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EXAMINING THE COMPLEX DYNAMICS INFLUENCING PERSISTENT ACUTE MALNUTRITION IN SAMBURU COUNTY – A LONGITUDINAL MIXED-METHODS STUDY TO SUPPORT COMMUNITY-DRIVEN ACTIVITY DESIGN

BASELINE QUALITATIVE REPORT

MARCH 2022

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ACRONYMS AND ABBREVIATIONS

APHRC	African Population and Health Research Center
CHS	community health system
CHV	community health volunteer
COVID-19	coronavirus disease 2019 (SARS-CoV-2)
FGD	focus group discussion
FGM	female genital mutilation
GAM	global acute malnutrition
GIS	geographical information system
IDI	in-depth interview
IYCF	infant and young child feeding
KII	key informant interview
MIYCN	maternal, infant, and young child nutrition
MUAC	mid-upper-arm circumference
NGO	nongovernmental organization
NHIF	national hospital insurance fund
PREG	Partnership for Resilience and Economic Growth
RTI	RTI International (registered trademark and trade name of Research Triangle Institute)
SBCC	social and behavior change communication
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VSLA	village savings and loan association
WASH	water, sanitation, and hygiene
WIFAS	weekly iron and folic acid supplementation

EXECUTIVE SUMMARY

Study aims

This report presents the results from the baseline qualitative research conducted as part of the United States Agency for International Development (USAID) Nawiri longitudinal study in Samburu County, Kenya. The goal was to inform pilot studies and the design of Phase 2 implementation by collecting in-depth and nuanced evidence on immediate, underlying, and systemic drivers of acute malnutrition. The study also gathered insights from communities on appropriate solutions to achieve sustained reductions in acute malnutrition.

The qualitative study aimed to identify community perceptions of the factors related to acute malnutrition and to gauge how those factors varied by season and livelihood zone. In-depth data also were collected in three areas known to play an important role in acute malnutrition: factors that influence maternal, infant, and young child nutrition (MIYCN) practices; use and barriers to use of health-care services; and the role of gender dynamics in employment and household decision making.

Methods

The researchers collected data from June 14 to July 31, 2021, in selected villages representing three livelihood zones: urban/peri-urban, pastoral, and agropastoral. Data collection methods included community dialogues, focus group discussions (FGDs), in-depth interviews (IDIs), and key informant interviews (KIIs). Participatory exercises were incorporated into the community dialogues and FGDs. Text data were coded and analyzed thematically, while data from participatory exercises were analyzed using descriptive statistics.

In all, 331 individuals participated, including mothers and fathers with young children; community leaders; and county officials and nongovernmental organization (NGO) representatives.

Community perceptions of factors related to acute malnutrition: Mothers and fathers reported the following across livelihood zones (or in specific livelihood zones where noted in parentheses).

- **Strong factors** contributing to acute malnutrition in children: Lack of food, inadequate caring and feeding practices, unclean water and poor hygiene and sanitation, child illness, inadequate health-seeking behavior, poverty, and drought.
- **Moderate factors** related to acute malnutrition: Children eating soil, maternal alcohol use (peri-urban and agropastoral), lack of health and nutrition knowledge, being an orphan, raids (agropastoral and pastoral), and migration (pastoral and agropastoral).
- **Weak factors** associated with acute malnutrition: Unemployment, cultural beliefs related to sex during pregnancy and breastfeeding (peri-urban and pastoral), family conflicts and divorce, early marriage and early pregnancy (agropastoral), giving the child unhealthy foods (pastoral), illiteracy (peri-urban), disability (peri-urban and pastoral), poor child spacing, premature birth (peri-urban and pastoral), teething (peri-urban and pastoral), and failure to use traditional herbs (agropastoral and pastoral).

Global acute malnutrition (GAM) was perceived to be most common in the dry season, and was linked to low food diversity, high cost of food, greater poverty, drought, and migration, which occur during dry periods. Health-seeking behavior and clean water and hygiene were

challenging for different reasons in different seasons (e.g., no money to go to health facilities in the dry season; rains making roads impassable). Child illness was most prevalent during the rainy season, when children got diarrhea from dirty water and contracted coughs or pneumonia that were exacerbated by the cold weather.

Community perceptions of factors that influence MIYCN practices: Poverty, maternal illiteracy, maternal alcohol use, and poor water, sanitation, and hygiene (WASH) practices were perceived to be underlying barriers to optimal MIYCN practices. Suboptimal feeding practices were acknowledged to be common because of food insecurity and the unavailability and unaffordability of nutritious foods, with seasonality named as a key factor for food access and utilization. Optimal breastfeeding was affected by use of prelacteal feeds, maternal perception of insufficient breast milk, pregnant women weaning babies early, and perception that breasts need to be washed before breastfeeding. Optimal complementary feeding was affected by mothers' limited knowledge about preparation of locally available nutritious foods, nonresponsive feeding practices, belief that packaged milk is not good for children, and beliefs about food allergies. Nutrition during pregnancy and lactation was affected by advice not to eat certain foods (e.g., eggs and avocadoes), advice to restrict food intake, food cravings, and customs forbidding women to eat certain foods. Adolescent mothers faced additional challenges with breastfeeding and complementary feeding because they lacked knowledge about child care and feeding and sometimes needed to delegate caregiving to an older female relative so they could return to school or work.

Use and barriers to use of health-care services: Communities in Samburu County signaled their trust in health-care services, including staff at health-care facilities and community health volunteers (CHVs). They cited the national hospital insurance fund (NHIF) and equipped ambulances as instrumental in accessing care. However, some barriers were named as needing particular attention in interventions, such as logistical and cost barriers to reach facilities and obtain health services, lack of medicine and staff at facilities, long waiting times, use of traditional or herbal remedies (which delayed health seeking), and the tendency to wait until the illness was serious. In terms of gender roles related to health-care seeking, mothers were seen as responsible for taking children for health care, while fathers were said to be responsible for financially supporting health-care seeking.

Gender dynamics in employment and household decision making: For the most part, women in Samburu County continued to be involved in manual labor and petty-trade economic activities with low margins of return, while men controlled land, assets, and capital. Men were still to a large extent the main economic providers in the family and the ones to make decisions regarding purchases of food.

Recommendations

Key interventions suggested by community members to tackle acute malnutrition included:

- Organize continuous community sensitization and advocacy on issues related to health and nutrition, to address knowledge gaps among community members;
- Include adolescents, fathers, and grandmothers in nutrition programming and messaging;
- Strengthen the community health system by enhancing the effectiveness of CHVs in their roles to support households in identifying and preventing acute malnutrition;

- Execute high-impact nutrition interventions, such as deworming campaigns, supplementation programs, and family-led mid-upper-arm circumference (MUAC) measurement; and
- Implement interventions to increase women's empowerment, which would help to increase their role in household decision making and their access to and control over factors of production.

Shock preparedness, increased involvement of men in MIYCN, support for adolescent mothers, and alternative solutions for accessing nutritious foods during lean seasons were mentioned as key elements for MIYCN interventions. Men specifically indicated their wish to be more involved in MIYCN practices. Community members cited the importance of health services through CHVs as fundamental in supporting mothers to optimize MIYCN.

Conclusions

In Samburu County, the community members who participated in the qualitative research were aware of good nutrition practices. However, gaps in carrying them out persisted because of poverty, lack of food, inadequate caring and feeding practices, unclean water and poor hygiene and sanitation, and child illness. Seasonal cycles and limited mechanisms to adapt to shocks have led to the persistence of acute malnutrition. Nutrition interventions and other health services, though available, are often sought late because of transport challenges, the tendency to delay seeking health care, and stigma related to having a child with acute malnutrition. Caregivers and other participants offered potential solutions to tackle the issue of malnutrition.

1 INTRODUCTION

The goal of the United States Agency for International Development (USAID) Nawiri program is to sustainably reduce levels of persistent acute malnutrition in Kenya's arid and semi-arid lands. In Samburu County, USAID Nawiri is facilitated by a Mercy Corps-led consortium of partners that share a commitment to putting county governments and their citizens in the driver's seat of their own journeys to self-reliance. In the first phase of USAID Nawiri, the consortium is conducting desk reviews, several types of primary data collection, and implementation research to identify household and systemic factors associated with acute malnutrition. USAID Nawiri is using the information collected to tailor and test program activities to ensure they address the key factors associated with acute malnutrition.

The causal pathways leading to acute malnutrition in Samburu County are complex; are interlinked; and require in-depth assessment and analysis to fully understand the associated contextual, seasonal, and shock-specific factors. The USAID Nawiri longitudinal study aims to produce evidence-based insights for developing overarching as well as micro solutions for sustainably reducing acute malnutrition, and to inform Phase 2 USAID Nawiri activities in Samburu. Its two main objectives are to:

- Understand and map how a variety of immediate, underlying, basic, and systemic drivers interact to influence acute malnutrition over time among infants and young children living in different livelihood zones, and
- Identify and prioritize opportunities and barriers to achieve sustained reductions in acute malnutrition.

The baseline study used a mixed-method approach: a quantitative survey with households (results are covered in a separate report) and qualitative data collection using various methodologies. The qualitative investigation was designed to be triangulated with findings from the survey, highlighting communities' perceptions of the complexity of factors related to malnutrition, and gathering data on the "hows" and "whys" of key findings from the household survey.

2 STUDY METHODOLOGY

2.1 STUDY DESIGN

The methods used in the qualitative component of the longitudinal study were community dialogues, key informant interviews (KIIs), focus group discussions (FGDs), and in-depth interviews (IDIs).

Community dialogues were conducted separately for groups of men and women of different ages to mitigate power dynamics and maximize self-expression. The women's groups included adolescent mothers (10–17 years), young mothers (18–24 years), and adult mothers (25+ years). The men's groups included young fathers (15–24 years) and adult fathers (25+ years). All community dialogue participants had a child aged 3 years or younger. Each community dialogue had 22–24 participants. The community dialogues included three methods: (1) free listing of factors that participants viewed as contributing to acute malnutrition; (2) a seasonal calendar, used to explore and understand how different seasonal factors influence malnutrition, from the communities' perspective; and (3) causal mapping, used to map community perceptions of the connections between factors said to contribute to

acute malnutrition. The free listing was done by all participants together. They were then divided into four groups by age and gender (i.e., adolescent and young mothers, adult mothers, young fathers, older fathers) to do the seasonal calendar and causal mapping activities.

KIIs were conducted with individual county government officials, community gatekeepers, representatives of local nongovernmental organizations (NGOs), United Nations agencies, and USAID Partnership for Resilience and Economic Growth (PREG) partners. These respondents offered expert insights into the nutrition and food security issues in the community, including the challenge of acute malnutrition and how it can be addressed.

FGDs were conducted with groups of six participants and **IDIs** were conducted with individuals. Participants in both FGDs and IDIs were adolescent mothers (10–17 years), young mothers (18–24 years), adult mothers (25+ years), young fathers (15–24 years), and adult fathers (25+ years), all with children aged 3 years or younger. Separate **IDIs** were conducted with adolescent mothers, young mothers, and adult mothers with malnourished children aged 2 years or younger. The FGDs were undertaken separately for both men and women. The FGDs and IDIs were used to collect information on community perceptions of factors related to acute malnutrition; maternal, infant, and young child nutrition (MIYCN) practices; water, sanitation, and hygiene practices; and health-seeking behaviors. Additionally, **FGD** respondents participated in a free listing activity to collect information on what constitutes an enabling environment for mothers to achieve optimal MIYCN practices, what support networks already exist to promote optimal MIYCN practices for women in the community, and how the enabling environment and networks could be enhanced.

Annex A summarizes the themes investigated using different qualitative methods and the knowledge gaps that the methods sought to fill.

2.2 SAMPLES AND SAMPLING STRATEGY

Table 1 summarizes the final number of participants included for each data collection activity.

Table 1. Completed samples by type of data collection, Samburu County

Type of data collection and	Number of interviews or group discussions held			
	Pastoral	Agropastoral	Urban/ peri-urban	Overall
KIIs				
Community leaders (ward administrators, chiefs, village elders, women's group leaders, youth leaders, religious leaders, community health volunteers (CHVs) and community health assistants)	8	8	13	29
County officials and NGO representatives	-	-	-	18

Type of data collection and participant	Number of interviews or group discussions held			
Community dialogues (Target: Parents with a child aged 3 years or younger)				
Mothers (all ages)	1	1	1	3
Fathers (all ages)	1	1	1	3
Total number of participants	48	47	44	139
FGDs (Target: Parents with a child aged 3 years or younger)				
Adolescent mothers (10–17 years)	1	1	1	3
Young mothers (18–24 years)	1	1	1	3
Adult mothers (25+ years)	1	1	1	3
Young fathers (15–24 years)	1	1	1	3
Adult fathers (25+ years)	1	1	1	3
Total number of groups	5	5	5	15
Total number of participants	30	30	30	90
IDIs (Target: Parents with a child aged 3 years or younger and women with an undernourished child aged 2 years or younger)				
Adolescent mothers (10–17 years)	3	6	5	14
Young mothers (18–24 years)	4	2	4	10
Adult mothers (25+ years)	7	7	5	19
Young fathers (15–24 years)	2	2	2	6
Adult fathers (25+ years)	2	2	2	6
Total number of participants	18	19	18	55

Three villages were purposefully selected for qualitative data collection **(Table 2)**. The villages were chosen in consultation with county officials to represent the different livelihood zones (one village per livelihood zone) and sub-counties. In each village, participants were recruited with the support of gatekeepers (the chief or assistant chief and one CHV). Participants with the targeted characteristics were identified by the CHV, then invited to give their informed consent and take part in data collection.

