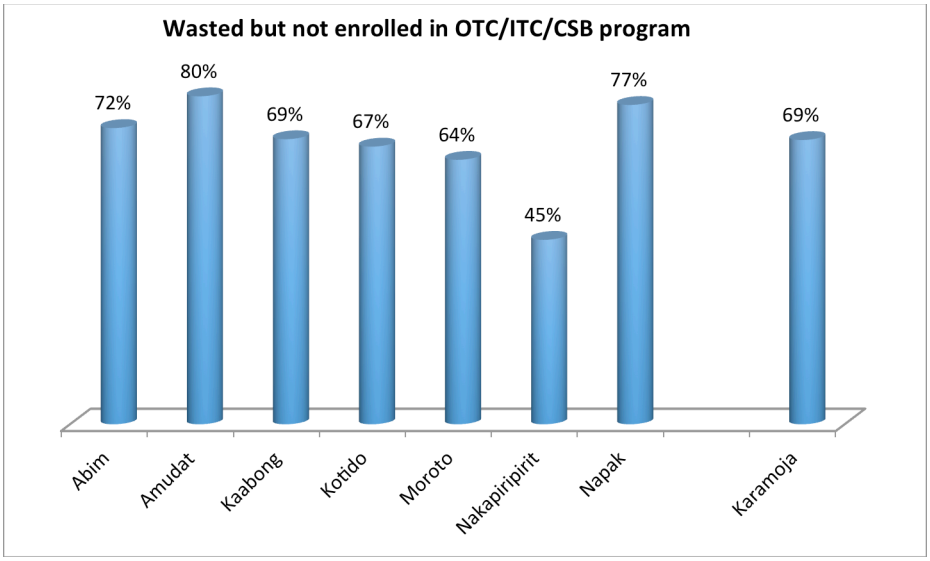


Figure 37: Malnourished children who were NOT targeted by feeding programs

Besides the low program coverage, there is a possibility that the feeding programs in the Karamoja region are also not equitable in targeting. It is common in poor communities of Africa for intervention programs to benefit those whom it is not intended to. There is therefor need to review the screening/targeting process for the feeding program beneficiaries because a large number of children enrolled in the feeding programs were neither wasted nor underweight. Only 18% of the children who were enrolled were acutely malnourished **(Figure 38)**. This implies that the rest of the children in the program were likely to be wrong targets. Alternatively it could also imply that the 82% of the children without GAM who were participating in the feeding programs had already been cured and were awaiting discharge from the program.

This information suggests the need to strengthen monitoring, supervision and on-job training to ensure proper implementation of CMAM guidelines. Also to ensure referral to blanket MCHN to avoid mothers keeping their children severely malnourished.

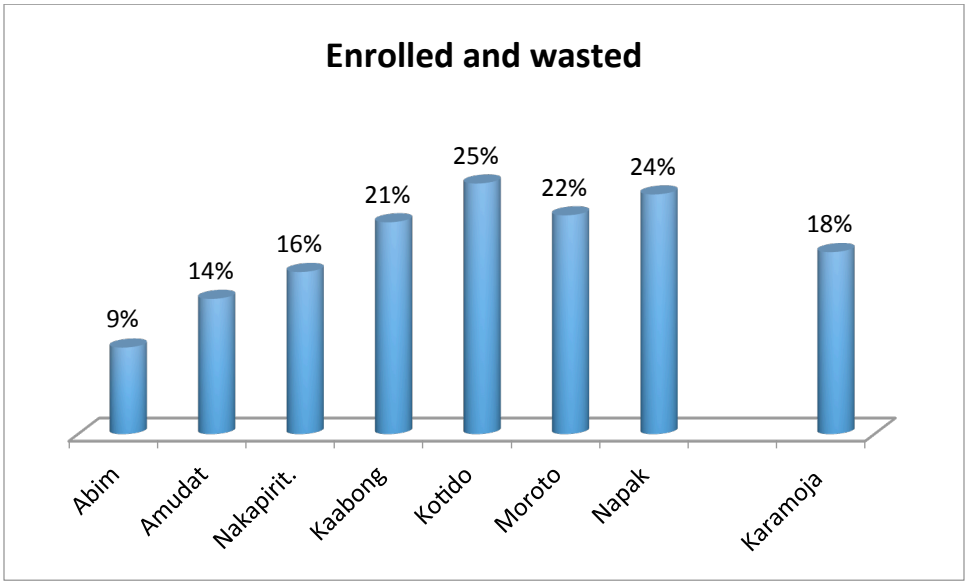


Figure 38: Percentage of children enrolled in any feeding program

10. Household health and mortality

Immunization and supplementation status

Similar to previous assessments over the past five years, immunization coverage rates for Karamoja region have been meeting the WHO targets. In the majority of the districts coverage was above the global target of 90% when considering mothers reports i.e. immunized without card, except for measles in some districts **(Table 8)**. Immunization is critical aspect for child survival, protecting children against killer diseases, reducing morbidity and effectively, nutrition outcomes. Sustained efforts to immunize children therefore remain important. Emphasis should especially be on boosting coverage of measles vaccination and deworming that were relatively low especially in Amudat and Napak.

Table 12: Immunization, deworming and vitamin A supplementation coverage according to district

District	Measles				DPT3				Deworming				Vitamin A supplementation			
	Yes with card	Yes without card	No with card	No without card	Yes with card	Yes without card	No with card	No without card	Yes with card	Yes without card	No with card	No without card	Yes with card	Yes without card	No with card	No without card
Abim	82%	12%	6%	1%	85%	14%	1%		85%	15%	1%		78%	15%	6%	1%
Amudat	62%	13%	21%	4%	75%	19%	6%		80%	18%	1%	1%	71%	18%	10%	1%
Kaabong	76%	13%	10%	1%	78%	15%	7%		77%	20%	2%		80%	17%	3%	
Kotido	86%	1%	11%	2%	93%	4%	3%		91%	8%	1%	0%	92%	4%	5%	
Moroto	74%	19%	5%	3%	74%	23%	3%	0%	78%	21%	1%	1%	75%	22%	3%	1%
Nakapirit.	75%	9%	13%	2%	85%	13%	2%		80%	9%	9%	3%	76%	11%	11%	3%
Napak	68%	7%	24%	1%	92%	7%	0%		88%	8%	3%	1%	90%	8%	2%	
Karamoja	75%	10%	13%	2%	84%	13%	3%	0%	84%	13%	2%	1%	82%	12%	5%	1%

Prevalence of common childhood illnesses

Up to 65% of children had suffered at least one illness in the two weeks preceding the survey, indicating high morbidity. As observed in previous surveys, the most common illnesses affecting children across the region were fever/malaria[9], diarrhea, and Acute Respiratory Infections (ARI)/cough (**Figure 39**). Diarrheal diseases were most common in Kotido (42%). A much higher proportion of children in Abim, Kaabong, Kotido and Nakapiripirit experienced disease insults.

