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Nutritional Outcomes: Acute Malnutrition

Patterns of Acute Malnutrition in the Two Counties—Secondary Analysis (Ochola, 2021b, Ochola, 2021a)

Research question: What are the spatial and temporal patterns of acute malnutrition (AM) in the counties?

Overview and methods: Kenyatta University (KU) undertook a hotspot mapping and analysis of Isiolo and Marsabit Counties. Acute malnutrition hotspots are defined as areas where the prevalence of Global Acute Malnutrition (GAM) frequently exceeds 15%. KU identified a total of 27 Standardized Monitoring and Assessment of Relief and Transitions (SMART) nutrition surveys, including 14 conducted in Marsabit County between 2010 to 2019, and 13 conducted in Isiolo County between 2010 and 2020.

Key findings

Persistence of GAM. Emergency levels of child acute malnutrition (defined by weight-for-height z-scores (WHZ)) were reported in both counties over the decade, with more than double the occurrences in Marsabit compared to Isiolo. The seasonal timing of surveys varied between the two counties.

Variability in rates between and within counties. During the decade under review, there was extreme variability in the malnutrition rates between and within the two counties. For example, when the county survey data are disaggregated by subcounties and wards, some ward estimates were double the emergency rate, reaching rates over 30% (in Garbatulla and Sericho wards, Garbatulla Subcounty), while rates in the neighboring wards are better. The variability in GAM rates between neighboring wards and over time suggests the drivers of malnutrition change over the year and may be specific to certain areas/communities.

Potential masking of hotspots. If data are aggregated and analyzed at county and subcounty level, it may not be possible to identify hotspots within the dataset. For example, in Isiolo, looking at subcounty data, Isiolo Central Subcounty may not be considered a hotspot. However, two wards in this subcounty (Ngaremara and Oldonyiro) had consistently higher malnutrition rates than other wards in the county. Disaggregation of data to subcounty and ward level may provide an indication of regional differences but is not statistically reliable.

Limitations

Irregular timing of SMART surveys. SMART surveys at county level were conducted usually once a year, with irregular timing. From 2014 on, all surveys in Isiolo were completed in the short dry season (January–February (JF)) in line with Centers for Disease Control and Prevention (CDC)/government policy. In Marsabit only one survey was done in JF, and 10 (83%) surveys were completed in the long dry season (June, July, August, September (JJAS)). The reason for the variable timing is unclear.

Lack of SMART data for seasonality analysis. The predominantly annual nature of SMART surveys and their inconsistent timing across seasons mean that seasonality analysis is not possible.
Implications for Nawiri

1. Nutrition information systems (NIS) reporting on child acute malnutrition in Kenya includes: SMART surveys for humanitarian purposes; National Drought Monitoring Authority (NDMA) nutritional surveillance for early warning; and Demographic Health Survey (DHS) surveys for monitoring and planning development. While this comprehensive approach is in line with government policies, it has evolved to become a system with emergency-oriented SMART surveys and nutritional surveillance contributing towards a food security and nutrition analysis on the one hand, and the longer-term developmental planning associated with the DHS surveys on the other. This system has left a significant evidence gap regarding ward-level hotspots and seasonality patterns.

2. National government policies have highlighted key priorities\(^1\) to enhance the collection and use of nutrition data, which provides an opportunity for Nawiri to support a county-level review of these priorities and development of specific county-level strategies.\(^2\)

3. When GAM exceeds 15%, the nutritional status of all children has declined, thus highlighting the need for a community/population-wide strategy to prevention.

Immediate and Underlying Drivers of Acute Malnutrition (Marshak, 2021)

Research question: What are the immediate and underlying causes of acute malnutrition, and what is their relationship to nutritional status of children and women?

Overview and methods: This desk study reviewed 23 research papers and reports that investigated the immediate and underlying drivers and acute malnutrition (self-reported or measured anthropometrically) in the two counties and wider Kenyan arid and semi-arid lands (ASALs).