Table 2. Villages selected for qualitative study by livelihood zone, Samburu County

Sub-county	Location	Sub-location	Village	Livelihood zone
Central	Loosuk	Loosuk	Loisukutan	Agropastoral
Central	Central	Maralal	Maralal	Urban/peri-urban
North	Ndoto	Ndoto	Tankar A	Pastoral

2.3 DATA COLLECTION PROCEDURES

Data were collected face-to-face with eligible participants, using qualitative guides for each data collection modality (e.g., FGD, KII, IDI, community dialogue) and type of participant. Teams of trained research assistants collected the data from June 14 to July 31, 2021. All fieldworkers were recruited from their communities, were familiar with the area and customs where they would be working, and spoke the local languages. They received intensive training using African Population and Health Research Center's (APHRC's) training protocol, which included both theoretical training and practical exercises. The training also covered using audio recording devices and taking field notes to capture nonverbal cues, observations, and other relevant information. The fieldworkers were initially trained for 10 days in April; however, due to delays in commencing fieldwork, a 2-day refresher training was offered to all fieldworkers in June 2021 before data collection. A pilot was carried out immediately after the training to test the tools and field procedures. All notes and feedback by fieldworkers were considered in the subsequent review of tools. The main changes after the pilot exercise were rewording some questions to make them easier for communities to understand, editing local-language translations, and adding probes to certain questions.

Field operations were supervised in two layers: (1) daily supervision by team leaders to ensure that the recruited participants met the target criteria, fieldworkers undertook the appropriate interviews as assigned, recorded data were backed up daily, and teams held a daily debriefing meeting; and (2) weekly reviews by the data coordination team to ensure that all interviews were undertaken and the data were of good quality. All field teams shared a daily report on issues arising in the field with the APHRC research team, who advised on the necessary actions to take.

During fieldwork, data quality assurance was enhanced by the APHRC research team randomly observing group discussions or interviews, having team leaders conduct daily debriefing meetings, cross-checking field summary notes, and holding weekly debriefing meetings between the APHRC research team and fieldworkers to review the quality of the incoming data. The APHRC research team also offered both group and individualized feedback and led discussions of challenges encountered. The research team backed up the field audio recordings daily to a secure computer. The APHRC research team also checked data quality by cross-checking 10% of transcribed data against the guide to ensure that all research questions were answered.

2.4 ETHICAL CONSIDERATIONS

The researchers sought and obtained ethical and research approvals and research permits from the Ethical and Scientific Review Committee of Amref Health Africa and the National Commission for Science, Technology, and Innovation of Kenya, respectively. A reliance agreement between the RTI and APHRC Institutional Review Boards was put into place. All individual participants provided written informed consent. To ensure respondent confidentiality, the research team saved transcripts on a dedicated password-protected computer and removed all identifiers from the transcripts. Only anonymized transcripts will be kept in the APHRC data repository.

2.5 CHALLENGES ENCOUNTERED IN THE FIELD

Respondent fatigue: Some respondents complained about the long duration of interviews. The IDIs and KIIs took an average of 1.5 hours while FGDs and community dialogue took an average of 4 hours.

COVID-19: Delays occurred at the beginning of data collection because of COVID-19. The team decided to observe the situation for 2 weeks before kicking off data collection. The team ensured that all group activities took place in safe spaces—outside, where possible, or in large school halls.

2.6 DATA TRANSCRIPTION, CODING, AND ANALYSIS

All audio files were cross-checked for standard labeling. The audio files for IDIs, FGDs, KIIs, and community dialogues were then transcribed verbatim from local languages and translated into English by a team of 12 experienced transcribers with good mastery of local languages and English. After reading and rereading the transcripts, the coders developed a codebook of deductive and inductive codes for each interview guide. Transcripts were then cleaned, saved in rich-text format for importation into NVivo (QSR International) software, and analyzed according to the developed codebook using a thematic framework approach.[1] Intercoder variability on thematic groups was limited to less than 10%.

Transcripts from the causal mapping and seasonal calendar exercises were coded and analyzed thematically. Information collected through the causal mapping exercise was presented visually using a causal diagram to demonstrate community perceptions of linkages between factors, their relative importance, and the livelihood zones that mentioned them.

The free listing data from FGDs were analyzed by grouping responses from participants on the different items of support for optimal MIYCN, and then tabulating the frequencies. This step was followed by consolidating the responses further into broader thematic areas. The detailed description of the broader themes was derived from the transcripts of the discussions during the free listing exercises.

3 FINDINGS

The study findings describe how communities perceived the factors that contribute to acute malnutrition as well as how those factors vary by season. In-depth data also were collected on three areas that play an important role in acute malnutrition: factors that influence MIYCN practices, use and barriers to use of health-care services, and the role of gender dynamics in household decision making. Findings are highlighted by the livelihood zone.

3.1 PARTICIPANT CHARACTERISTICS

Community dialogues included 139 participants, about half of whom were female and younger than 25 years **(Annex B)**. A majority were Christian (96%), married (96%), not formally educated (51%), and had one or two children younger than 5 years (86%). By occupation, a plurality of 48% were engaged in livestock herding or farming.

[1] Pope, C., Ziebland, S., & Mays, N. (2000). Qualitative research in health care. *BMJ, 320*(7227), 114–116. https://doi.org/10.1136/bmj.320.7227.114; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1117368/

Of the 90 participants in the FGDs, 60% were women, 60% were younger than 25 years, 88% were married, 97% were Christian, 42% were not formally educated, 87% had three or more children younger than 5 years, and 39% were formally employed **(Annex C).**

Of the 55 IDI participants, 80% were women, 53% were younger than 25 years, 96% were Christian, 67% were married, 49% were not formally educated, 87% had one or two children younger than 5 years, and 44% reported that livestock herding/farming was their main occupation **(Annex D)**.

Of the 47 KII participants, 68% were men, 68% were 25–49 years of age, 94% were Christian, 66% were educated beyond primary level, 92% were married, 75% were engaged in livestock herding or farming, and 55% had one or two children younger than 5 years **(Annex E).**

3.2 COMMUNITY PERCEPTIONS OF FACTORS ASSOCIATED WITH ACUTE MALNUTRITION

3.2.1 Causal map of factors associated with acute malnutrition

The results of the community dialogues were used to create a causal map of factors associated with acute malnutrition **(Figure 1)**. The shading of the boxes represents how strongly participants said a factor was associated with acute malnutrition. The livelihood symbols in the shaded boxes indicate which livelihood zones mentioned each factor.

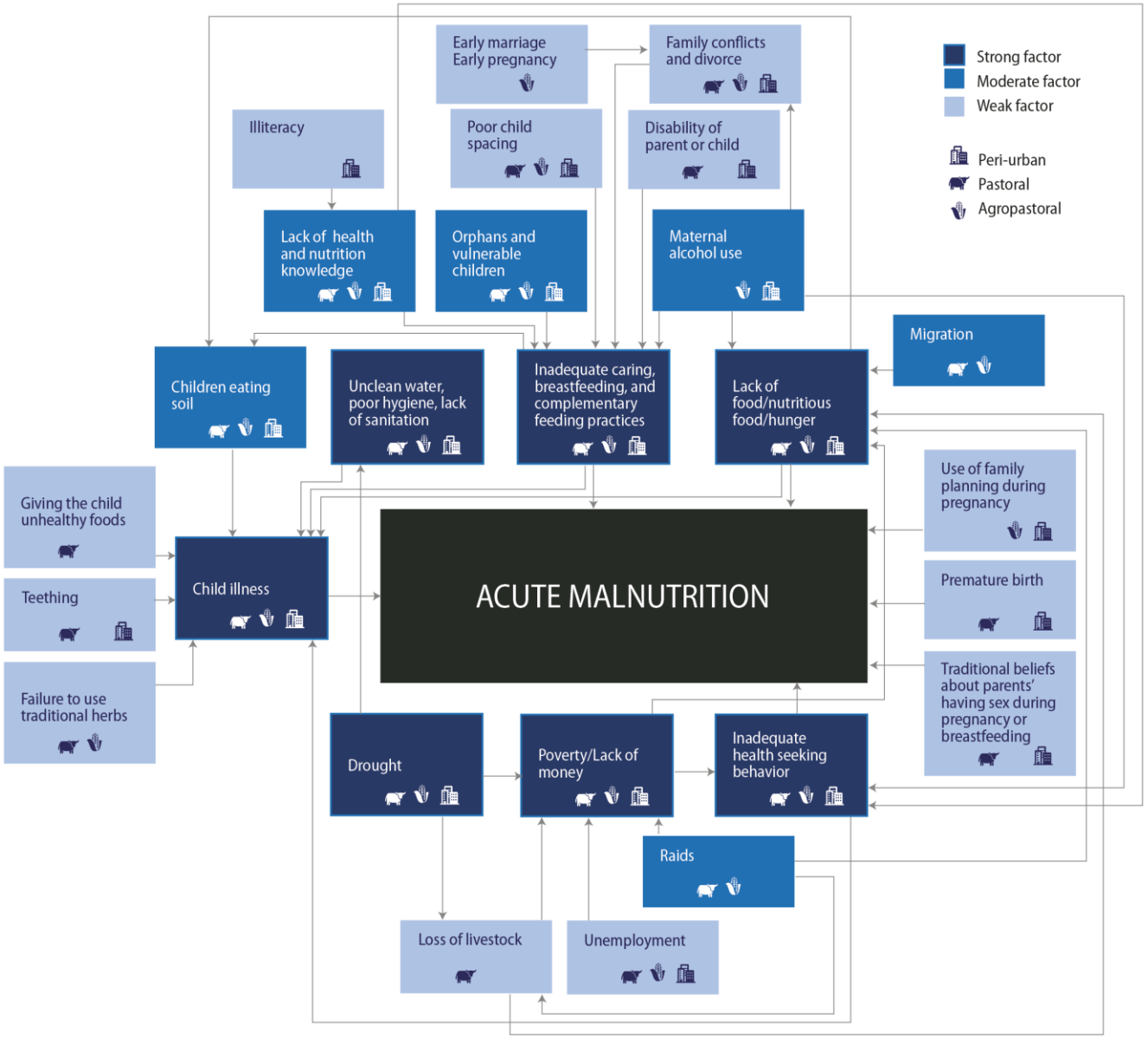
Strong factors: The factors that participants said were most strongly linked with acute malnutrition were lack of food, lack of nutritious food, and hunger; inadequate caring, breastfeeding, and complementary feeding practices; unclean water, poor hygiene, and lack of sanitation; child illness; inadequate health-seeking behavior; poverty or lack of money; and drought.

- The issue of **lack of food, lack of nutritious food, and hunger** was mentioned by all livelihoods. It was considered to be directly related to acute malnutrition, but also contributed to acute malnutrition through its negative effect on child health. Lack of food was a factor leading to children eating soil, which led to acute malnutrition through child illness. Participants discussed how not giving the child a variety of foods and not feeding the child frequently enough also contributes to malnutrition.

  I can say the problem is with the parents because children need to have something called a balanced diet. [They need] to eat a certain food today and tomorrow eat different food, like rice. They also need to eat something like fruits, something that can make the child strong. I think the [malnourished] child [in the picture] is eating one type of food [and] the child might not be getting good care. So, that's where the problems started from, and the child became weak [and malnourished]. — Agropastoral father, Community dialogue

  You are giving that child food, but you are not giving enough food, like you just give the child a little food [or] you don't give the child food on the next day. — Peri-urban mother, Community dialogue

Figure 1. Causal map of factors related to acute malnutrition from community dialogue



- **Inadequate caring, breastfeeding, and complementary feeding practices** were considered by all livelihoods to be directly related to acute malnutrition, but also contributed to it through their effect on child illness. Participants mentioned that not practicing exclusive breastfeeding, stopping breastfeeding early, and infrequent breastfeeding when the mother is busy working contributed to acute malnutrition. They also said that children can become malnourished when their parents do not adequately care for them by feeding them a variety of foods that protect them from diseases.

  When the mother stops breastfeeding this child before time, that not only makes the child malnourished, but also makes that child get diseases frequently and the child will not grow well. — Peri-urban mother, Community dialogue

  Maybe they don't give sufficient care to the child. They can't look after the child well, can't protect the child from diseases. They may not be feeding the child different foods, and they also don't give fruits. It is lack of that care that leads to [malnutrition]. — Agropastoral mother, Community dialogue

- **Unclean water, poor hygiene, and lack of sanitation** was mentioned by all livelihoods. Participants explained that using unclean water, failing to clean utensils or wash hands, and lack of latrines contribute to children getting sick and then becoming malnourished.

  We mostly don't have toilets, thus the same streams we use as toilets are the same where we fetch water when it rains. And again, there are no hospitals around in case of any typhoid or cholera, thus affecting the child and leading to [malnutrition]. — Peri-urban father, Community dialogue

- **Child illness** was named as a factor by all livelihoods and was considered to be directly linked to acute malnutrition. Participants mentioned diarrhea, pneumonia, and HIV as illnesses that contribute to acute malnutrition in children. Agropastoral participants mentioned that diseases that last a long time or are untreated can lead to acute malnutrition. Pastoral participants described how illness or disease was the result of poor sanitation and hygiene.