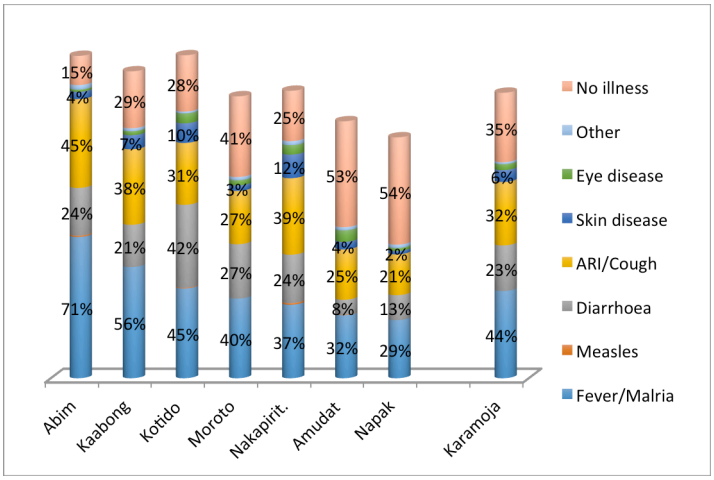


Figure 39: Prevalence of common childhood illnesses

[9] For practical reasons, it is difficult to distinguish fevers according to their causes (e.g. malaria, typhoid, etc.) in typical data collection exercises

Mosquito net coverage

Use of mosquito net for children in Karamoja region has been low since 2014. For children who slept under a bed net the night of the survey, this round shows yet another decline to 57%, **(Figure 40)**, compared to June 2016 (68%), December 2015 (70%) and December 2014 (90%) rounds. Amudat, Moroto and Nakapiripirit are largely responsible for the poor performance in bed net use in most of the rounds.

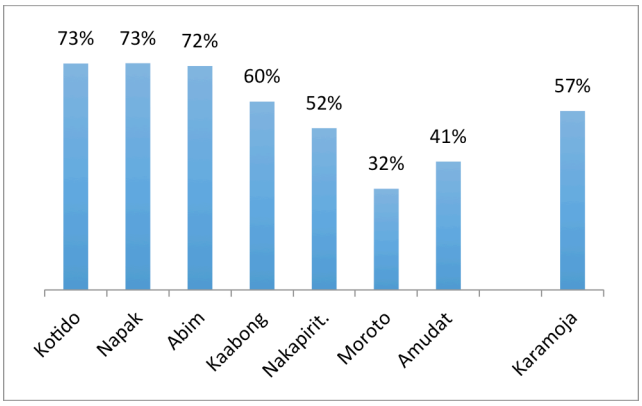


Figure 300: Mosquito net coverage according to district

Mortality

In interpreting mortality the following guidelines are used:

CMR = deaths/10,000/day

<1 = Under control

>1 = Serious condition

>2 = Out of control

>4 = Major catastrophe

Mortality rate for <5 age group

1 = Normal in a developing country

<2 = Emergency phase: under control

>2 = Emergency phase: in serious trouble

>3 = Emergency phase: out of control

The overall 180-day recall Crude Mortality Rate (CMR) was 1.2 and 1.1 deaths/10000/day for Kaabong and Nakapiripirit, respectively, **(Table 13)**. The CMR was at serious in the two districts. Likewise, Under-five Mortality rate (U5MR) was 2.1/10,000/day – serious trouble – for Kaabong district. Kaabong district had the highest rates of both GAM and stunting while Abim and Kaabong also had the highest burden of common childhood illnesses, which could be contributing to the high mortality. There is need to intensify intervention while establishing the real factors leading to the high mortality in Kaabong.

Table 13: Crude and Under-five mortality rate according to district

	CMR	CMR classification	U5MR	U5MR classification
Abim	0.8	Normal	1.2	Under control
Amudat	0.2	Normal	0.1	Normal
Kaabong	1.2	Serious	2.1	Serious trouble
Kotido	0.4	Normal	0.5	Normal
Moroto	0.5	Normal	0.6	Normal
Nakapiripirit	1.1	Serious	1	Normal
Napak	0.8	Normal	0.6	Normal

11. Water, Sanitation and Hygiene (WASH)

Access to safe water

Access to safe water in Karamoja has been high – above 80% - above the national average (70%) for a period beyond five years. In this survey up to 91% of households in the region reported use of water from safe water sources such as water from boreholes, protected wells and piped water (**Figure 41**). However, Amudat district has always lagged behind in terms of safe water coverage in all the surveys largely because of the fewer boreholes compared to other districts. In addition, the water treatment practices in the district was poor. Only 1% of the households in Amudat reported treating water, mainly by boiling. There is need to improve safe water supply in Amudat district. In the meantime communities should be sensitized on simple water treatment techniques to prevent break out of water born diseases such as diarrhea.

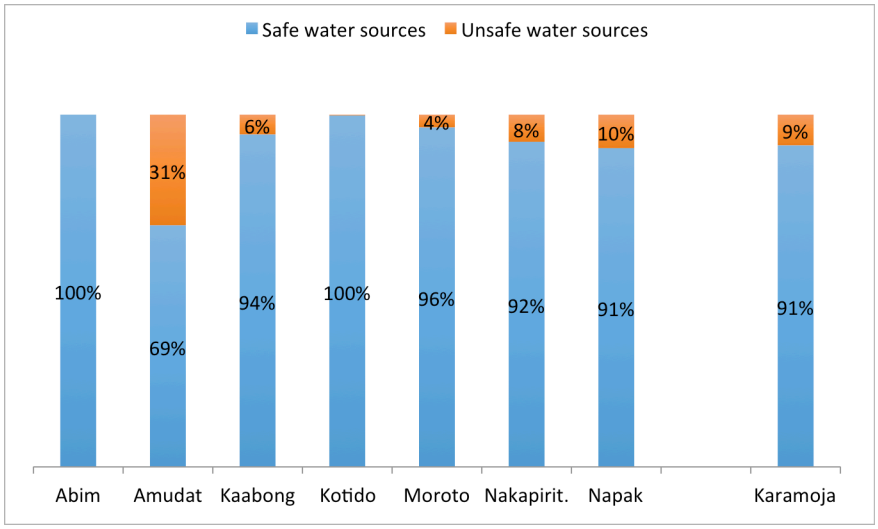


Figure 41: Access to safe water

Household level utilization of water

The total amount of water used at household level has slowly improved in the region. Up to 37% of the households reportedly used 15 liters per person per day **(Figure 42)**, which is an improvement from a previous average of about 25%. However the median is still 12 liters per person per day and is least in Amudat (10 liters) and Kotido (11 liters).