Key findings

Nutritional outcomes. Wasting, underweight, and stunting are all serious problems in the Kenyan ASALs. High levels of malnutrition are frequently reported over time, across counties, and irrespective of livelihoods, gender, age group, or nutrition indicator used. Although boys and girls of all ages under 5 years are affected, multiple studies identify boys as having worse nutritional outcomes.

Dietary intake/food security. Most studies hypothesized and tested the relationship between dietary intake and malnutrition. Two studies using participatory approaches identified lack of milk consumption as a driver of child malnutrition. However, no quantitative studies among the research papers reviewed found a significant link between consumption and wasting. There is some evidence from Ethiopia, from a study of the impact of providing dry season livestock fodder supplements, that the weight-for-age z-score (WAZ) of pastoralist children who received milk was greater than those who did not receive milk (Sadler and Catley, 2009).

Disease. Child morbidity was most consistently associated with worse nutritional outcomes. Three studies using participatory or self-reported methods identified disease as a risk factor for malnutrition.

\(^1\) For example:
   1. Further strengthen networking and coordination of the relevant NIS databases at county level;
   2. Enhance and broaden all aspects of nutritional analysis, to include relevant components of the adapted framework;
   3. Enhance the collection and use of knowledge and information at the national, county, and community levels;
   4. Support systems to enable feedback of information in appropriate formats on the nutritional situation (nutritional outcomes and drivers, not limited to food security);
   5. Promote use of technologies to enhance cost-effectiveness and timeliness in reporting, and user-friendliness.

\(^2\) Specific urgent technical issues to be reviewed jointly include: the timing and coverage of SMART surveys; the choice of nutrition indicator for NIS and surveys; the need for a county-level data repository.
Wealth. Various measures of wealth were inconsistently associated with child nutrition outcomes.

Social and care environment. Women’s workload was identified as a risk factor for child malnutrition but was only explored in studies using qualitative methods. Education, especially of the female caretaker, was associated with better nutrition outcomes.

Health environment and access to health services. Access to clean drinking water and to improved toilet facilities were consistently associated with better nutrition outcomes (WHZ, height-for-age z-scores (HAZ), and WAZ). Two studies showed access to health services was also associated with better nutrition outcomes.

Limitations

Slim evidence base, mixed results, and some drivers ignored altogether. The desk review confirms that acute malnutrition is a problem, that most drivers are under-studied, and some are ignored altogether.

Community-level characteristics have largely been ignored. Studies focusing exclusively on individual- and household-level drivers ignore potentially important community-level characteristics that might relate to nutrition outcomes.

Zoonotic disease a potential risk factor. Several studies recommend support for livestock-related programs, and/or look at household-level livestock ownership as a key driver. While studies out of the ASALs have shown a positive association between nutrition and livestock ownership, negative externalities, such as zoonosis, were not considered in a single study in the Kenya ASALs literature review.

Sedentarization oversimplified. Studies that compare settled versus nomadic communities ignore the complex changes driving urban drift and sedentarization.

Worse nutritional outcomes for boys. Yet studies do not explore whether there are sex and age differences in drivers.

Interactions between drivers. The presence of one significant driver, such as food insecurity, is likely to exacerbate other drivers, such as women’s workload, yet none of the literature present findings on interactions.

Implications for Nawiri

1. Some studies reflect widely held yet unproven assumptions (regarding food security and consumption, wealth, poverty, and sedentarization) that continue to influence program design. For this reason, Nawiri must focus on addressing evidence gaps, testing assumptions, and identifying improved solutions and programmatic approaches.

2. The limitations of the available studies have informed the design of the Nawiri longitudinal study and follow-up qualitative studies. The outstanding anthropometric technical issues will be addressed, and Nawiri will provide crucial evidence on the community-level and household drivers of acute malnutrition.