  I would like to say that when a child is sick, they can easily become malnourished if you don't give them good food, like meat, fruits, beans, and others… The diseases that can cause child malnutrition include diarrhea [and prolonged exposure] to the cold, [which] can make them get pneumonia. This can later lead to vomiting and diarrhea, then the baby will lose a lot of water and become weak. — Peri-urban father, Community dialogue

- **Inadequate health-seeking behavior** was mentioned as a key factor across all livelihood zones. Agropastoral and peri-urban participants mentioned that sometimes parents do not take the child to the hospital, do not give the child medicine when sick, or delay in taking the child to the hospital, and these behaviors contribute to acute malnutrition if the child's illness does not resolve quickly. Pastoral participants said that the distances to health facilities and poor roads made it challenging for parents to take their children to the hospital when they are sick.

  If a child gets sick and you don't take the child to the hospital, that is a bad thing. The child is going to be sick for a very long time and they are going to lose a lot of weight. — Agropastoral mother, Community dialogue

Some people live far from hospitals and at the same time they do not have roads. Children [in those communities] have so many challenges. For example, when they get sick, they can't easily access the hospitals. — Pastoral father, Community dialogue

- **Poverty or lack of money** was listed as a major factor linked to acute malnutrition by all livelihoods. Participants explained that it is difficult to feed and take care of a child well without sufficient funds.

  This condition [malnutrition] is brought about by poverty. First, the child does not have food to eat. When this child becomes sick and does not have good care, the child will be malnourished. — Agropastoral father, Community dialogue

- **Drought** was mentioned by all livelihoods as an important factor contributing to malnutrition. Participants explained that during droughts there is not enough food; the livestock do not produce milk that can be given to children; livestock may die, leaving the family poorer; and water is scarce and of poor quality, which leads to more diseases.

  When there is no food for humans and animals to eat, it is something serious that may also cause the child to be malnourished. — Pastoral father, Community dialogue

Moderate factors: The factors that participants said were moderately associated with acute malnutrition were children eating soil, maternal alcohol use, lack of health and nutrition knowledge, being an orphan, raids, and migration.

- **Children eating soil** was mentioned by participants from all livelihood zones. Children were said to eat soil when they did not have enough food, were weaned early, or were not adequately cared for. Eating soil contributed to child illness, especially worms and diarrhea, which then led to acute malnutrition.

  When the children do not get food, they will eat soil and dirty things, which may cause them to be [malnourished]. — Pastoral mother, Community dialogue

- **Maternal alcohol use** was mentioned by participants in the agropastoral and peri-urban livelihood zones. Most participants explained that alcoholic mothers often fail to cook for or adequately care for their children. However, a few participants said that mothers who use alcohol still cook for their children.

  When the mother is a drunkard, this can cause a lot of issues. For example, the mother ends up going everywhere with this child. She can sleep in streams and the child has not eaten anything the whole day. This liquor that the mother drinks is the same that the child sucks while being breastfed, thus causing malnutrition. — Peri-urban father, Community dialogue

- **Lack of health and nutrition knowledge** was mentioned across all livelihood zones. Participants mentioned that when people live in remote areas and/or they have not been educated through schools, churches, or health facilities, they may not have had a chance to gain nutrition knowledge. This was described as negatively impacting parents' caregiving and feeding practices. However, some participants mentioned that parents may have the wisdom of experience, and some felt that education on health and nutrition could be gained from other people, not just from institutions.

If they completely lack knowledge, then they would continue with their daily routine, where children are sick and their mothers do not recognize the cause of the disease or how to prevent it. — Agropastoral father, Community dialogue

Even if the parents are not learned, there is something called wisdom. Use your wisdom to do what is right by also seeing what other people are doing. — Pastoral father, Community dialogue

- **Being an orphan** was mentioned as contributing to malnutrition across all livelihood zones because orphaned children were less likely to be adequately cared for than biological children.

  Maybe the child was under the care of another mother. I think that can contribute to [malnutrition]. When the child is under the care of a foster mother, eating food [only] sometimes, and when the child goes elsewhere, she can even be forgotten. When the child comes to complain of hunger, she is beaten. — Agropastoral father, Community dialogue

- **Raids** were mentioned by participants in the agropastoral and pastoral zones. They explained that communities raid one another to steal or kill livestock. This loss of livestock results in poverty and reduces access to important food sources, like milk.

  You will find that the communities raid each other and steal livestock. As a result, the whole community becomes poor… As pastoralists, livestock is their main source of income, and so whenever insecurity arises, it brings about [malnutrition] through poverty. — Pastoral father, Community dialogue

- **Migration** was mentioned by participants in the agropastoral and pastoral zones. Some of them said that when livestock migrate during the dry season, the children have less food, but others said that some animals are left behind to feed the children and that other foods, such as maize flour, are available.

  Even if the cows have moved away, the child is not going to look like that [malnourished] child in that picture because they are still going to get something to eat…daily. — Agropastoral mother, Community dialogue

Weak factors: Factors that participants said were weakly or indirectly associated with acute malnutrition were unemployment, cultural beliefs related to sex during pregnancy or breastfeeding, family conflicts and divorce, early marriage and early pregnancy, giving the child unhealthy foods, illiteracy of parents, disability of parent or child, poor child spacing, premature birth, teething, and failure to use traditional herbs.

- **Unemployment** was mentioned by participants from all livelihood zones as an underlying factor that contributes to malnutrition. They explained that when parents are unemployed and do not have money to buy food, the child may become malnourished.

  If that person does not have a job to get food, then the child can be malnourished. — Agropastoral father, Community dialogue

- **Cultural beliefs related to sex during pregnancy and breastfeeding** were mentioned by participants in the peri-urban and pastoral livelihood zones as a factor that weakly contributes to acute malnutrition. They explained that parents should not have sex with each other or with any other partners when the woman is pregnant or during the first

several months after the child is born because this is believed to cause malnutrition in the child.

> *If the husband sleeps with the wife while pregnant that may result in some problems in the future [to the child]… When the mother gives birth, the husband is not supposed to sleep with his wife because it is likely to bring some challenges to the child. — Pastoral father, Community dialogue*

- **Family conflicts and divorce** were mentioned by all livelihoods as a weak factor contributing to malnutrition. Participants explained that in cases of family conflict or divorce, care for the child may become inadequate, which leads to malnutrition.

> *When a husband and wife separate, it could cause [malnutrition]. This is because a situation may arise where neither of the parents wants to stay with the child… and the child will face severe hunger, as there is no one taking care of the child. — Pastoral father, Community dialogue*

- **Early marriage and early pregnancy** were mentioned by participants in the agropastoral zone as a weak factor contributing to malnutrition. They explained that when a young woman gets married or pregnant at an early age it may create family conflict and stress and the young woman may not have the knowledge or experience to care for the child, which can lead to malnutrition.

> *Let's say the girl is sent home from school [because she is pregnant], then when she comes home her parents will start to pressure her, so the girl will be stressed. — Agropastoral father, Community dialogue*

- **Giving the child unhealthy foods** was mentioned by participants in the pastoral zone as a weak factor contributing to malnutrition. They explained that some processed foods have chemicals that can affect the health of the child. Similarly, some participants thought that the injections they give to their livestock could get into the milk and affect the child's health, especially if the child is under 6 months.

> *It is the diseases for which we inject the livestock, then we give milk to the child, it affects the child [when they are younger than] 6 months. It is true when you give [that] milk, they get flu. — Pastoral mother, Community dialogue*

- **Illiteracy** was mentioned by peri-urban participants as contributing to malnutrition because mothers who are illiterate do not know what types of food to feed their children and feed them a monotonous diet.

> *Illiteracy in the parents or lack of education is another issue. In our people in Samburu, most of them are uneducated, especially women, and they think the only food for the children is milk and maize flour. Since they may not know good foods needed for the child, they end up feeding the child the same food throughout the year from January to January. I think this is what causes malnutrition. — Peri-urban father, Community dialogue*

- **Disability of parent or child** was mentioned by pastoral and peri-urban participants. They said that a disabled child may not be adequately cared for, and a disabled mother may not have the money needed to care for and feed the child.

You know there are women who are disabled. So, it could be that they cannot afford to get good food for that child. — Peri-urban mother, Community dialogue

- **Poor child spacing** was mentioned by participants from all livelihoods. They explained that if a mother gets pregnant when the first child is still young, she is expected to stop breastfeeding the first child and she may also start to neglect the child, which can lead the child to become malnourished.

  The child is supposed to grow, but if you get pregnant while the other child is still small, then you should stop the baby from breastfeeding and you might not have good food to feed the child. — Agropastoral mothers, Community dialogue

- **Premature birth** was mentioned by participants from peri-urban and pastoral livelihoods. They said that if a child is born early and not well cared for, it can become malnourished, but that if the parents take care of the child and feed it well, it will be okay.

  If this child doesn't get good care as a result of premature birth, it will affect the body of the child and even the growth. — Peri-urban father, Community dialogue

- **Teething** was mentioned by participants from peri-urban and pastoral livelihoods. They said that certain kinds of teeth coming in can make the child have diarrhea and vomit. These teeth need to be removed or the child will become malnourished and may die.

  There are those teeth which we usually take the child to be removed… It makes them have diarrhea and they lose weight. — Pastoral mother, Community dialogue

- **Failure to use traditional herbs** was mentioned by participants from the agropastoral and pastoral livelihood zones. They explained that when parents fail to use traditional herbs themselves or when they do not give children herbs for preventive purposes, it can lead to the child being malnourished.

  Maybe it's the husband who is not giving the wife good herbs… I think the father of this child has a problem, too… I think the men should also take herbs because how can you sire such a [malnourished] child. I think he needs to take herbs too because he has some problem. — Agropastoral father, Community dialogue

3.2.2 Cultural norms and beliefs related to acute malnutrition

Cultural beliefs/misconceptions related to malnutrition were prevalent. The cultural belief that certain diseases are endemic in the Samburu community and can be explained culturally was common. Participants believed that government health-care providers cannot comprehend these problems. In line with this belief, there was the notion that sexual intercourse by either parent during pregnancy results in health problems for the child (as described above). It was reported that treatment for acute malnutrition is sought only when there are severe symptoms. Early detection and treatment hardly happened in the Samburu community.

For example, some children are born with swollen uvula. Like what Samburu call "ljepeta." Do you know what "ljepeta" is? Parents identify these diseases, including

premature teething and swollen uvula, but hospitals cannot comprehend. — Peri-urban father, Community dialogue

Beliefs about body size and build leading to late identification of acute malnutrition: Among the Samburu, it is normal to be thin, which is considered hereditary. In some cases, the belief that Samburu are thin overrode the need to seek health services for a child suffering from acute malnutrition. This was predominantly described in Samburu North. Women in peri-urban and agropastoral zones tended to identify acute malnutrition at an advanced stage, which meant that caregivers delayed treatment and only sought health-care services when the child presented with other ailments, such as diarrhea.

In Samburu North, we have the Turkana and Samburu cultures. When a child is malnourished, they don't see that as a disease, sometimes they say that that is how the family is. Malnutrition is the main issue that is affecting the area, yet they may delay until this child is severely malnourished or even develops some complications. That is the time they come to the facility. I can say the health-seeking behavior is still low. —County official, KII

Stigma related to acute malnutrition: Some families fear taking their children to health facilities due to community stigma related to acute malnutrition.

Yes, there are people who fear taking their malnourished children to hospital to seek medical attention because they will be the laughingstock in the community and bring shame to them. — Peri-urban mother, IDI

3.3 PERCEPTIONS OF SEASONAL VARIATIONS IN MALNUTRITION AND FACTORS AFFECTING MALNUTRITION

Participants across all livelihoods described the **seasonal pattern of acute malnutrition.** Cases of malnutrition increase during the dry season from January to February and June to August. The pastoralist community is most affected because they migrate in search of food and pasture during these times. If the children are enrolled in a nutrition supplementary feeding program, they tend to stop participating when the family migrates, and this program dropout leads to an increase in the severity of acute malnutrition among those children.

Malnutrition cases are usually more pronounced in January and February… and June to August. Pastoralists are more affected as there is no rain and sometimes [they] are forced to migrate away from main amenities, such as their usual health facilities. When they come back around the facility and towns, we go out and screen for malnutrition and this is the time we get so many cases of malnutrition in children, including some who were in the program before and they had defaulted. They come back when they are severe. — County official, KII

The causes of acute malnutrition that participants said varied by season included child illness, health-seeking behaviors, hunger and availability of nutritious foods, breastfeeding practices, clean water and hygiene, poverty, drought, and migration.

Child illness: Participants across all livelihoods discussed how child illness varies by season. They explained that pneumonia, diarrhea, and malaria are more common during the rainy season.

During rainy season, there is cold during that season. It causes cough and pneumonia among children. — Agropastoral mother, Community dialogue

During rainy season, when a child drinks dirty water that collects after rainfall, the child develops stomach-related diseases and may start to have diarrhea. — Pastoral mother, Community dialogue

Health-seeking behaviors: Participants in all livelihood zones said that their ability to seek health care for their child could vary by season. Some participants explained that it was difficult to seek health care during the dry season because families do not have the money to travel to the health facility, or the family decision makers may be far away taking care of livestock and there is no one to take the child to the health facility. Conversely, some participants said it was easier to go to the health facility during the dry season when the roads were more passable.