Water is important for personal and domestic hygiene, there is therefore need to continue encouraging households to use more water.

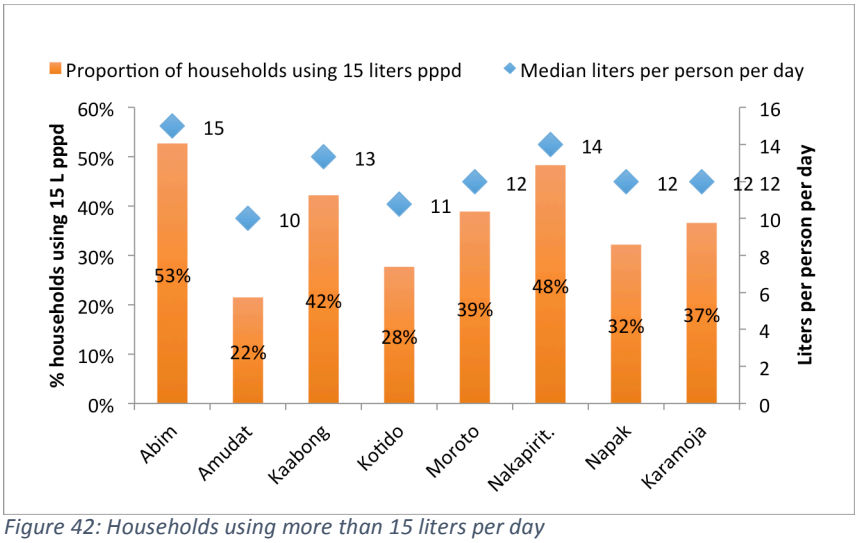


Figure 42: Households using more than 15 liters per day

Sanitation facilities and practices

The situation of toilet facilities in the Karamoja region has not changed over the last one year. In December 2015, 69% of the households lacked toilet facilities and the situation was similar in December 2016 **(Figure 43)**. The highest rate of ownership was observed in Abim where 2 in every 3 households had access to toilet facilities. Open defecation Karamoja is common practice. "*There is very low latrine coverage, when you go around, there is massive open defecation. Only less than 1/3 of the households have latrines. More in north Karamoja, but in the south and central Karamoja they practice open defecation which is a risky factor for diarrhea disease", Key Informant.* There is therefore continued need to improve latrine coverage and promote the use of the same where they are available.

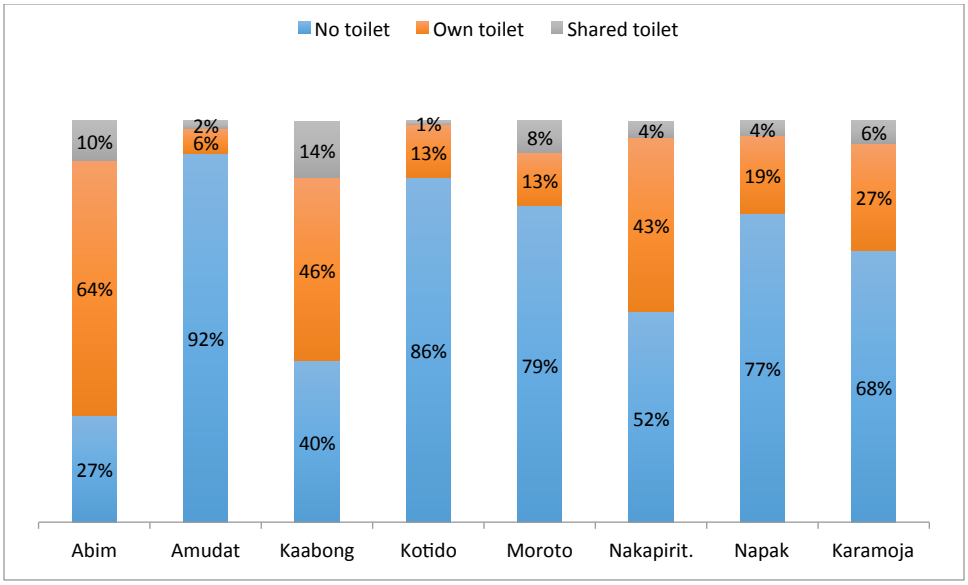


Figure 43: Ownership of sanitary facilities

12. Factors associated with Food Security & Nutrition

In interviews during qualitative assessment, several factors were mentioned as being associated with food security in this region. Factors raised were both natural and manmade. Among the natural factors emphasized were the *limited and unpredictable rainfall, low adaptability to seasonal variations, wild animals destroying crops especially in the Kidepo communities and lack of fast growing crops.* The man made factors associated with food security included the practice of o*ver selling of food, lack of modern farming methods, failure to use short rainfall seasons for planting, high levels of drunkenness among men and women, the poor post-harvest handling practices, people's attitudes of preference of animal rearing and the low retention of project successes coupled with lack of sustainability strategies among interventions implemented in this region.*

Gender of the household head

Children in female-headed households were significantly more likely to be malnourished (GAM, Underweight, Stunting) compared to those in male-headed households (**Figure 44**). Female-headed households are more at risk and need to be specifically targeted.