Use of Trials of Improved Practices (to Improve Complementary Feeding) Field Study (Catholic Relief Services, 2021h)

Synthesis unavailable.
Participatory Epidemiology Findings (Mahmoud et al., 2021, Burns et al., 2021)

Research questions: Each study included three research questions: What is the seasonality of malnutrition and related factors? How do women describe and prioritize the causes of malnutrition in children and mothers? What are women's suggestions and priorities for improving nutrition, and what is the reasoning behind their views?

Overview and methods: The study was carried out in 14 villages in North Horr and 16 villages in Loiyangalani. The study applied two participatory methods, viz., a monthly calendar and a casual diagram. The design of these tools was informed by an ethnographic study on local language terms around nutrition prior to the field work. The causal diagram involves asking participants to identify what they believe are the key causes of malnutrition for both women and children, using a photograph of a malnourished child/mother as a visual reference. Once they have identified all the causes, they are asked to assign a score to each cause (indicator). Scoring is done by distributing 100 counters among the different indicators, with more indicators being assigned to the more important factors and fewer counters to less important factors. Visual aids are used to facilitate the exercise, which also involves in-depth discussions around each indicator.

Key findings

Seasonality of acute malnutrition with peaks in the main dry season. In both areas, the results show that malnutrition increases during the dry season. Participants largely attributed this increase to the absence of milk and meat during this period.

Women's strong association between access to livestock and livestock products—especially milk—and nutritional status. The availability of milk from small stock corresponds directly with the availability of rainfall and pasture. On the other hand, camel milk is available throughout the year although in smaller quantities during the dry season. However, the milk is not available for women and children, as the camels are in the fora during this period. In both areas, the lack of livestock products (specifically milk and meat) was identified as the main cause of malnutrition in both women and children.

Women's clear knowledge about a “good diet” and hygiene.

Domestic roles are highly gendered, and livelihood shifts are placing additional burdens and risks on women, affecting maternal health and childcare.

Limited positive diversification options for women or activities that enable work and income, while also caring for children, exist.

Access to markets and more positive diversification options are limited by remoteness, poor infrastructure (roads), and by the persistence of conflict and its direct and indirect impacts.

Limitations

The specifics of proposed interventions were not discussed in great detail. However, the overall message from women was that these areas (livelihoods, income, access to credit, business mentorship, market linkages, etc.) were their priority.

Implications for Nawiri

1. Context is critical. The importance of different factors contributing to acute malnutrition varied from place to place, including between villages in fairly close proximity to each other.
2. Two very strong field teams with participatory epidemiology (PE) capacity are now in place, and there is considerable support for the approach in county governments.

3. Women almost always identified livelihoods or income-generation support as priorities (livelihoods, access to credit, business mentorship, market linkages, etc.). They have clear aspirations to own and control livestock, and access more milk. More in-depth discussion is needed to understand how women can practically manage livestock given their other roles and secure their decision-making about livestock and uses of income in the current gendered arrangements.

4. Context is also key in addressing AM, along with spatial differences in the importance of different factors contributing to AM. The opportunities to address these also vary from place to place.
Livelihood Systems and Nutrition—Desk Study (Stites, 2021)

Research question: How do livelihood systems operate as part of the basic causes of malnutrition?

Overview and methods: Livelihoods in arid lands are dominated by pastoralism, including those directly engaged in pastoral livestock production and those employed in livestock services, processing, trade, and transportation. Kenya has a long record of research on pastoralism and change, with various accounts of shifting livelihoods since the 1800s. More recent studies report shifts in pastoralist herd management strategies and mobility patterns. They show that pastoralists are adapting and diversifying their livelihood strategies towards a more mixed and spatially varied set of livelihood strategies. These livelihood shifts and transformations are linked to wider processes of profound social, economic, and political change. The Nawiri desk study on the livelihood systems in Marsabit and Isiolo Counties seeks to document, examine, and investigate the ways in which livelihood systems operate as part of the basic causes of malnutrition.