When there is drought, it is very hard to have any money at all, so when you are asked to take the child to the hospital, you might find that you do not have any means of transport or money to take the child. — Agropastoral father, Community dialogue

Hunger, low food diversity, and high cost of food were mentioned by participants in all livelihood zones as a problem during the dry season, when there is not enough food in general and specific types of foods, such as fruits, vegetables, and milk, are unavailable. They said that the cost of food increases greatly during the dry season. Participants, especially pastoralists, explained that their households resort to eating fewer meals per day and eating the same foods every day during the dry season. Among pastoralists, in particular, multiple vulnerabilities emerge because milk is unavailable due to lack of pasture and the animals become thin, thus reducing the selling prices so that it is not viable to sell livestock to raise money for food.

There are no fruits during [the dry season]. The only thing that is available is maize, and maize with beans doesn't help the child that much. So that is what makes children malnourished. — Agropastoral father, Community dialogue

If it doesn't rain then it becomes difficult to get food, because no food will grow; the livestock will lack pasture and there will be no milk. Also, the livestock will grow thin, affecting the livestock market, in that you cannot sell the livestock, hence getting money to buy food becomes a problem. — Pastoral village elder, KII

Pastoralists usually eat one meal a day and children eat two meals a day. Most of their meals consist of two food groups. This is too low compared to the international recommended standard, which proposes that children eat at least five food groups. — County official, KII

Breastfeeding practices: Participants' perceptions of seasonal effects on breastfeeding practices varied. Some of them said that breastfeeding is the same throughout the year, while others thought that women breastfed less during the dry season when they felt they did not have enough food themselves to produce sufficient quantities of milk, or they were working away from home and were not nearby to breastfeed the baby.

During rainy season you have plenty of food; thus, you can breastfeed frequently, unlike the dry season, where you rarely get food and you cannot breastfeed frequently. — Agropastoral mother, Community dialogue

Clean water and hygiene were mentioned as an issue throughout the year by all livelihoods, but reasons for them being a problem differed by season. During the rainy season, water was said to be full of waste that carried diseases, while during the dry season, water was unavailable or difficult to obtain, which made it challenging to maintain good hygiene.

The reason we have diseases in this season is when it rains, a lot of water causes diseases. For example, water pans and streams carry dirt—such as cow dung, manure—and the same water is used by people. This water will cause diseases. — Pastoral father, Community dialogue

During that period, the streams are dry with no water. People will not clean themselves and their clothes, thus they are attacked by diseases. [Lack of hygiene] attracts houseflies, thus leading to diseases. — Pastoral father, Community dialogue

Poverty/lack of assets was said to vary by season across livelihoods. Participants explained that poverty is greater during the dry season when there is no milk, livestock are difficult to sell, and agriculturalists do not have crops to sell.

It is drought in January, February, and March. The month of April we have started planting…so that in October we harvest. Then in the month of November, we sell maize and get money. — Peri-urban mother, Community dialogue

Drought: Participants discussed how erratic rainfall patterns affect agricultural practices among agropastoral communities. They noted that delayed rains or prolonged drought periods impact food production. Further, availability of grazing pasture is a concern among pastoralist and agropastoral communities. In the case of prolonged dry spells, livestock become weak, and either entire households or selected household members migrate in search of pasture and water. This situation affects the nutritional status in pastoral livelihoods, because they depend on livestock products, especially milk, for good nutrition.

When the onset [of rains] is late or very late, the duration of that season will be short, and this affects crop production. This also affects pasture production and thus its availability…The dry spells have become more intense and more severe. This affects the livelihood of the communities, mainly pastoralists, who depend on livestock, which is also their main source of nutrition. The increase in the intensity of dry spells leads to increased prevalence of malnutrition. — Implementing partner, KII

During rainy season we can plant maize and beans; therefore, you can get enough food to eat. However, in the case of drought, you cannot do farming and maybe there is food you want to eat, like maize and beans, and you don't have money to buy, so no option but to eat what is available. This contributes to our poor nutrition situation. — Peri-urban mother, IDI

Migration was described by participants in the pastoral and agropastoral livelihood zones as occurring during the dry season, when livestock herders move to find pasture and water for their animals. This contributes to malnutrition in children because they are usually left behind with their mothers and they do not have access to milk when the animals are away.

> *Migration is not throughout the year, only during the dry season… The moment livestock migrate away from home, young children will start eating foods other than milk and maybe they are too young to consume such kinds of foods... Whenever the livestock migrate, the children will have to wait until the livestock are back home and that is when milk will be available. — Pastoral father, Community dialogue*

3.4 COMMUNITY PERCEPTIONS OF FACTORS THAT INFLUENCE MIYCN PRACTICES

3.4.1 Perceived barriers to optimal MIYCN practices, by livelihood zone and season

The USAID Nawiri longitudinal study quantitative baseline survey in Samburu County showed that breastfeeding practices were fairly good; 86% of children were breastfed within 1 hour of birth and 58% of infants 0–5 months were exclusively breastfed. However, suboptimal complementary feeding practices were the norm. Only 8% of children 6–23 months achieved minimum dietary diversity and 32% achieved minimum meal frequency. Maternal dietary diversity was also low (6%).

Participants described several barriers to optimal maternal and child nutrition practices, including poverty; maternal illiteracy; alcoholism; and poor water, sanitation, and hygiene (WASH) practices. Not surprisingly, several of these barriers align with the factors identified in the causal mapping exercise, but they are explored here in more detail. Participants also described factors that constrain optimal breastfeeding, complementary feeding, and nutrition during pregnancy and lactation.

Poverty/low income: Most households across the livelihood zones mentioned that low income affected their food purchasing power and forced them to stick with foods that were affordable. Dietary diversity was low in many households, whose diets were mainly monotonous and repetitive, especially during dry seasons.

> *We have poor diets because we cannot purchase all available foods, such as fruits and certain vegetables. The problem is only money because when you do not have money you cannot buy everything you want, but when you have the money, you can buy anything in the market because they are all available there. — Pastoral mother, IDI*

Maternal illiteracy was perceived to be a significant barrier in access to knowledge and information. This situation was especially true for women in the rural areas, across all the livelihood zones. The inability to read was attributed to low educational attainment among caregivers in these areas. Such caregivers were reported to provide inappropriate, and often monotonous, diets to their children. Illiteracy also posed challenges for providing nutrition information to community members because they need to receive the communication through oral (in person) or audio (recorded) format.

Children are mostly given maize during lunchtime. [Caregivers] don't know that you can eat ugali with vegetables. They don't know that you can eat with beans. They cook plain rice and give it to a child, so they really need to be educated. — Agropastoral local administration, KII

Illiteracy is high in Samburu, posing a challenge when it comes to dissemination of nutrition information. We are reliant on the local radio to pass information. — Implementing partner, KII

Alcoholism in some caregivers was said to result in inadequate child care and feeding. In other cases, alcoholic caregivers/mothers were reported to take alcohol when pregnant, which was noted as harmful to the fetus.

Alcoholism is an issue because it…is the main contributor to poor child-care practices. —Implementing partner, KII

Drinking [alcohol] while expecting is a big issue. You will end up having a weak or abnormal child. — Peri-urban father, Community dialogue

Poor WASH practices: Participants explained that caregivers across all livelihood zones had poor hygiene and sanitation practices. Their handwashing practices were unsatisfactory, and this was worsened by lack of water. The quality of water was also poor, often coming from an open, unprotected source. The participants recognized that poor WASH practices both increase the risk of disease and negate good nutrition practices.

Matters of sanitation are still a challenge, although we have received help from UNICEF to target communities on hygiene. Initially, there was poor hygiene, and latrine coverage was about 26% in the whole county. The other [problem] is water issues, which contribute to malnutrition because…if your sanitation is poor and the water where you are drawing your water for drinking is bad, it means even that food you eat will not be well utilized and will soon contribute to malnutrition. —County official, KII

Factors affecting optimal breastfeeding: Participants described several beliefs and practices that could affect optimal breastfeeding. They explained that some women produce insufficient milk during the first days after birth or lack support during the breastfeeding period. Without support, this may lead women to use ***prelacteal feeds*** or to bottle-feed the infant during the first few days before starting breastfeeding.

I faced many challenges as a first-time mother. The biggest challenge being delayed breast milk flow and my baby was not able to suckle anything for the first 2 days. I thought at first, I should give water because the child was hungry but was advised against it by the health-care worker. I was encouraged to be patient until the breast milk production kicks in. — Agropastoral mother, IDI

There are still about 12% of caregivers who feed their children with prelacteals. These include cow fat and water, which they give a child before they start lactating. They also still practice bottle feeding. — Implementing partner, KII

Many mothers indicated that they exclusively breastfed their children for the recommended 6 months. Nonetheless, in some cases, the mothers reported having ***insufficient breast milk,*** which they perceived to be caused by poor maternal nutrition resulting from inadequate food intake. These women introduced complementary feeding or mixed feeding earlier than recommended because they had to look for income-generating activities outside of the household.

> *At times, mothers' milk is not enough for the child. That's why [the child] is given some other foods. With the challenges we go through when there is a food shortage at home, it becomes difficult as they will not even have enough milk to breastfeed the child. — Agropastoral mother, IDI*

> *When you go to work early and you come back late at night, when the child is still small you just decide to stop breastfeeding and start giving this child food instead of them going hungry. — Peri-urban mother, IDI*

Participants described a belief that a child should not be breastfed if the mother is pregnant again. The community's interpretation was that the woman needed to stop breastfeeding to concentrate her energy on the pregnancy and that the milk becomes different when a women is pregnant so the current breastfeeding child would not receive appropriate nutrients to meet their needs for growth and development. As such, ***pregnant women opted to wean the child*** and introduce animal milks or begin early complementary feeding. Participants explained that this problem was the result of short birth intervals and inadequate child spacing.

> *If you are pregnant with another child, then you will have no choice but to stop the other child from breastfeeding so that you can concentrate on the other one. — Pastoral mother, IDI*

> *There's a woman who is expecting, but still breastfeeds a child. This affects the child since the milk becomes different. — Peri-urban father, Community dialogue*

Participants also believed that breastfeeding when ***breasts are dirty*** (e.g., after physical labor) can transmit diseases to the child and cause malnutrition.

> *If you don't clean your breasts after going away for a long time, for example, to collect firewood or do other chores, then your baby will have this condition [malnutrition]. — Agropastoral mother, Community dialogue*

Factors affecting optimal complementary feeding: Participants described several factors that could affect optimal complementary feeding. Many caregivers across the livelihoods, particularly in the remote areas, had ***limited knowledge on preparation of locally available nutritious foods*** to ensure diverse diets for their children.

> *Many mothers in this community lack knowledge on how to prepare nutritious foods for their children. For example, a meal of ugali is hardly ever served with vegetables, like kale, and fruits. This is common among mothers from remote areas, who lack knowledge on balanced diets. — Peri-urban mother, IDI*

In Samburu County, people do not eat vegetables, especially populations who are found in the rural areas. This is because they do not know how to prepare, not because they do not want to consume them. — County official, KII

Caregivers tended to use ***nonresponsive feeding practices*** when their children presented challenges during mealtimes. Many reported that they force-feed their babies at mealtimes or leave them without food for long periods, with the hope that when they are hungry, they will eat without refusing.

When the baby refuses to eat, I just let them be until they feel hungry, then I will give them food. — Agropastoral mother, IDI

Caregivers believed that some manufactured foods had chemicals making them unsafe for consumption. Some mothers believed that ***packaged milk is not good for children*** and may carry disease. Therefore, in the absence of fresh cows' milk, they would not give children packaged milk. Fruits were also mentioned to contain chemicals; therefore, some caregivers removed them from their child's diet.

Packaged milk brings about stomach cancer. — Agropastoral mother, IDI

Culture (lkereti) limits me in a way that I feed my baby with fruits from the market because they are believed to always contain chemicals and are not pure. — Agropastoral mother, IDI

Participants described how ***food allergies*** may lead caregivers to exclude certain foods from a child's diet. Allergies to eggs were most commonly reported and excluded from the diet.

I used to give my child eggs, but I stopped because when she eats, it causes rashes on her skin. — Peri-urban mother, IDI

Factors affecting nutrition during pregnancy and lactation: Several beliefs and preferences were said to affect the foods that mothers consume during pregnancy. For example, participants indicated that pregnant women are ***advised not eat certain foods*** (i.e., eggs and avocado) because of the belief that these foods would make the child too large and lead to the need for a caesarean section. Therefore, women avoid these foods.

I was told not to eat eggs because the baby will be too big and will lead to an operation. My mother-in-law told me not to eat eggs and pancakes. — Agropastoral mother, IDI

I was told not to eat avocado because it can make the child to be big in the stomach. I was also told not to eat it as it has a lot of fats. This can make the child can grow bigger and you will have to deliver through caesarean section. — Peri-urban mother, IDI

Pregnant women are also told to ***restrict their food intake*** to avoid having a baby that is too large. Representatives from implementing partner organizations said they thought that this practice contributed to the high prevalence of low birth weight in the community.

Despite this being a period when they need to eat more, you will find them taking "ngarer" [diluted milk] most of the time. This is why most of the babies born are usually underweight, weighing around 2 to 2.5 kilograms. It is very hard for women in the village to give birth to a baby who is 2.5 kg or above.