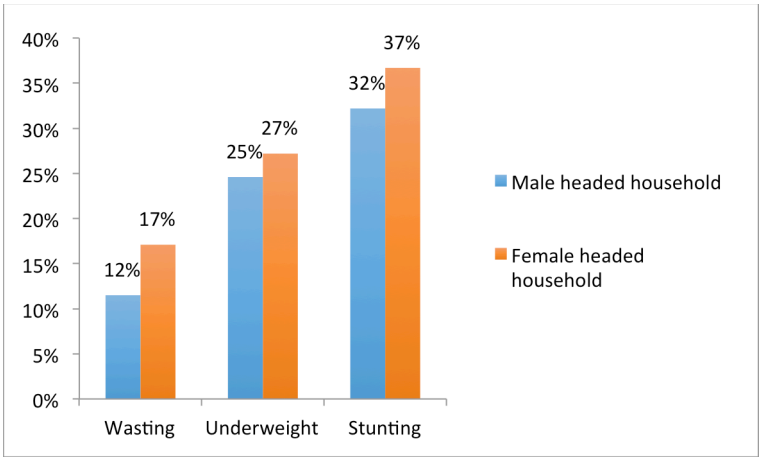


Figure 44: Prevalence of malnutrition in male and in female-headed households

Education level of the household head

Almost all studies in Karamoja have demonstrated the dose-effect relationship between education and nutrition outcomes. Any level of education is important than nothing (**Figure 45**), and the effect is more powerful for mothers' education **(Figure 46)**.

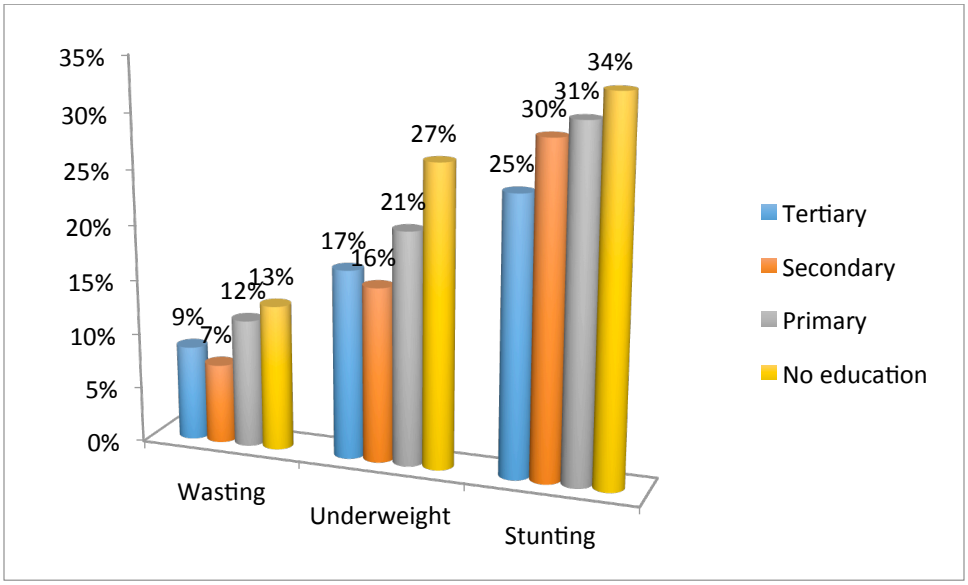


Figure 45: Associated between education status of the household head and child nutrition indicators

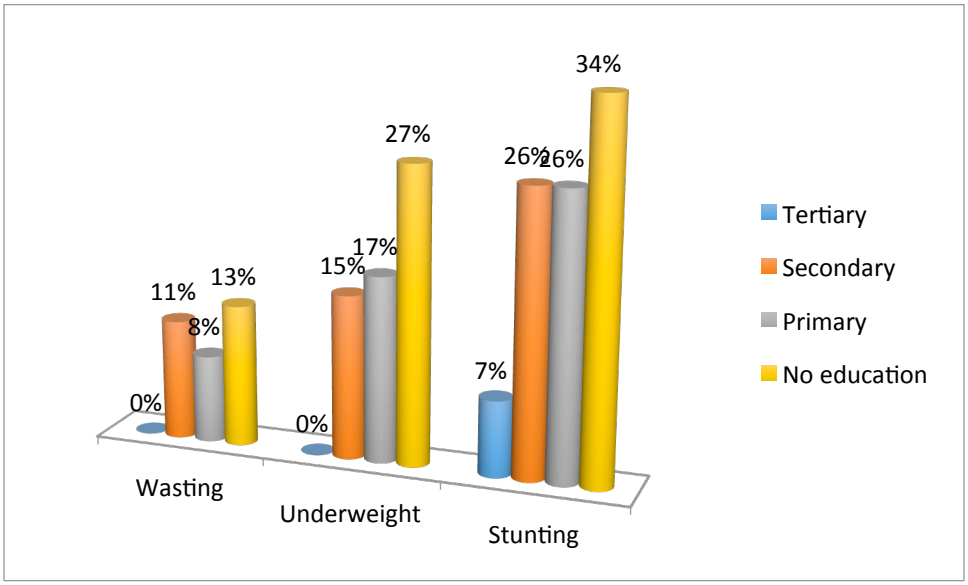


Figure 46: Association between education status of the mother and child nutrition indicators

Household socioeconomic status

Household socioeconomic status based on household assets was significantly associated with both nutrition and food security outcomes (**Figure 47**). This further emphasis the need for more holistic approaches to challenges in Karamoja region.

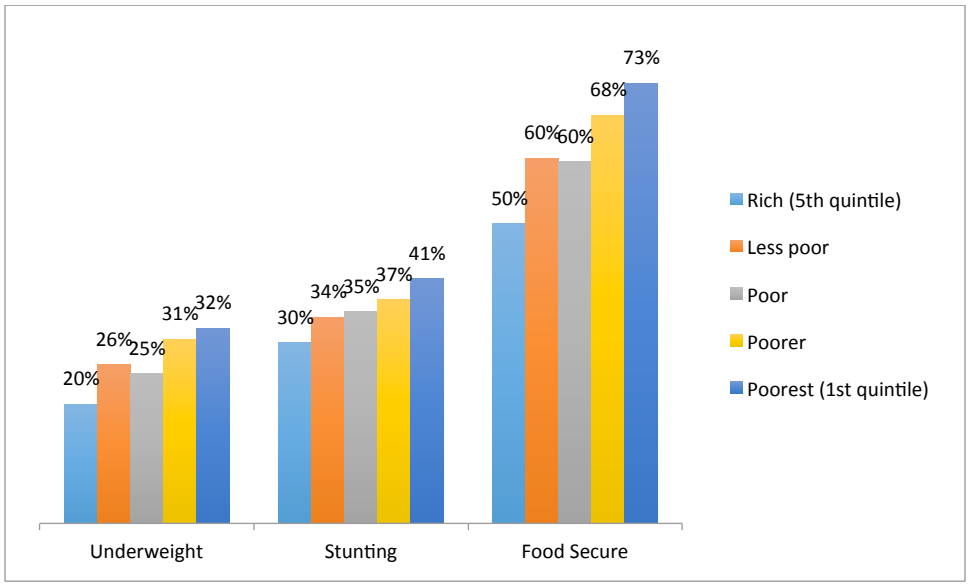


Figure 47: Association between household socioeconomic status and nutrition and food security outcomes

Household income earners

Findings showed that children in households with no income earner were significantly more likely to experience food insecurity (**Figure 48**). However, the relationship was not statistically significant with indicators of the malnutrition. This suggests that having more income earners in a household may improve overall access to food.