Key findings

Mobility and herd management. Increasing constraints on mobility in dryland areas have led to pastoralists adapting their herd management strategies. Shifts in herd composition are evident, and the demography of herds more generally is changing.

Informal social safety nets. Social connections, networks, and expectations of reciprocity are known to support communities to recover and rebuild, although there is some evidence that the poor are often unable to participate in support networks and that social networks of reciprocity contract when communities face persistent drought, for example.

Coping, adaptive, and maladaptive strategies. Increased vulnerability and limited livelihood options prompt coping and adaptive strategies. Some coping strategies have negative impacts that affect nutrition, such as reducing meals, taking children out of school, and selling productive assets. Adaptive strategies reflect more permanent livelihood changes, which are not necessarily sustainable, such as livelihood diversification into sale of firewood, charcoal making, etc. Maladaptive strategies negatively impact others, as they are linked to illicit activities, or even coercion and conflict.

Market systems, diversification, and increasing importance of cash. As market systems and networks have expanded into northern Kenya, so has the commoditization of water, pasture, forest resources, etc. Hence the increasing importance of cash to pastoral communities who must increasingly engage in market transactions. Access to markets has also resulted in increased livelihood opportunities and diversification, and growing inequalities between poorer and better-off pastoralists.

Sedentarization, milk production, and nutrition. Sedentarization of pastoralists and more diversified/agriculturally-based livelihoods in the ASALs are associated with lower milk intake and livestock ownership, but not necessarily worse nutrition outcomes (Marshak, 2021).

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3 Research Area 4: Key Questions 1 to 4.
Gender and generational norms. Shifts in pastoral livelihoods have resulted in an evolution of gender and generational norms, with women playing greater economic roles within many households due to their engagement in petty trade and exploitation and sale of natural resources in towns and trading centers. However, most of these activities are marginal. Generational roles are gradually changing, in part because young men are increasingly seeking manual labor in towns as households settle.

The policy context, aid modalities, and humanitarian assistance. The policy environment is changing from the former explicit goal of sedentarization to one that increasingly recognizes the non-equilibrium nature of drylands and importance of pastoralism. International aid is also changing, with a shift to disaster risk reduction and resilience building, although humanitarian action continues to predominate. Formal social safety net programs in Kenya are part of the medium-term national development policy called Vision 2030.

Decentralization and devolution. The increase in national- and county-level pro-pastoral policies (such as the pro-pastoral components of Vision 2030 and accompanying strategies) came in the wake of the plans for the 2010 constitutional reforms and political devolution. Increasing central government interests in dryland areas potentially run counter to decentralization sentiments and may contribute to longer-term tensions.

Conflict. The ASAL region has experienced numerous forms of conflict over the past century. These include conflict perpetrated by the state, local-level drivers of violence, and conflict associated with border disputes, cattle raiding, and disputes over land use and access that often trigger armed violence. Tribal or clan identity is of particular importance to communal claims on land.

Limitations

Limited recent research on livelihoods. Despite the long history of research in Kenya on pastoralism, little has been done in the past 20 or 30 years, which has been a period of profound social, economic, and political change.

Conflict analysis. Conflict analysis is lacking, especially of conflict drivers and processes from the local level upwards, local conflict mitigation and peacebuilding processes, and the impact of conflict on livelihoods and nutrition.

Implications for Nawiri

1. Findings confirm the importance of pastoralism for most of the population in the two counties. However, increasing constraints potentially undermine the resilience of livelihood systems and the sustainability of natural resources. These constraints contribute to the transformation of livelihoods, increasing inequalities and the burden on women in marginal activities.

2. Nawiri should aim to protect and promote pastoralism among those communities that have the specialist knowledge and customary institutions for managing access to natural resources, by supporting locally appropriate adaptive management strategies involving women and men, and the young and the old. This process should start with developing a shared understanding among all stakeholders of pastoralism and pastoralist-related livelihoods, and their relationship with nutrition.