At the same time, they do not eat eggs, but depend on "loshoro" [light ugali] only. —Implementing partner, KII

Older people in our society advise that our food intake should be measured to a certain level. —Agropastoral mother, IDI

Participants across livelihood zones said that pregnant women need to eat healthy foods, like meat, fruits, and vegetables. These ***foods are preferred during pregnancy*** over the usual foods, such as maize and milk, but many women could not afford them, so they ate the usual foods. Some participants said that pregnant women could feel nauseated or get heartburn if they ate certain foods and they would then avoid eating them.

During pregnancy I consumed milk, maize, beans, and potatoes because they were the only foods that I could afford, and they were available. So, we have no other choice but to eat them because they are the only ones that we can get. — Pastoral mother, IDI

When I was pregnant, I wasn't eating a lot. I didn't like eating a lot because when I ate, I got a lot of heartburn. The food that I liked to eat was ugali with milk. I was also taking chips, avocado, and oranges. Those were the foods that I liked and that I would eat. — Peri-urban mother, IDI

Women are also forbidden from consuming certain animal parts and from drinking milk during pregnancy.

Some community members still hold onto cultural taboos. For example, there are still foods prohibited among women. They are not supposed to consume certain parts of animal meat, which are reserved only for the men. This denies them mostly the nutritious part of that animal. —Implementing partner, KII

Animals have foot-and-mouth disease; therefore, we are advised not to drink cows' milk when pregnant. — Pastoral mother, IDI

Lactating women are discouraged from consuming sugary foods, alcohol, and foods containing wheat, and encouraged to take porridge, which was viewed as supporting milk letdown.

A breastfeeding woman is not allowed to take alcohol or sweet things. The community members believe that consumption of sweet things can increase the acidity levels in a baby. — Agropastoral mother, IDI

When one is still a mother in the early months after giving birth, one is not supposed to eat chapatis, pancakes...They say that these wheat foods and the sticky nature may bring discomfort to the stomach. — Peri-urban mother, IDI

It is highly recommended that a lactating mother take porridge, in order for her baby to get enough breast milk. — Agropastoral mother, IDI

Cultural beliefs about foods that are appropriate for human consumption: The Samburu community tended to eat a limited variety of food and had a strong preference for local foods. Adopting new foods, such as chicken, fish, eggs, and products made from wheat flour (e.g., chapati/pancake or mandazi), was limited. Few participants reported picking up these new diets. Implementing partner representatives perceived a need for more efforts in behavior

change communication and more emphasis on the importance of diverse diets to achieve optimal nutrition.

> *When one goes to the market, he/she will only buy maize flour, cooking fat, tea leaves, sugar, and salt. Those are the only things they consider as food, only five things. So, buying things such as onions, cabbage, etc., is a different story among the pastoralists and malnutrition is brought about by the tendency of eating one type of food. — Peri-urban local administration, KII*

> *There are foods that the community does not usually eat, known as "ngimomwa." These include wheat-based products like mandazi, chapati, pancakes, or cake, even though they were introduced to and trained on how to prepare them through the mother-to-mother support groups…Their perception is that it is not part of their normal diet. — Implementing partner, KII*

> *As a community, they usually keep chickens, but they do not consume any of its products, including its meat and eggs. They do not see the need or the importance of eating the egg…The Samburu people usually say you cannot eat something that does not have four legs. — Implementing partner, KII*

Figure 2 summarizes the responses on feeding practices, by livelihood zone.

Figure 2. Summary of MIYCN and infant and young child feeding (IYCF) practices, behaviors, and challenges, by livelihood zone

Findings common to ALL livelihood zones

- Maternal illiteracy was found to be a significant barrier to translation of knowledge on MIYCN practices. Oral or audio format in local dialect was best situated to pass along nutritional information.
- Poor dietary practices during pregnancy and lactation among women were said to be influenced by cultural beliefs (food restrictions and taboos), maternal illiteracy, food insecurity, poverty, and alcoholism.
- Lack of social support and late onset of breastmilk production among mothers was said to lead to delayed breastfeeding within the first few days after birth.
- Some caregivers were known to introduce prelacteals (cows' fat and water) and bottle feeding of the infant in the first few days after childbirth.
- Participants acknowledged introducing complementary feeding or mixed feeding among children less than 6 months.
- Poor dietary practices for children included monotonous, cereal-based diets; infrequent introduction of nutritious local foods because of caregivers' limited knowledge about how to prepare them; nonresponsive feeding practices during mealtimes; food allergies; and cultural beliefs about packaged foods (e.g., pasteurized milk raises the risk of disease).
- Participants expressed a strong preference for a narrow range of local foods, for both women and children. This preference restricted their adoption of new food recipes and limited the variety of foods consumed in their households.
- Poor WASH practices described included inadequate handwashing techniques among caregivers; domestic use of unsafe water for drinking, food preparation, and cleaning of utensils, which impacted negatively on child health and nutrition status.

Findings specific to pastoral zone

During rainy season:

- Children's diets were said to improve as high biological proteins (milk and blood) became available from livestock.

During dry season:

- Children's diets were described as poor because milk and blood were unavailable when livestock migrated for pasture or when livestock were lost to drought or raids.
- Limited income from livestock sales was said to reduce households' food-purchasing power.
- Severe food shortages resulted in households consuming monotonous diets and reducing number of meals to one per day

Findings specific to agro-pastoral zone

During rainy season:

- Householders said they experienced better diets because food was available from farms (i.e., beans, maize, vegetables) and the markets.
- Respondents indicated that children's diets improved because milk and blood were available from livestock.
- Diet diversity among women was said to improve due to availability of varied foods from own production and markets.

During dry season:

- Children were described as having poor diets due to lack of milk and blood, unavailability of farm food due to loss of crops, and migration or death of livestock due to drought.
- Householders said they depended only on the markets for food, but with limited means for purchasing and thus limited food variety.

Findings specific to urban / peri-urban zone

During rainy season:

- There was agreement that women and children experienced more diverse diets due to the abundance of a variety of foods in the market.

During dry season:

- Respondents indicated that diversity in family meals became limited (i.e., vegetables and fruits were not included in the diet).

3.4.2 MIYCN knowledge and intervention approaches for adolescent and adult mothers

Knowledge of MIYCN practices varied by group, with the more experienced mothers having better knowledge compared to first-time mothers. Young adolescent mothers (10–17 years), especially first-time mothers, said that they valued indigenous knowledge and experiences from older women in their day-to-day care of their children. They said that older women in the community provided guidance or advice on MIYCN. Young mothers highlighted that strong kinship ties with their mothers, mothers-in-law, and neighbors gave them ongoing informational support.

> *One can get support from their mother. — Agropastoral mother, IDI*

> *As young mothers, your parents and in-laws mostly guide you. — Agropastoral mother, IDI*

Adolescent mothers delegated caregiving practices to older women. This point was mentioned by women in the pastoral and peri-urban livelihood zones, and in some cases, by adolescents themselves. Adolescent mothers, especially those who were enrolled in school and those who depended on casual work for income, left their young ones under the care of their mothers or grandmothers. Many of them delegated caregiving at 6 months.

> *I breastfed the child for six months, then I stopped so I could go back to school. — Pastoral mother, IDI*

> *I breastfed for 3 months, and in the fourth month I started giving food because she was grown, and I wanted to go and work. — Peri-urban mother, IDI*

Adolescents faced challenges with IYCF, especially exclusive breastfeeding. Many felt that their breastmilk was inadequate to meet the child's needs and, therefore, were forced to introduce other foods to quell the child's hunger.

> *When my child was small, about 2 months old, I started feeding him with milk because I saw that the breast milk was not enough. When he had grown a little, I think when he was 4 months old, I started preparing potatoes for him. — Pastoral mother, IDI*

Intervention approaches: Implementing partners reported that most programs on MIYCN had traditionally targeted adult mothers and neglected adolescent girls and "morans" (young men who are warriors). As a result, many adolescents lacked knowledge on optimal MIYCN practices and relied on older women in the community for information. It was noted that sometimes the information they received was informed by traditional beliefs and practices.

> *Based on evidence from past surveys and studies, we still have a good percentage of caregivers who have inadequate knowledge of maternal, infant, and young child nutrition, such as breastfeeding and complementary feeding practices. This is noted especially among adolescent mothers due to early marriages. There is no or limited MIYCN knowledge because most programs have traditionally been targeting the adult caregivers, not the adolescents or the "morans" [young men]. Information they have is passed on by their grandparents, which sometimes is not sound practice in terms of MIYCN. — Implementing partner, KII*

However, despite the gap noted, it was indicated that some programs targeting the adolescent population had gained traction, with organizations in the county running various advocacy programs. An example is iron and folic acid supplementation to prevent anemia occasioned by menstrual blood loss and the effects of female genital mutilation (FGM) and early pregnancies.

> *We are the only organization who have started a program known as weekly iron and folic acid supplementation (WIFAS) targeting adolescent girls every month. We are sensitizing them on the importance of WIFAS to boost their blood level due to blood loss from their menses. So, we encourage them to use the WIFAS and the benefits it offers them. — Implementing partner, KII*

> *There may be seminars. I have attended one where we were educated on different types of diseases that may result from FGM. This happened during school holidays, like April, August. Also, the issue of early pregnancies and FGM where there is a difference between a mother who has undergone the practice [FGM]…when they give birth. — Peri-urban mother, IDI*

3.4.3 Men's perceived role in MIYCN and intervention approaches for men

Men's roles as providers and protectors: Men saw themselves as providers. They described being keen to ensure that their families were well catered for in terms of basic needs, including food, shelter, clothing, and other necessities. They wanted to make sure that the diets of pregnant and lactating mothers and children were adequate to ensure good health. Men reported that they sacrificed their own feeding habits during the drought period so that their wives and children could get some nutrition to support their dietary needs.

> *The husband plays a very important role. He guides on what to eat and gives the necessary support. — Agropastoral mother, FGD*

> *The father is the one who provides money to purchase food because he is the man of the house and the one who heads the family. He is obligated to look for food, including for the children. There is no other person. — Agropastoral father, IDI*

Additional reports from key informants indicated that in the pastoral community, food purchasing was mostly undertaken by men. This was because markets were located far from their homes and men could access them when they went to trade livestock. However, they were reported to have limited knowledge of what types of foods to purchase to ensure proper nutrition in their households.

Men also described being involved in advising and supporting their wives during pregnancy and lactation to achieve good nutrition. They also provided care when the mother was ill to ensure that she would be nursed back to health.

> *It is the husband…who knows that during the time the woman is pregnant or has delivered, [she] must be healthy, and therefore she needs to be brought nutritious food. — Peri-urban father, IDI*

> *Sometimes I just stay at home without going to casual work just to see her progress, how she eats foods, if the child is breastfeeding well. From there, I*

can be able to know what next I can give so that she can improve her health and the way she breastfeeds her child. — Peri-urban father, IDI

Few programs targeting men: It was reported that there were very few programs directly targeting men to support their wives in implementing MIYCN recommendations. Where such programs existed, the number of men reached was limited.

There is a need to start having male involvement in child upbringing because this has always been left to the women, yet they are not decision makers at the household level. For example, they are given 1,000 Kenya shillings by their husband to purchase food for the family, which is expected to last a week or two, and the man disappears [leaves them, moving elsewhere]. — Implementing partner, KII

The **CHVs are seen as instrumental** in influencing men to be involved in MIYCN issues.

Things in our community are now changing. We never knew those things [MIYCN] and we nowadays are aware because of the CHVs who are helping us a lot. They are training us on foods that are good for the development of the child and also advising women about things that they should avoid. They are the ones who are guiding us. — Pastoral father, IDI

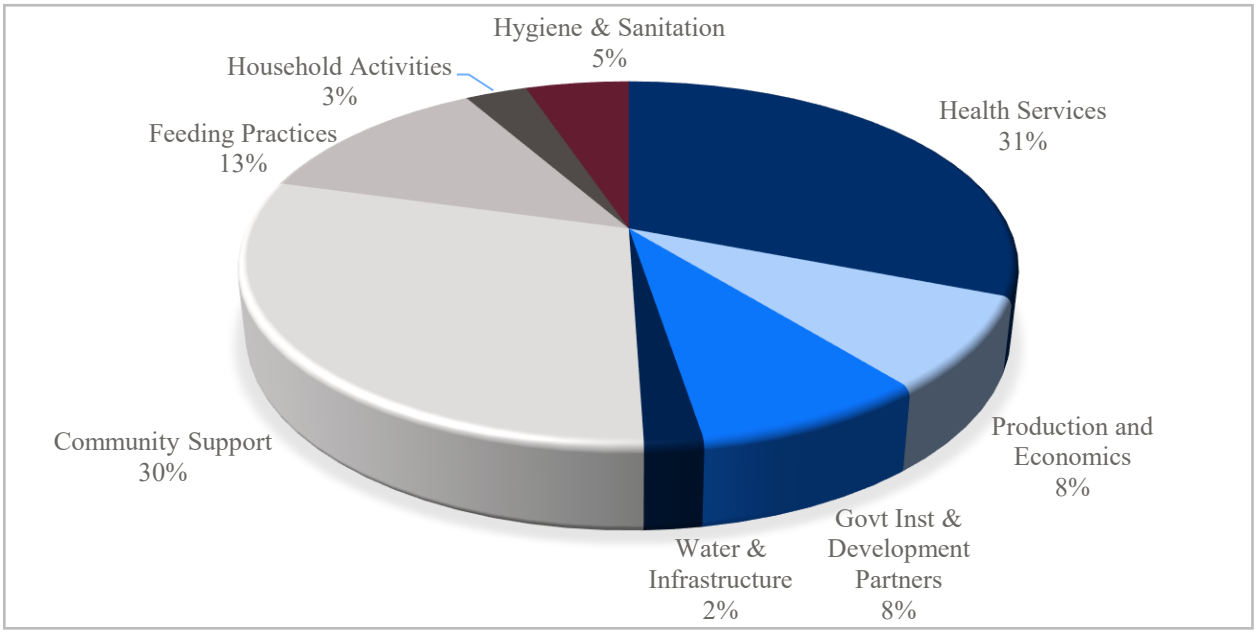
Peer-to-peer communication and observation within the community is seen as one of the ways men get information on how to ensure good nutrition for their families.