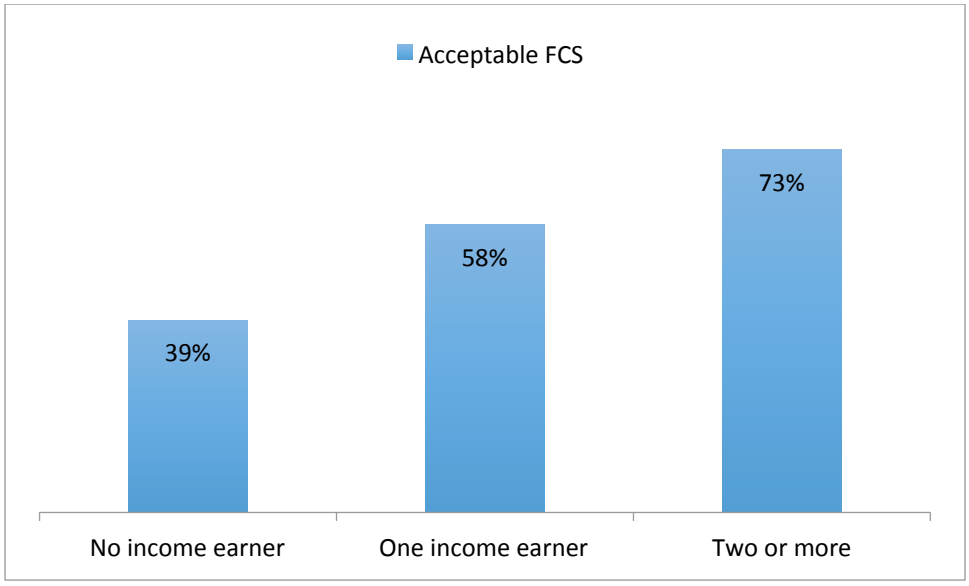


Figure 48: Influence of number of household income earners on food security

Household food security status

Children who lived in food insecure households were at an increased risk of being wasted and stunted **(Figures 49-50)**. Household food security is an important factor in infant and young child nutrition and it deserves its due emphasis.

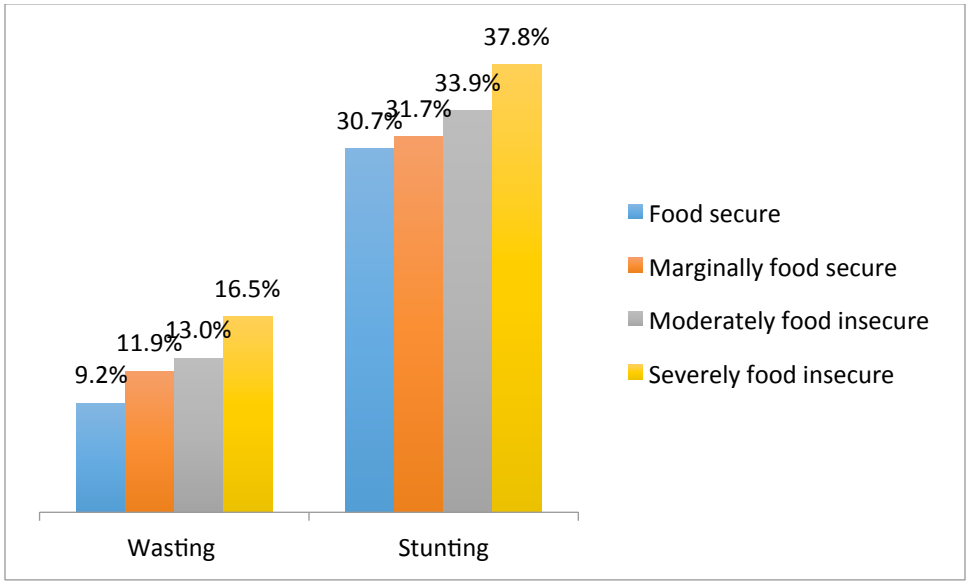


Figure 49: Association between final household food security status and malnutrition

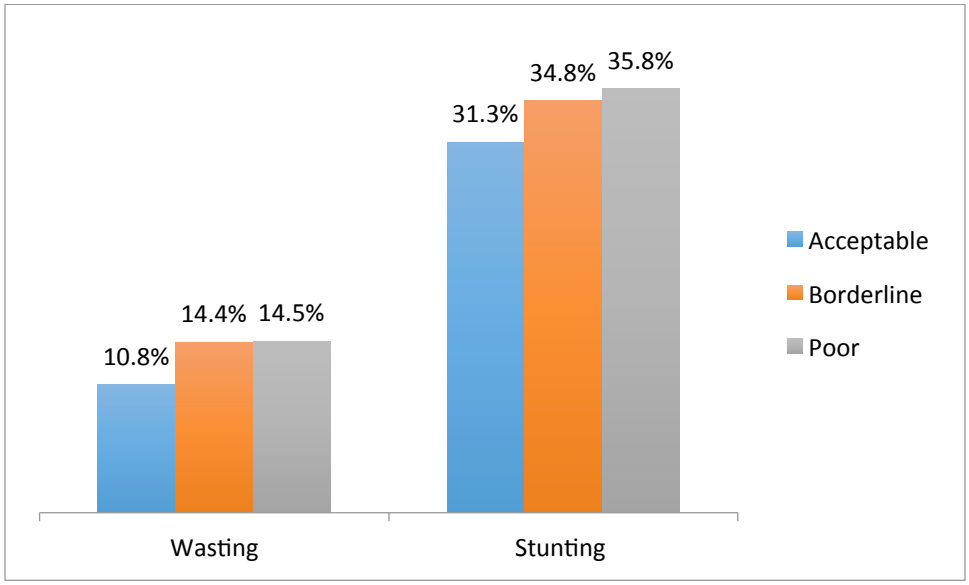


Figure 50: Association between household food consumption score and malnutrition

Household coping strategies

Households that coped most were likely to have more malnourished children than those than coped less. Likewise low coping was associated with higher food consumption scores **(Figures 51-52)**.