3. The transformation of livelihoods has created opportunities and challenges for different people. Successful adaptation fosters resilient livelihoods and a sustainable resource base. Maladaptive livelihood strategies cause harm and increase risks and vulnerability, e.g., negatively affecting social relations, the environment, and local institutions. Nawiri should develop a common understanding of the benefits of diversification and risks of maladaptation in order to foster institutions. Nawiri should develop policies and interventions that promote livelihood resilience and peaceful relationships.

3 This framework is discussed in “Improving the way we address acute malnutrition in Africa’s drylands,” which appeared in the May 2021 issue of Field Exchange.
4. Livelihood interventions must be conflict sensitive (aware of tensions, divisive issues, etc.) so as to reduce risks of conflict and promote social cohesion. For example, interventions must support livelihoods based on natural resources and need to take account of the rights and interests of all users of natural resources, including women and men, and seasonal or temporary users.

**Natural Resource Management, Livelihoods and Nutrition—Desk Study (Birch, 2021)**

**Research question:** What are the systems and institutional arrangements for accessing and managing natural resources for livelihoods?

**Overview and methods:** Livelihoods in the Kenyan ASALs are predominantly derived from the natural resource base, even for many who have settled. The Nawiri Natural Resource Management Study seeks to understand how land access and natural resource management (NRM) policies, institutions, and relationships are changing in the ASALs, what the consequences are and for whom, and the potential impact on livelihoods, food security, and nutritional status.

**Key findings**

**Most land is classified as arid or very arid and is community land.** Approximately 80% of land is managed under customary rules and tenure, within wider national- or county-level policy frameworks, which illustrates the plurality of tenure regimes and central importance of community institutions and customary rules for livelihoods. The policy and institutional framework for land and NRM has changed significantly in Kenya since 2010 (devolution).

**The evolving policy context (government, investors, external partners).** The policy context in Kenya is evolving in different and sometimes contradictory ways, demonstrating both change and continuity with the past. Large-scale but localized investments in northern Kenya are transforming the value of and attitudes toward land. These investments are threatening further loss and fragmentation of the natural resource base, which undermines pastoralist production systems.

**Community institutional capacities and specialist local knowledge.** Access to natural resources can be protected and enhanced when community institutions retain both the confidence of those they represent and the capacity to adapt to change and opportunity. Institutions facilitate the transfer of specialist knowledge between generations.

**Relationships between producers and with formal institutions.** Institutions manage relations between producers, and with neighboring groups and the state. Access to natural resources is increasingly secured through membership in, or a relationship with, a formally constituted body, such as a community conservancy.

**Increasing commercialization of customary resources.** Private landowners set rules and penalties for access (fees for grazing and overnight stays). Costs involved in long-distance migration—finance and labor—mean that it is increasingly the preserve of wealthier households. Customary norms of reciprocity and collective action persist, even where processes of privatization and individualization are further advanced.

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4 Research Area 3: Key Question 1.
5 Customary institutions regulate the use of common property resources within their areas of jurisdiction and negotiate reciprocal access across a wider area; group ranch committees manage registered community land in trust for their members; community conservancies manage community land that is either unregistered or registered as a group ranch, and whose governance may or may not incorporate customary norms; government sector-based associations are responsible for managing a particular natural resource.
Changing gender and generational dynamics. Increasing barriers to livestock mobility and access constraints are having an impact on inter-generational and gender relationships; sometimes positive impact (e.g., financial autonomy, market access, and access to education for women, with potential positive implications for nutrition) and other times negative impact (e.g., erosion of social cohesion).

Devolution presents opportunities and challenges. With devolution, there is an opportunity to rationalize and reform institutional arrangements for NRM, particularly if county legislation were to legitimize community-based resource management.

Limitations

Research bias. Data show the over-arching importance of customary pastoral or agro-pastoral systems, yet most research in the region has had a narrower focus on areas where pastoralism overlaps with community conservancies and group ranches, suggesting a research bias towards these hybrid systems and an evidence gap regarding the practice of pastoralism.