I get information from friends and also through my own observation when I pay visits to my friends and neighbors. I observe what is normally being given to a lactating mother. Also, I hear from friends talking about what is good to be given to a mother when lactating and she is pregnant, so I just come and apply the same. Additionally, I learn through experience. When I bring food for my lactating wife, when she eats, I will just observe, or she can also tell me how she feels after eating that food. I will observe by the following day if her health is improving and she also says if she likes that food, then I will bring more of that food for her. — Peri-urban father, IDI

3.4.4 Community perceptions of support for optimal MIYCN

During the FGDs with community members, participants were engaged in a free listing exercise that elicited their perceptions on what constitutes an enabling environment for mothers to achieve optimal MIYCN. Overall, 436 responses emerged. The responses were consolidated and categorized into health services, production and economic support, government institutions and development partners, water and infrastructure, community support, feeding, household activities, and hygiene and sanitation. The percentage of responses in each category are shown in **Figure 3** and participants' descriptions of how these categories support optimal MIYCN are provided below.

Figure 3. Free listing results of factors that support optimal MIYCN practices



Health Services

Researchers further categorized the specific health services participants said they expected as part of "health service delivery" (i.e., 31% of the 436 responses) for MIYCN into those provided at health facilities (21%), by CHVs (5%), and through mother-to-mother support groups (5%).

Health facilities were reported to provide the following services: antenatal care, immunization, family planning, safe delivery of babies, postnatal care, supplementation such as soya, and HIV/AIDS testing services. Health facilities provided supplements such as soya and Plumpy'Nut. In addition, the health facilities were reported to provide training on consumption of nutritious foods, hygiene, pregnancy care (i.e., not overworking), and exclusive breastfeeding for six months.

CHVs were reported to visit mothers and other community members at home and teach them about hygiene and sanitation (e.g., the importance of treating water, digging dumpsites, and constructing latrines), and the importance of delivering at the health facility. They screened children for acute malnutrition and referred children who were severely malnourished. They also gave the mothers medicines for sick children.

Mother-to-mother support groups were identified as being critical for supporting pregnant and lactating women with household chores (fetching water, fetching firewood, and washing clothes), supplying food and other commodities (lessos and shawls), and taking them to hospital for child delivery. The groups also provided a platform where the women would share about their respective challenges. Groups were used as venues for advising the women on the benefits of antenatal care, postnatal care, delivery at the health facility, family planning, immunization, and exclusive breastfeeding. They were also taught about symptoms to look for during labor and how to handle babies after birth.

Community Support

Overall, 30% of community members indicated community support for MIYCN practices was important. Their responses were subdivided further into the following types of people or organizations that provide support: family members, 21%; neighbors, 5%; religious organizations, 3%; and friends, 1%.

Family members, especially husbands, mothers-in-law, and mothers, were considered key in supporting pregnant and lactating mothers by helping them with household chores, looking after the child, accompanying mothers to the hospital for delivery and to clinic visits, and ensuring that mothers and children consumed nutritious foods. Family members also advised mothers on the benefits of breastfeeding exclusively, giving birth at a health facility, visiting the clinic, using family planning methods, and consuming nutritious foods. In addition, husbands were perceived as key in providing nutritious food, slaughtering livestock (especially goats) for lactating mothers, paying transport for mothers to deliver at the nearest health facility, providing mothers with money to contribute to savings groups, and ensuring that mothers were not stressed (by avoiding conflict). Parental care of the child by both parents was also reported as key for child growth.

Neighbors were reported to help mothers with household chores, contributing money to mothers, providing security, constructing latrines, and supplying food. They also advised mothers on nutritious foods to feed children and benefits of clinic visits.

Religious organizations, through church groups (Jumuia) and missionary sisters, supplied mothers with food; gave mothers money; bought them commodities (such as baby clothes and soap); fetched water for mothers; and advised mothers on the benefits of consuming nutritious foods, breastfeeding exclusively, exposing the child to sunlight for vitamin D, and using proper hygiene. In addition, the organizations reported boarding and caring for young children when parents migrate.

Friends were reported to help mothers with household chores, advised mothers on how to raise children, bought mothers commodities (such as baby clothes), and provided financial support.

Feeding Practices

Feeding practices were mentioned as important for MIYCN by 13% of the community members. This category was further subdivided as follows: nutritious food, 7%; exclusive breastfeeding, 4%; complementary feeding, 1%; and consumption of meat, 1%.

Nutritious foods such as rice, beans, meat, milk (fresh milk, yogurt), vegetables (kale, spinach), potatoes, maize (ugali), and fruits (bananas, oranges) were reported as important for pregnant and lactating mothers in ensuring ideal MIYCN practices. Herbs such as Losesiai were also described as nutritious and helped with child growth.

Exclusive breastfeeding for 6 months and complementary feeding with nutritious foods after 6 months were reported as key.

Government Institutions and Development Partners

In all, 8% of the community members indicated that government and development partners have a role in optimal MIYCN. They were further subdivided as follows: government and NGOs, 7%; and schools, 1%.

The government and NGOs (e.g., Amref Health Africa, Compassion, French Agency for Technical Cooperation and Development) were reported to train and advise mothers on how to use mid-upper-arm circumference (MUAC) tapes for screening for malnutrition; the benefits of ensuring hygiene, such as cleaning breasts before breastfeeding; giving birth at the health facility; introducing sanitation, such as constructing latrines; and expressing milk. They also trained grandmothers on how to handle pregnant mothers and trained mothers on the adverse effects of FGM. The government and NGOs also contributed relief food, supplied commodities (e.g., clothes, sanitary pads, seedlings, and water drums), gave livestock to mothers, supplied supplements such as Plumpy'Nut, offered financial support to purchase necessities or start businesses, constructed water points such as boreholes, supported mothers to form groups, provided vehicles to take pregnant women to the health facility for child delivery, presented tools for agriculture such as tractors, and supported pregnant mothers in critical condition by taking them to well-equipped hospitals for health-care services.

Schools were also mentioned as playing a role in optimal MIYCN as they served children nutritious foods at school.

Production and Economics

Of the 8% of the community members who indicated production and economics as important for optimal MIYCN, the category was further subdivided into savings groups, 5%; casual work, 1%; and livestock sales, 1%.

Savings groups were said to help women contribute money to buy food for pregnant and lactating mothers, and to support mothers to do kitchen gardening. Other women in the groups advise the mothers on feeding practices.

Casual work involved fetching firewood for neighbors or other forms of manual labor. Some community members mentioned livestock sales. The money acquired from labor or livestock sales is used to purchase food.

Hygiene and Sanitation

A small proportion (5%) of the community members mentioned hygiene and sanitation as being important in ensuring optimal MIYCN. The following are the practices community members highlighted: constructing and using latrines, attending to the mother's personal hygiene, washing the child's clothes, cleaning the house, and cleaning the baby.

Household Activities

From among the 3% of the community members who reported household activities, pregnant and lactating mothers doing light chores was indicated as key in ensuring optimal MIYCN.

Water and Infrastructure

Among the 2% of community members who mentioned water and infrastructure, access to clean water and construction of roads to access markets and health facilities emerged as the key factors to ensuring optimal MIYCN.

3.5 USE AND BARRIERS TO USE OF HEALTH-CARE SERVICES

3.5.1 Use of health-care services and facilitators of health-care utilization

Confidence in antenatal and postnatal services/care: Across livelihood zones, participants said they trusted health-care facilities in matters related to childbirth and antenatal care and the general care of children, which encouraged women to visit health facilities for antenatal care and delivery of their children. Services at health facilities for pregnant women and young children were considered important because they promoted health and ensured identification and treatment of diseases.

> *Going to the clinic helps one to know her health and pregnancy progress. So, it is only by visiting the clinic that one would be able to have such information. — Agropastoral mother, FGD*

> *You need to ensure that when she is about to deliver, you take her to the hospital immediately. — Agropastoral father, FGD*

For participants in the peri-urban livelihood zone, **proximity** to health facilities encouraged health-seeking behavior.

> *There are more health facilities in towns. — Implementing partner, KII*

Child immunization services and growth monitoring were common practices mentioned among all caregivers across the livelihood zones. The caregivers stated that they adhered to the health-care workers' instructions to take children for nationally approved immunizations based on agreed schedules.

> *Every month I take the child for clinic visits where they are vaccinated and child's weight is measured and the changes in child's weight measurement is recorded in the clinic book. They also let us know how the child is progressing in relation to weight. — Peri-urban mother, IDI*

Access to hospital insurance is a vital facilitator for caregivers among the peri-urban population to seek health-care services at a health facility. Participants mentioned the national hospital insurance fund (NHIF) and the "Linda mama" program, both run by the government, which allow them to seek care and medication without having to pay.

> *We just visit the hospital whether private or public because we have the NHIF card. We just pay [the stipulated amount in the scheme], then we seek medical services without paying. — Peri-urban mother, IDI*

Having **equipped ambulances** to offer transportation services has improved access to health-care services, thereby impacting positively on health outcomes in the community.

> *When that woman who was my neighbor passed on, we did not have an ambulance around, but now we have ambulances. When an expectant mother is in labor, that ambulance will come. Before, we used to rely only on public and private vehicles, which were not reliable. The ambulance has helped many women now and many other patients. We all have the number of the driver in our clinic cards from when you visit the hospital. The doctor will write her number in your phone or even [the number of the] ambulance so*

when you are in labor you will call those numbers. —Agropastoral mother, IDI

3.5.2 Contextual barriers to seeking health care

Distance to health facilities discouraged many households, particularly in the agropastoral and pastoral livelihood zones, from accessing care due to lack of hospitals within their locality. This meant some households had to travel long distances in search of health-care services, which put the affected communities at heightened risk of death during outbreaks, such as cholera. Long distance to health facilities was perceived to be the reason some women, especially in the pastoral communities, do not access antenatal care.

> *The biggest problem here is when a woman wants to give birth, because the clinic is too far from here, so it becomes so hard. Others have given birth on the way to the hospital. — Pastoral mother, IDI*

> *The other thing is infrastructure, we don't have enough facilities in Samburu… [For example], there was a mother who was sick, and the nearest hospital was around 140 kilometers away. So, how do you expect that person to access health services she needs, or checkups? There is no public transport nor boda-boda [motorcycle taxi]. So, you will not expect the health of those people to be 100%. They usually say they survive under the mercies of God. — Implementing partner, KII*

Low demand for some health services: Insights from KIIs showed that health-seeking behavior for preventive services, such as growth monitoring and supplementation with vitamin A and micronutrients, was low.

> *With regard to health, there is still low demand for some health and nutrition services. If one is not ill, they tend not to visit the health facility. Routine services like vitamin A supplementation and micronutrient supplementation are not adhered to and are accessed only when they are seeking medical attention due to an illness. They do understand the need for these nutrition and health services. Further, they only seek health-care services in the hospital if the illness is critical, like severe malnutrition among the children. — Implementing partner, KII*

Insecurity and infrastructure challenges: Participants explained that conflicts inflict fear of attack while seeking health-care services, while floods pose a transportation challenge. Implementing organizations and county programs are curtailed by insecurity and poor road networks, particularly during rainy periods, when flooding is common, and roads become impassable. These obstacles affect program coverage, negating gains and limiting program impact.

> *There are areas in this county that have very poor access in terms of roads. Sometimes you have rain causing the streams to overflow, hindering access to certain areas...Sometimes insecurity. At times you have to suspend the programming because of insecurity—either road banditry, or intercommunal raids. —Implementing partner, KII*

We have a challenge when we are taking a patient for medication: she/he cannot get treatment because there will be a lot of mud on the road, so it is hard to pass during rainy season. —Peri-urban mother, IDI

Traditional/herbal alternatives: Although health-care services were mainly sought in health facilities, the practice of herbal medicine was still widespread. Some caregivers reported that their first action in case of maternal or child illness is to try home remedies, followed by herbal medicine, and finally resorting to health-care services when they did not observe any signs of relief.

If there is someone who is sick in my house, whether it is the child or anyone else, we first prepare herbal medicine and give it to the person. When the herbal medicine does not relieve or cure the illness, then you take the person to the hospital. — Agropastoral mother, IDI

If an expectant mother is sick, especially here we don't take her anywhere. We slaughter a sheep and there are traditional herbs that are boiled in the meat soup. They can be roots or bark. The sheep's tail is also cooked to get fat, and then the fat is mixed with the herbs and given to the expectant mother, and the sickness will disappear. If one has delivered, they are given "lkuloriti" [an herb] mixed in blood. This is for mothers who experience stomachaches after delivery. The lkuloriti is soaked until it is bitter, then it is mixed with blood. — Agropastoral mother, IDI

Lack of medicine in the health facilities discouraged the community from seeking medical attention.