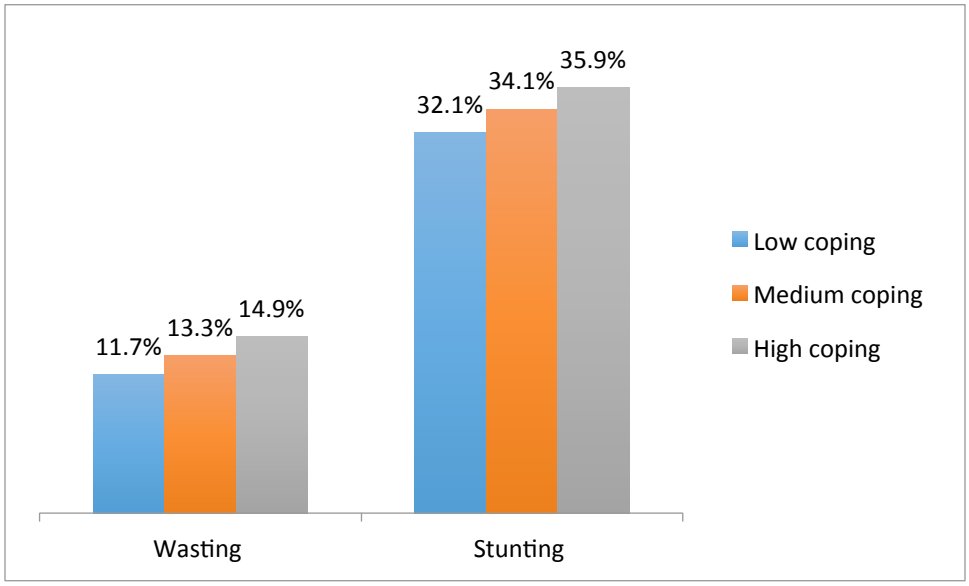


Figure 51: Association between household coping strategy index (R_CSI) and malnutrition

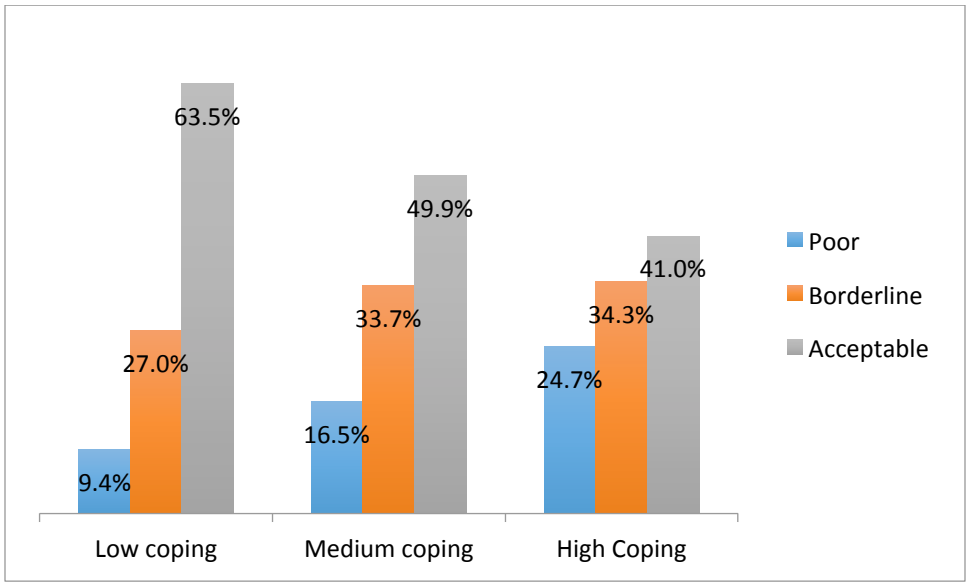


Figure 52: Association between household coping strategy index (R_CSI) and household food consumption scores

Illness

Apparently children with skin disease followed by diarrhoea and Malaria/Fever were at the greatest risk of being wasted compared to those who reported no illness **(Figure 53)**. It is there important to strengthen interventions addressing both acute onset illnesses such as diarrhoea and those with a tendency of having a slow onset or chronic diseases such as the skin infections.