Implications for Nawiri

1. The NRM study sheds light on vital customary rules and institutions that are of fundamental importance for dryland livelihoods (directly or indirectly). These institutions reflect changing community, gender, and generational dynamics. By understanding critical institutional processes, Nawiri will gain insights into the barriers and opportunities (or “gateways”) to resilient livelihoods or other public action.

2. Integrated NRM (INRM) considers the institutional and social relationships between users. INRM mediates the rights of different users, their inter-relationships, and their diverse and often complementary uses of natural resources. INRM also affects the wider socio-ecological system—the sustainability of natural resources, the resilience of livelihood systems, and the peaceful co-management of natural resources and mitigation of competition and conflict over natural resources. Nawiri should consider INRM processes and institutions as part of local conflict analysis, and as a mechanism to strengthen livelihoods and the peaceful co-management of natural resources.

3. There is little direct evidence of the impacts of NRM on livelihoods, food security, or nutritional status, which remains an evidence gap.

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6 Land use figures for Isiolo and southwestern Marsabit Counties indicate livestock production takes up 82% of the total area; mixed crop-livestock production 6%; livestock production with wildlife conservation 4%; and wildlife conservation alone 3%.
Basic Drivers—Systems and Institutions

A focus on systems and institutions helps to capture complex processes and identify underlying patterns between basic and underlying causes of malnutrition. Institutions may be formal, e.g., the governance environment, including civic, political, and economic institutions, or informal, such as the wider governance environment, including norms, behaviors, and standard practices.

A Gendered Analysis of Livelihood Transformation and Acute Malnutrition—Desk Study (Stites and Dykstra-McCarthy, 2021)

Research question: What are the evidence gaps on the intersection of gender and acute malnutrition in Isiolo and Marsabit Counties?

Overview and methods: This literature review presents a gendered analysis of key areas of transformation and evolution in people’s livelihoods in the Kenyan ASALs, primarily in Isiolo and Marsabit Counties.

Key findings

Diversification patterns, strategies, and outcomes are gendered. Livelihood strategies are gender specific, and the gendered trends may contribute to sedentarization (migration in order to settle). The diversification patterns of better-off and poor households and between women and men are almost certainly different, with women increasingly dependent on marginal, low-income activities. However, where women are able to earn cash and use it to increase their child’s dietary diversity, doing so is of nutritional benefit. Alternatively, households may settle in the hope of increasing their cultivation activities, which is likely to increase women’s workload and reduce time available for childcare, and increase dependency on secondary carers. Thus, sedentarization is associated with mixed findings related to nutrition.

Pastoral livestock mobility is predominantly the domain of men. However, pastoral women are also mobile, although gendered roles and pastoralist mobility and how they are changing is an important knowledge gap.

Other forms of migration (seasonal labor migration, longer-term and permanent migration, or distress migration in response to external shocks) align with gendered life stages, yet much remains to be understood.

Gender and generational roles are changing over time. Although information from Isiolo and Marsabit is limited, evidence from elsewhere suggests that social and intra-household dynamics, rites, and responsibilities are important factors in understanding gender and cultural norms that impact child nutrition.

Customary and kin-based safety nets. Pastoral and agro-pastoral systems are heavily reliant upon informal social institutions that determine access to resources, transfers of cattle, risk management, recovery from shock, marriage systems, and the sharing of critical information, all of which are highly gendered and potentially exclude the poor and marginalized. An important gap is understanding how these customary...
safety nets might be changing over time, or changing with sedentarization, and the implications of the changes for nutrition.

**Limitations**

**Narrow focus of available gender analysis.** Gender analysis in the region is often limited exclusively to the experiences of women, and therefore needs to be expanded to include women and men, the young and the old, and individuals from a diversity of ethnicities, livelihood sub-systems, etc.