When you visit the hospital for nutritional services, you may find that the hospital lacks supplements, like Plumpy'Nut. For instance, [I took my child for follow-up] after 3 months and we were told that there was no Plumpy'Nut in the facility at that time. This means your child is not able to complete their prescribed treatment. — Peri-urban mother, IDI

Women are sensitized on the need to attend antenatal care and services provided in this clinic. However, when they visit, the dispensaries experience stock-outs of the iron folic acid tablets emphasized during the awareness creation. The mother only receives other services and then she goes [without the tablets]. — Implementing partner, KII

Long queues in health facilities discouraged caregivers from seeking health-care services.

It becomes hard to seek treatment because you can go there [but] you stand in a queue for a long time, so you take longer to get services you required. — Peri-urban mother, IDI

Staffing gaps arise when one person at the health facility plays many roles, and transfers or resignations are common in the area.

You will also find the personnel are not enough. In one health center, you may probably find one person who is also expected to attend meetings sometimes lasting up to one week, do reports, and attend training. You can even find a

health facility that has been opened [only] once or twice, because that is the only staff. — Implementing partner, KII

You may train them today, [but] tomorrow, they transition to management, or they move from one area to another. — Implementing partner, KII

Intensity/type of illness: Some diseases, such as diarrhea and high fever, appeared to trigger greater health seeking in the peri-urban zone compared to an illness such as coughing, because it was assumed that coughs and flu-like symptoms can be easily managed at home and are mostly associated with dust. In the agropastoral zone, some mothers believed that diarrhea in children was a symptom of teething problems; therefore, they would take the child to an herbalist in the community to remove the teeth instead of seeking formal health services.

When a child has a cough, they are managed at home, but for diseases such as diarrhea or high fever, we ask them to take the children to the hospital. — Peri-urban CHV, KII

Women associate diarrhea with teething, and they take [the child] to a certain man who removes the teeth. As a CHV, I was trained that there's nothing related to a teething problem when a child starts to have diarrhea. It's because of the dirt that they eat. — Agropastoral CHV, KII

Competing priorities: Women shouldered household responsibilities related to nurturing and caring for the family, which included time-intensive household chores, such as fetching water, collecting firewood, farming, and rearing small livestock. These activities impeded women's health-seeking behavior. Women were also deterred, at times, from visiting the health facility for preventive services because of **lack of support from their husband.**

We sensitize and create awareness among the women on the need to visit the clinic when pregnant. Services provided include iron folic supplements needed to confer benefits both to the mother and the baby. However, visits to the clinic prove difficult due to their workload as per community allocation of responsibilities. They are subjected to too much stress, as you will find them charged with taking care of the livestock, fetching firewood, fetching water until the last stage of pregnancy... Some of the women deliver at home due to still engaging in these chores. Furthermore, the husbands are not supportive. If she says she is going to the clinic today as she was given a return date, she will be asked by the husband, "What normally do you go to do in the clinic? What does that doctor do to you? Is it a must for you to always go to that clinic?" You see, there is no goodwill from the husbands in the community, especially on issues of clinics and such. — Implementing partner, KII

Illiteracy among caregivers limited their ability to comprehend the importance of child health seeking.

The level of illiteracy is high although there is some improvement. There is a lot of investment in education. Many mothers may not have the basic knowledge about diseases and how to care for their children. — Implementing partner, KII

3.5.3 *Community perceptions of the services provided by the community health system (CHS)*

Community leaders and members, both women and men, appreciated the role played by CHVs. CHVs were described as the first point of contact to the health system and were easily accessible compared to health-care workers at facilities. They provided health-related information and support to community members. They also visited homes at regular intervals, providing information on nutrition; sanitation and hygiene measures; support for pregnant and lactating women; management of moderate acute malnutrition and referral of severe cases and infection; referral services for other ailments to the nearest health facility; provision of vitamin A and deworming medicine; and family planning. The community perception of their service is satisfactory, and the CHVs are happy with the role they play in the community.

> *The CHVs normally come to the villages to give children drugs like dewormers, and drugs for trachoma for both children and adults. They also give children vitamin A. — Peri-urban mother, IDI*

> *Initially, our food preparation practices were bad, and also, we did not cover our foods. But after the information and more training on hygiene by CHVs, we were able to cover our foods well. — Agropastoral mother, IDI*

> *In this region, we get information when we visit the hospital; we are given dates to visit the hospital. Also, the CHVs help us in remembering these dates and they share a lot of information, and it is up to you to decide what you want to do. — Pastoral mother, IDI*

The community members recommended recruitment of more CHVs; provision of transport to CHVs, such as motorbikes, to able cover a wider area and to reach many members of the community; and more training for CHVs on health and nutrition to enable them to effectively tackle community issues.

> *CHVs need to be increased so that they are readily available, because they can share a lot of knowledge. If they are not here, then it will take time for people to get medical services. They are also very important because if one goes to deliver and they don't have anyone who can accompany them, then the CHVs will accompany them until they are discharged. They will help in supporting latching of the baby to breastfeed and also advise them. — Pastoral mother, IDI*

3.5.4 *Men's and women's roles in seeking health-care services*

Decision making for health-care seeking largely was seen as a family responsibility, with men playing a supportive role and women taking an active role as promoters and actual consumers of health care, as well as the ones responsible for supporting other household members, especially children, to seek access to health-care services in health facilities.

> *I am responsible for health-care seeking. I just wake up and go directly to the hospital as it is the mother who knows the child is not feeling well. You can also tell the husband and then you find the means yourself. — Agropastoral mother, IDI*

The mother will always tell when the baby is sick and the father can advise the child to be taken to the hospital, if the husband has money. So, I do not make the decisions on my own or the father cannot just decide to send you to the hospital without being informed that the baby is sick. — Pastoral mother, IDI

3.6 GENDER DYNAMICS IN EMPLOYMENT AND HOUSEHOLD DECISION MAKING

Across the livelihoods, both men and women were involved in fending for their families. Women depended mainly on manual labor and petty trade to earn money. They indicated that they rarely owned productive assets; instead, land and other capital assets were mostly held by men. Women's work opportunities, such making charcoal and doing household chores for pay, tended to fetch low wages and demanded energy and time to undertake. Women are also responsible for heavy household chores, such as collecting water and firewood, which consumes much of their time during the dry season. Men mentioned they faced difficulty finding work as laborers, given the seasonal aspects of the economy, and that they relied on distant markets, especially during lean seasons.

At this moment, I have challenges in getting food because of staying without work... I also have to struggle and take care of my family. During market days, I engage in sale of livestock. Mostly, if you only rely only on one job, then it becomes a challenge. Money is exhausted quickly and so it becomes a big challenge. — Pastoral father, IDI

There are no job opportunities during dry seasons. Yet, this is what we depend on to put food on the table. So, you do not have anything, and the wife too is broke. The situation, therefore, becomes difficult. — Peri-urban father, IDI

Under normal circumstances, maternal workload is high. During the drought periods, it even becomes worse. — Implementing partner, KII

Some women gain a bit of financial autonomy through their savings groups. This gives them some leverage to be involved in household decisions related to food purchases.

Women have good financial support and groups amongst themselves. Every market day, they give one thousand shillings to different women. Thus, when it reaches your turn, it will help you as it goes round. — Pastoral father, FGD

In the agropastoral livelihood zone, men hold decision-making power in terms of farming. This includes land ownership, use of land, and types of crops to be cultivated. Women are engaged only at the point of crop farming activities, especially to provide labor. In a few instances, decisions are undertaken by both men and women in terms of what crops should be grown.

You see now for the crops to be planted, for example, it is me as the man who says what particular seed is to be planted in the farm. For the cooking of food, it's the woman. — Agropastoral mother, IDI

Both the husband and the wife may decide. We may discuss what should be planted, but what we mostly plant here is maize and beans. — Agropastoral father, IDI

3.7 PARTICIPANTS' RECOMMENDATIONS ABOUT APPROACHES TO TACKLE ACUTE MALNUTRITION

The following were participants' suggestions to overcome challenges that contribute to acute malnutrition:

- **Strengthen health-care services and staffing levels** at government facilities. The participants said that they need health facilities that are well stocked, including with nutritional supplements for malnourished children. Implementing partners and county officials stated the need for additional staffing, including nutritionists, CHVs, and public health officers, to effectively provide health and nutrition services and facilitate distribution of workload for improved implementation of health-care services.
- **Build CHVs' capacity in nutrition and health.** There is a need for training CHVs on malnutrition prevention, screening, and management; WASH practices; community-led total sanitation; and high-impact nutrition interventions, such as family-led MUAC and integrated management of acute malnutrition surge, which empower mothers and other family members to detect acute malnutrition early.
- **Sensitize communities and advocate for health and nutrition.** Women proposed raising awareness about methods that promote preparation of nutritious diets using locally available foods through CHVs, nutritionists, and public health officers, who play a vital role in community sensitization and advocacy on prevention. Given the low literacy level among caregivers, key informants recommended use of local language and audio or pictorial methods to engage the community for better comprehension of concepts.
- **Advocate for behavior change** to promote the consumption of chicken, eggs, fish, and wheat-based products. Emphasis should be placed on the importance of the nutrients and the benefits to one's well-being. This advocacy can be achieved using local media programs.
- **Regularly provide high-impact nutrition interventions.** This point was emphasized by county government staff, implementing partners, and community members. The key interventions mentioned included screening for malnutrition, including family-led MUAC; nutrition supplementation programs; use of CHVs for diagnosis and treatment of moderate malnutrition cases; and referrals for severe cases.
- **Emphasize and improve WASH practices,** including sensitization and support for community-led total sanitation programs to address the issue of open defecation. Additionally, programs related to handwashing practices and water treatment need to be strengthened.
- **Improve water accessibility** through central piped and treated water to support safe water for drinking, improve hygiene practices, and facilitate agricultural activities, such as kitchen gardening.
- **Empower women economically through income-generating activities and formation of village saving and loan associations (VSLAs).** Women wanted to receive capital and skills training to enable them start businesses that would earn income to sustain their families. In addition, support and training for more women on VSLAs would enable them to become economically empowered to access finance and credit services. The VSLA groups could also be used as drivers of household nutrition if they were integrated with nutrition social and behavior change communication (SBCC) and with nutrition intervention programs, such as kitchen gardens and small livestock keeping.

- **Strengthen early warning systems** that are sensitive to variations in rainfall between and within seasons, so they can be used to guide programs and ensure that communities are prepared in advance for shocks.
- **Manage data** using geographical information systems (GIS) for surveillance to support accurate data capture for tracking changes in seasons and climate, for the purpose of early detection and intervention in the communities. County technical teams would need to learn to undertake surveillance and to allocate sufficient resources for this task. Proper data management for health systems would require enhancing reporting mechanisms and establishing key county departments where implementing partners could readily access and share information.
- **Provide relief food and hunger safety-net programs** in times of severe drought.
- **Contextualize national policies and strategies geared toward improving maternal and child health outcomes.** National MIYCN, WASH, and nutrition and food policies and strategies could be localized through legislation at the county level for resource allocation.
- **Build infrastructure,** particularly improvements to the road and telecommunication network, to enable access to markets and health facilities. Improving the road network would open up the rural/interior areas and foster establishment of retail shops and livestock markets near the communities. Launching markets would ensure that households have access to a variety of food items, including fruits and vegetables. An improved road network would also facilitate access to health facilities.
- **Establish multisectoral partnerships, pool resources, and strengthen institutions** through stakeholder forums, co-creation of programs by the county and implementing partners, and inclusion of key nutrition and health areas and gaps in the county development plans. This approach would help eliminate duplication of efforts, foster efficient use of funds, and enhance the transfer of skills and technical resources during project implementation.
- **Strengthen continuity and sustainability of programs after donors exit.** This step would ensure sustainability of the programs or interventions. Multiple strategies are needed to facilitate sustainability, such as integration into county action plans to facilitate budget allocation, project scale-up to reach other wards or sub-counties, and community involvement to promote ownership and continuity.
- **Introduce conflict-mitigation and peace programs** in parts of Samburu East and Samburu North. Conflict affects access to various services, such as health care, markets, and transportation. Livelihoods are also affected when livestock are raided as their owners migrate in search of pasture for their herds.
- **Teach smart farming techniques** to support communities to adopt modern farming and livestock-keeping practices. Some of the strategies suggested by participants were drip irrigation, use of drought-resistant crops, mixed agriculture, optimal land use, and small livestock keeping.

4 TRIANGULATION OF QUALITATIVE AND SURVEY FINDINGS

The qualitative study findings in Samburu point to reasons behind differences observed in global acute malnutrition (GAM) rates in the baseline household survey and also yield insights into some other key factors that influence acute malnutrition.