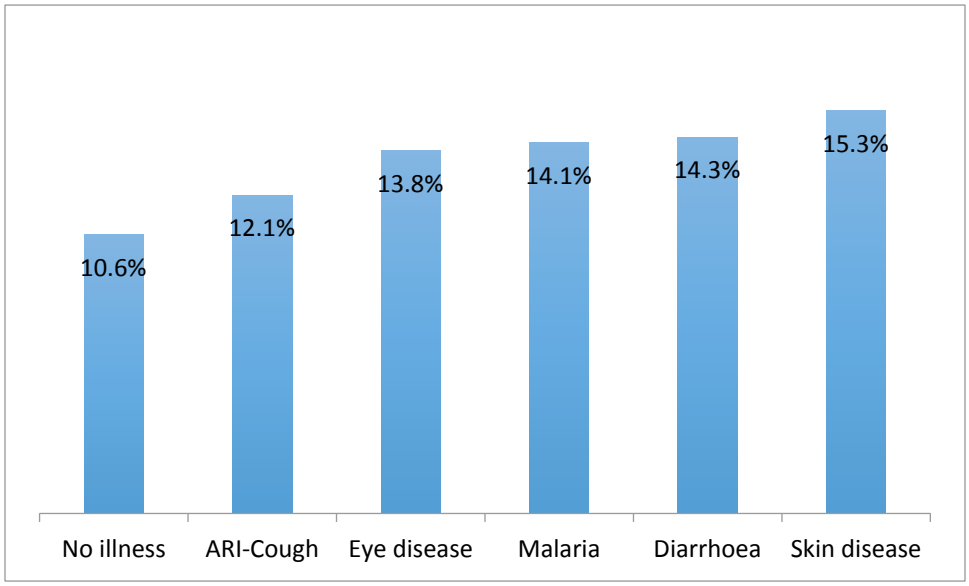
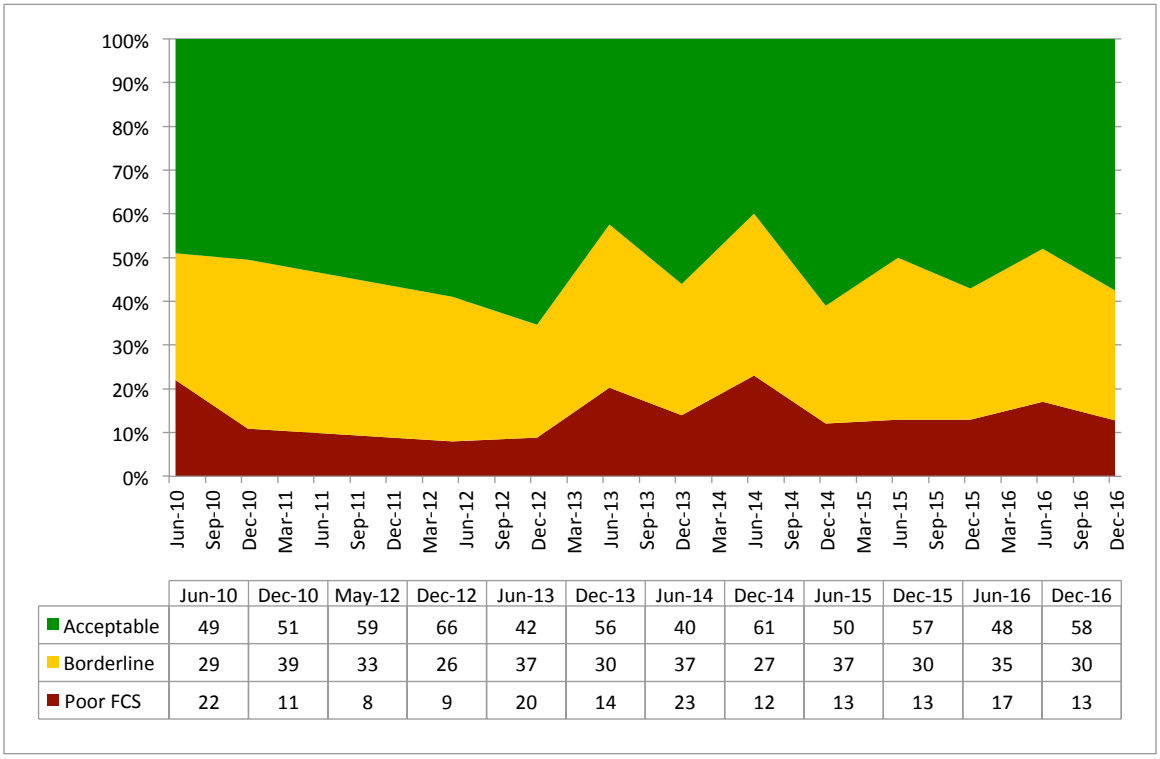


Figure 53: Association between two-week presence of illness and wasting status

13. Food Security and Nutrition trends

Food Consumption Score trends (2010 – 2016)

Food consumption is constant over the years despite some differences reported especially regarding unfavorable weather conditions. Trend analysis shows that food consumption over the last 10 years has minimally changed (**Figure 55**). This might imply that much of the programing in the region is still bent on the survival mode. There is need to review programing in the region with focus on households rather than children and women. This is believed to be due to an increase in the level of humanitarian assistance over the 6-12 month period since 2015 in response to rising food insecurity.



	Jun-10	Dec-10	May-12	Dec-12	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16
Acceptable	49	51	59	66	42	56	40	61	50	57	48	58
Borderline	29	39	33	26	37	30	37	27	37	30	35	30
Poor FCS	22	11	8	9	20	14	23	12	13	13	17	13

Figure 55: Trend of food consumption in Karamoja, 2010-2016

Global Acute Malnutrition prevalence (2010 – 2016)

The regional trends for GAM also depict more or less a constant situation in the December rounds over the past 6 years (**Figure 56**).

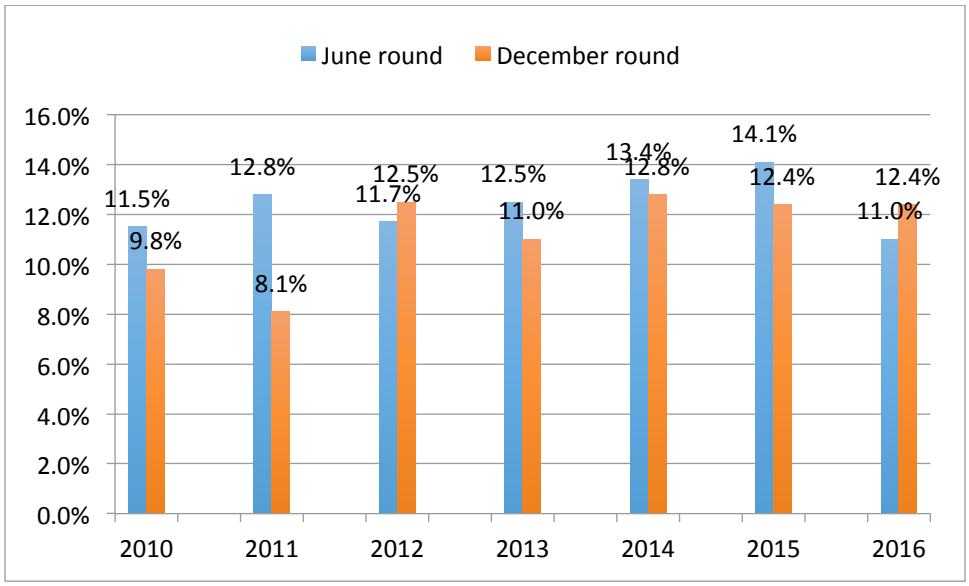


Figure 56: Trends of GAM prevalence, 2010-2016

14. Recommendations

- The community components of the current interventions should be redesigned to improve coverage of service delivery while minimizing targeting of individuals. First, coverage for feeding programs was as low as 31%; second, up to 77% of households currently classified as EVH have had one or more income earner, which dispels the criterion that EVHs lack labor capacity; third, anecdotal information mainly from field supervisors suggest instances where mother and caregivers get excited whenever MUAC measurements on a child get below 11.5 cm. These observations suggest the need to improve the community component of the current programs. In addition, the common phenomenon associated with targeted programs i.e. wrong targets benefiting from the intervention instead of the right target could be happening in Karamoja region; and finally that individual targeting especially of the vulnerable children has increased dependency or is being abused by households at the expense of children. Therefore the community programs should be redesigned to target households instead of individuals especially for livelihood programs. Karamoja region is no longer homogeneous; preferably geographical parameters should guide targeting of the households.

- Strengthening the community components of interventions should be done hand in hand with scale up of behavior change communication, community dialogue and sensitization to increase awareness and knowledge on the importance of adequate feeding for children, food security, sanitation and environmental protection to control dependency charcoal and firewood.

- Promote increased agricultural and livestock based livelihoods. Given high prevalence of anemia in the region especially in women, and the finding that majority of households had not consumed iron rich foods, it is recommended to introduce bio-fortified varieties of crops that would contribute to improved nutrition of households for example iron bio-fortified beans. Unpredictability in seasons should also be managed by teaching farmers to prepare gardens in the dry seasons so that crops are planted with first rains. Improved livestock farming will also increase the chances of households consuming proteins and hem-iron whose intake was low. Scale up distribution of small animals especially goat and sheep to promote nutrition. Milk value chain should be addressed to promote access of milk to children because currently it's very low. Poultry should be promoted as well alongside promotion on the consumption of eggs. Veterinary services and medicines should be availed as well as involving Agricultural research organizations to support the improvement of farming practices.

- There is need for interventions to promote Climate Smart Agricultural Practices among households through extension and training, particularly in the green belt areas to further enhance crop production. Furthermore, given the recurrent dry spells in the region, introduce drought resistant varieties of staple crops to contribute to improved food availability amidst erratic and unpredictable rains.

- Given that household food stocks are expected to run out by end of March 2017, and that food prices are expected to increase as the lean season progresses, it is recommended to scale up

food/cash for work programs for in the region, particularly in Moroto, Napak, and Kotido districts where access to food was relatively lower.

- Since GAM prevalence has persistently remained high over many years, there is need to ascertain extent of incidence and relapse of SAM and MAM both at community and facility level.

- Gender roles were important in determining education opportunities for children. Girls were kept out of school due to domestic chores while boys due to lack of resources to care for needs at School including fees. There is need for continuous sensitization of households on the importance of educating and keeping both boys and girls in Schools. This will strengthen the universal primary education program.

15. ANNEX

Annex 1: Explaining the Food Security index

A food security index was calculated, at household level, as an average of the scores obtained from the Food Consumption, Food Expenditure, and livelihood coping indicators. Each household was then assigned to a Food Security Index group viz. Food Secure, Marginally Food Secure, Moderately Food Insecure, and Severely Food Insecure.

The food security index is based on an algorithm, which combines, at the household level, the results for each of the reported food security indicators (Food Consumption Score, Food Expenditure Share, and Livelihood Coping Strategies).

Converting food security indicators into a 4-point scale

A central stage of the methodology involves converting the outcomes of each of the 3 indicators into a standard 4-point classification scale. The 4-point scale assigns a score (1-4) to each category. Once all the indicators have been converted to the 4-point scale, the **overall food security classification** for a household can be calculated as below and as shown in **Table 14**:

1. The *'summary indicator of Current Status' was taken to be the equivalent of the Food Consumption Score* (i.e. the 4-point scale scores) in the **Current Status** domain (CS).
2. Calculate the *'summary indicator of Coping Capacity'* by averaging the household's scores (i.e. the 4-point scale scores) for the Food Expenditure Share and the Livelihood Coping Strategy Index in the **Coping Capacity** domain (CC).
3. Average these results together: (CS+CC)/2.
4. Round to the nearest whole number (this will always fall between 1 and 4). This number represents the household's overall food security outcome.
5. The resulting Food Security Index is categorized as shown in **Table 15**.

Table14: Calculation of the Food Security Index

	Current status (CS)	**Coping Capacity (CC)**				
	Household Food consumption group*	Food Expenditure Share category**	Livelihood Coping Strategy Categories ***	Formula	**Final Food security outcome for household**	**Overall food security classification**
Example indicator score	3	1	4	CS = 3 CC = (1+4)/2 = 2.5	(3+2.5)/2 = 2.75; ***Round off to 3***	Moderately Food Insecure

*Acceptable, Borderline or Poor; ** Food Secure, Marginally Food Secure, Moderately Food Insecure or Severely Food Insecure; *** No coping, Stress coping, crisis coping or Emergency coping.

Table 15: Overall Food Security Classification categories

	Food Secure	Marginally Food Secure	Moderately Food Insecure	Severely Food Insecure
Food Security Index	Able to meet essential food and non-food needs without engaging in atypical coping strategies	Has minimally adequate food consumption without engaging in irreversible coping strategies; unable to afford some essential non-food expenditures	Has significant food consumption gaps, OR marginally able to meet minimum food needs only with irreversible coping strategies	Has extreme food consumption gaps, OR has extreme loss of livelihood assets that will lead to food consumption gaps, or worse.

Annex 2: Plausibility checks

Abim

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**10** (7.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.877)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.009)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**4** (13)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**4** (14)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.06)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.18)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.22)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.046)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**26** %

The overall score of this survey is 26 %, this is problematic.

Amudat

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**5** (4.1 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.609)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (11)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**4** (13)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.07)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.18)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.13)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.099)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**21** %

The overall score of this survey is 21 %, this is acceptable.

Kaabong

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**5** (4.5 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.874)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.05)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.14)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.37)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.049)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**21** %

The overall score of this survey is 21 %, this is acceptable.

Kotido

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**20** (13.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.240)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (7)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**10** (21)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**4** (16)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**2** (1.15)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.17)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.15)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.407)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**46** %

The overall score of this survey is 46 %, this is problematic.

Moroto

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**5** (3.8 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.839)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (0.99)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.03)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.04)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.330)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**17** %

The overall score of this survey is 17 %, this is acceptable.

Nakapiripirit

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**0** (2.4 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.469)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.05)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.02)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.01)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.791)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**14** %

The overall score of this survey is 14 %, this is good.

Napak

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**0** (0.6 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.039)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.04)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.07)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.03)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.350)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**16** %

The overall score of this survey is 16 %, this is acceptable.