- **Differences in GAM rates by livelihood.** The longitudinal study baseline survey showed that overall GAM prevalence was 19% by weight-for-height z-score and 8% by MUAC. Using either measure, the pastoral livelihood zone in Samburu had the highest GAM prevalence—three or more times higher than the other livelihood zones by weight-for-height z-score. Qualitative data collected from women and men in the community indicated that acute malnutrition was seen as a problem across all livelihood zones. Pastoral communities face special challenges during the dry season because livestock must be taken far from homesteads to seek pasture and water. This leaves women and children at home without access to milk. Pastoral families also lack income during the dry season because their animals are thin and weak, and they cannot sell them.
- **MIYCN and IYCF practices.** The quantitative survey analysis showed that only 8% of children met the threshold for minimum dietary diversity, despite high levels of knowledge about child feeding among caregivers. The survey also indicated that dairy was most commonly consumed food group (79%) followed by cereals (71%). Consumption of fruit and vegetables varied by livelihood zone, with more agropastoral children eating vitamin A-rich fruits and vegetables and more urban/peri-urban children eating other fruits and vegetables. Consumption of any type of fruit or vegetable was very low among pastoral children. Overall, animal-source foods other than dairy were not widely consumed, with only 6% of children eating flesh foods and less than 3% eating eggs. Qualitative data collected from community members and key informants indicated that even though the communities across the different livelihood zones recognized the importance of a "balanced diet," there seemed to be a gap in knowledge of practical ways to use locally available foods to prepare a variety of meals. Poverty and lack of resources were also mentioned as key limiting factors for implementing the knowledge received. In general, it was noted that availability and affordability of food were the main factors guiding households' decisions around food. Other important factors limiting the implementation of knowledge received were perceived insufficient breast milk due to mothers' inadequate diets, prevalent harmful cultural beliefs about certain foods, alcohol consumption, and poor birth-spacing practices.
- **Health-seeking practices.** In the quantitative survey, the percentage of children who were taken to a health facility because they had cough, fever, or diarrhea in the past 2 weeks ranged widely by livelihood zone (agropastoral 72%, pastoral 60%, peri-urban 36%). Vaccination coverage was quite high for all vaccines except measles across livelihoods. Deworming coverage was low in pastoral and agropastoral livelihood zones and moderate in the peri-urban zone. Vitamin A supplementation coverage was low to moderate across livelihoods. Qualitative data indicated that community members were aware of the importance of using health services for treatment and prevention, but they noted barriers to use of health services, including distance to health facilities, poor road infrastructure, and lack of staff and supplies at facilities. Other barriers to use of health services were stigma related to acute malnutrition, and delays in treatment seeking when home remedies and herbal medicines were tried first. Participants mentioned two programs that were helping them to seek health care when needed: the NHIF scheme and the availability of an ambulance for emergencies.
- **Gender issues related to decision making and control over resources.** The quantitative survey indicated that women's control over decision making varied widely by livelihood. More than 80% of married women/caregivers in the urban/peri-urban livelihood zone made all decisions by themselves or jointly with their husband/partner on usage of household income, child health, their own health care, food purchases, major household purchases, and visits to friends/relatives. Sole or joint decision making was lower in the

agropastoral (54%) and pastoral (33%) livelihood zones. Qualitative data indicated that women had control over low-value assets and made decisions, but they could be considered "low level" decisions. They still mostly relied on men to provide for the family and to decide how money was used.

5 CONCLUSIONS AND RECOMMENDATIONS

In Samburu County, a variety of factors were identified that contribute to acute malnutrition. The major factors were drought; poverty; lack of food; inadequate caring and feeding practices; child illness; inadequate health-seeking behavior; and poor water, sanitation, and hygiene. Seasonal variations in income, food and water availability, and the presence of diseases present major challenges to achieving good maternal and child nutrition. Beliefs about child caregiving (e.g., leaving children hungry if they refuse to eat) and appropriate foods for children or during pregnancy (e.g., not eating eggs or avocados) also were said to contribute to poor maternal and child nutrition.

The health-care system has played an important role in preventing and treating acute malnutrition, by leading intensive health campaigns, increasing access to health facilities, and strengthening the quantity and quality of services provided by CHVs at the household level. However, even when they are available, health services often are sought late because of transport challenges, stigma, non-recognition of malnutrition signs, and use of herbal remedies first.

Gender inequities in access to assets and factors of production also were found to limit women's ability to be autonomous and to contribute fully and adequately to household decision making, including decisions about foods to be purchased. There is therefore a need for planners to consider the broader sociocultural and economic contexts, including the value of women's autonomy, when designing and implementing nutritional interventions for women and children in the county.

Despite these and other challenges, participants identified potential solutions to tackle the issue of malnutrition.

Overall, findings from the qualitative study point to the following recommendations:

1. **Continue to strengthen community awareness of the importance and practice of optimal nutrition,** going back to the basics and using SBCC channels and packaging information in ways that are sensitive to the low levels of formal education among caregivers.
2. **Continue to implement SBCC interventions** for women on nutrition and **develop strategies to reach men** with SBCC and messages on their role in maternal and child nutrition. Implement SBCC interventions to **strengthen households' preparation and ability to respond to shocks** beyond reliance on emergency food.
3. **Prioritize the zones worst hit by malnutrition** (especially among pastoralists) by allocating resources and strengthening accountability systems to ensure that resources are appropriately distributed.
4. **Continue to strengthen the community health system** by enhancing CHVs' effectiveness at providing services to households.

5. **Improve transportation infrastructure** for better access to health facilities and ensure that health facilities are adequately staffed and have the necessary supplies and equipment.
6. **Continue to empower women** through enrollment of girls in school, involvement in income-generating activities, involvement in decision making at the community level, and adequate access to family planning information and services for appropriate child spacing.
7. **Provide targeted support to adolescent mothers** through appropriate child care education. Involving grandmothers in nutrition education interventions could create substantial leverage, given that many adolescent mothers leave their children with their grandmothers while they work or go to school.
8. **Adopt appropriate water service-delivery options** based on context. USAID Nawiri—in co-creation with the county—should design service-delivery models that seek to enhance the professionalization and uptake of water service delivery by the private sector in rural areas.
9. **Create demand in the community for sanitation and hygiene services** by promoting safe sanitation practices and disseminating hygiene messages.

ANNEX A. THEMATIC AREAS FOR QUALITATIVE DATA COLLECTION

Thematic area	Methods	Knowledge gap to be filled
Community perceptions of factors related to acute malnutrition	Focus group discussions (FGDs) In-depth interviews (IDIs) Community dialogue	▪ Understand perceptions of the factors related to acute malnutrition and how they change over time, including during shocks ▪ Understand best approaches to tackle factors related to malnutrition, including during shocks ▪ Understand level and quality of support received by women through mother support groups and community health system (CHS) ▪ Understand the seasonality of factors affecting malnutrition
Community perceptions of factors that influence maternal, infant, and young child nutrition (MIYCN) practices	FGDs IDIs Community dialogue	▪ Understand barriers to translation of knowledge into optimal MIYCN practices, by livelihood zone and season ▪ Understand seasonality of behaviors ▪ Understand adolescents' MIYCN practices versus those of adult mothers ▪ Understand men's perceived role in maternal and child nutrition and care practices ▪ Understand challenges and opportunities by season
Health-seeking behaviors	FGDs IDIs Community dialogue	▪ Understand the factors that influence decision making in utilization of health care ▪ Understand the contextual barriers and drivers to seeking health care ▪ Understand the perceptions of communities regarding services provided by the CHS ▪ Understand men's involvement in decision making to seek integrated management of acute malnutrition and other health-care services
Gender and equity dimensions	Community dialogue	▪ Understand how gender dynamics and sociocultural norms impact decision making regarding access to resources (livestock, food, and financial resources)

ANNEX B: PERCENTAGE DISTRIBUTION OF COMMUNITY DIALOGUE PARTICIPANTS, BY SOCIO-DEMOGRAPHIC CHARACTERISTICS AND LIVELIHOOD ZONE

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
Number of participants	48	47	44	139
Sex				
Female	50.0	48.9	52.3	50.4
Male	50.0	51.1	47.7	49.6
Age				
<25	50.0	42.6	56.8	49.6
25–49	50.0	57.4	43.2	50.4
Religion				
Christian	91.7	100.0	95.5	95.7
Non-Christian	8.3	0.0	4.5	4.3
Education				
No formal education	81.3	27.7	43.2	51.1
Primary	12.5	61.7	38.6	37.4
Post-primary	6.3	10.6	18.2	11.5
Marital status				
In union	97.9	93.6	97.7	96.4
Not in union	2.1	6.4	2.3	3.6
Occupation				
Petty trade	2.1	66.0	6.8	25.2
Livestock herding/farming	52.1	23.4	70.5	48.2
Employed	45.8	10.6	22.7	26.6
Number of children under 5 years				
1–2	77.1	91.5	88.6	85.6
3+	22.9	8.5	11.4	14.4
Number of children 5 years or older				
1–2	81.3	51.1	77.3	69.8
3+	12.5	25.5	22.7	20.1
Missing	6.3	23.4	0.0	10.1

ANNEX C: PERCENTAGE DISTRIBUTION OF FOCUS GROUP DISCUSSION PARTICIPANTS, BY SOCIO-DEMOGRAPHIC CHARACTERISTICS AND LIVELIHOOD ZONE

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
Number of participants	30	30	30	90
Sex				
Female	60.0	60.0	60.0	60.0
Male	40.0	40.0	40.0	40.0
Age				
<25	60.0	60.0	60.0	60.0
25–49	40.0	36.7	40.0	38.9
50+	0.0	3.3	0.0	1.1
Religion				
Christian	96.7	100.0	93.3	96.7
Non-Christian	3.3	0.0	6.7	3.3
Education				
No formal education	56.7	30.0	40.0	42.2
Primary	36.7	46.7	40.0	41.1
Post-primary	6.7	23.3	20.0	16.7
Marital status				
In union	80.0	100.0	83.3	87.8
Not in union	10.0	0.0	16.7	8.9
Missing	10.0	0.0	0.0	3.3
Occupation				
Petty trade	0.0	56.7	16.7	24.4
Livestock herding/farming	43.3	13.3	50.0	35.6
Employed	56.7	30.0	30.0	38.9
No employment	0.0	0.0	3.3	1.1
Number of children under 5 years				
1–2	0.0	6.7	0.0	2.2
3+	90.0	83.3	86.7	86.7
Missing	10.0	10.0	13.3	11.1

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
Number of children 5 years or older				
1–2	66.7	66.7	70.0	67.8
3+	16.7	16.7	26.7	20.0
Missing	16.6	16.7	3.3	12.1

ANNEX D: PERCENTAGE DISTRIBUTION OF IN-DEPTH INTERVIEW PARTICIPANTS, BY SOCIO-DEMOGRAPHIC CHARACTERISTICS AND LIVELIHOOD ZONE

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
Number of participants	18	19	18	55
Sex				
Female	77.8	84.2	77.8	80.0
Male	22.2	15.8	22.2	20.0
Age				
<25	50.0	52.6	55.6	52.7
25–49	50.0	42.1	44.4	45.5
50+	0.0	5.3	0.0	1.8
Religion				
Christian	94.4	94.7	100.0	96.4
Non-Christian	5.6	5.3	0.0	3.6
Education				
No formal education	66.7	47.4	33.3	49.1
Primary	16.7	42.1	38.9	32.7
Post-primary	16.7	10.5	27.8	18.2
Marital status				
In union	72.2	73.7	55.6	67.3
Not in union	27.8	26.3	44.4	32.7
Occupation				
Petty trade	5.6	36.8	5.6	16.4
Livestock herding/farming	33.3	26.3	72.2	43.6
Employed	61.1	36.8	22.2	40.0
Number of children under 5 years				
1–2	72.2	94.7	94.4	87.3
3+	27.8	5.3	5.6	12.7
Number of children 5 years or older				
1–2	66.7	47.4	44.4	52.7
3+	16.7	31.6	50.0	32.7
Missing	16.7	21.1	5.6	14.5

ANNEX E: PERCENTAGE DISTRIBUTION OF KEY INFORMANT INTERVIEW PARTICIPANTS, BY SOCIO-DEMOGRAPHIC CHARACTERISTICS AND LIVELIHOOD ZONE

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
Number of participants	9	10	28	47
Type of KII				
NGO	11.1	20.0	53.6	38.3
Community	88.9	80.0	46.4	61.7
Sex				
Female	33.3	20.0	32.1	29.8
Male	66.7	70.0	67.9	68.1
Age				
<25	0.0	10.0	0.0	2.1
25–49	66.7	60.0	71.4	68.1
50+	11.1	20.0	17.9	17.0
Religion				
Christian	100.0	90.0	92.9	93.6
Non-Christian	0.0	0.0	7.1	4.3
Education				
No formal education	11.1	10.0	3.6	6.4
Primary	33.3	30.0	14.3	21.3
Post-primary	55.6	50.0	75.0	66.0
Missing	0.0	10.0	7.1	6.4
Marital status				
In union	88.9	100.0	89.3	91.5
Not in union	11.1	0.0	3.6	4.3
Missing	0.0	0.0	7.1	4.3
Occupation				
Petty trade	0.0	20.0	3.6	6.4
Livestock/farming	77.8	60.0	78.6	74.5
Employed	22.2	20.0	17.9	19.1
Number of children under 5 years				
None	22.2	40.0	32.1	31.9
1–2	77.8	60.0	46.4	55.3

Characteristic	Livelihood zone			Overall
	Pastoral	Agropastoral	Urban/peri-urban	
3+	0.0	0.0	3.6	2.1
Missing	0.0	0.0	17.9	10.6
Number of children 5 years or older				
None	11.1	0.0	7.1	6.4
1–2	22.2	30.0	25.0	25.5
3+	44.4	30.0	32.1	34.0
Missing	22.2	40.0	35.7	34.0

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