**Testing assumptions.** This review made several assumptions based on evidence from other dryland regions. To some extent, these assumptions were validated by the Nawiri PE studies in Marsabit and Isiolo. There is scope for further testing and elaboration. These assumptions include:

- The increasing workload and time burden of women linked with their livelihood diversification are driven by the need to provide for their household. But as a result, they must leave their children for longer with other carers, which may have negative nutritional outcomes;
- Women are aware of the best foods for children but are unable to access them;
- Wealth differentials between households influence women's opportunities to diversify their livelihoods or practice pastoralism.

**Implications for Nawiri**

1. Gender is of over-arching importance in relation to addressing AM, given the assumed links between gender roles and dynamics, and nutrition. There is no doubt that additional research is needed on gender and generational roles and nutrition, and how the former are changing in the two counties for different communities.

**Gender, Youth and Social Dynamics—Desk Study (Catholic Relief Services, 2021i)**

**Research questions:** What are the social and cultural norms associated with persistent acute malnutrition? How does gender affect underlying and immediate drivers of persistent global acute malnutrition?

**Overview and methods:** The overall aim is to explore the gender, social, and cultural factors associated with persistent acute malnutrition in Isiolo and Marsabit Counties, to illuminate pathways through which these factors result in nutrition outcomes. Specific research questions focus on the role of laws, regulations, informal institutions, cultural norms, belief and practices, gender and age-specific roles, and control over resources and decision-making. The study reviewed published literature, policy and budget documents, and project reports.

**Key findings**

**Pastoralist women’s roles are more time-consuming and tedious than men’s, and nutrition programs put more pressure on women’s time.** Women’s roles include care of young, pregnant, and sick animals, processing of milk, and sale of milk products. Men’s roles include herding, watering, and sale of animals. However, there are few studies that have measured women’s and men’s, and girls’ and boys’, workloads against maternal and child health and nutrition outcomes, particularly in pastoralist communities.

**Household resources are controlled by men.** Women take responsibility for reproductive work such as cooking, childcare, and firewood and water collection. Other roles include processing and sale of milk. Men are responsible for herd management and marketing. They control women’s access to health care and credit. This power is reinforced through gender-based violence (GBV) and intimate partner violence (IPV). Limited access to resources and disempowerment hinder women’s childcare abilities.
Women lack control over health services despite childcare responsibilities and heavy workloads. Limited access to water, male migration (herding, wage labor), and the commercialization of pastoral resources increase women's workload and inability to care for children. Women and youth have limited access to and control of assets and resources like mobile phones, while their restricted movement and lack of decision-making power hinders access to health and nutrition services.

Differences in livelihoods (pastoral, agro-pastoral, etc.) and socio-economic status (need for casual wage labor) also affect responsibilities of men, women, and youth, and the ability to care for children.

Changing patterns of education, urbanization, and communication (mobile phone and digital technologies) impact nutrition, and women and youth roles. These patterns increase credit access and access to other financial services.

Women's workload and men's control over decision-making limit women's participation in formal and informal institutions. Participation in these institutions, for example, community groups and committees or local government, also depends on women's age and marriage status.

Drought and climate change have reduced herds and affected social networks and sources of support. During droughts, searching for food and income becomes more time-consuming. Women increase time spent on petty trading, charcoal production, and firewood collection, further limiting time for childcare.

Elderly female family members and traditional birth attendants (TBAs) have a strong influence on infant and young child feeding (IYCF) practices, which can be detrimental to nutrition. Harmful traditional practices (e.g., female genital mutilation/cutting (FGM/C), child early and forced marriage (CEFM), IPV) with negative nutrition outcomes and sub-optimal child feeding practices (e.g., shortened breastfeeding duration, early termination of exclusive breastfeeding, and reduced breastfeeding) are common in the study areas.

A strong food-sharing culture, food preferences, and taboos are reported to restrict eating of protein-rich foods (eggs, chicken, fish) and negatively affect maternal health and child nutrition.

Government investment in social services such as health, water, infrastructure, and education has been limited. Policies on health, agriculture, education, social protection, and drought response highlight gender and youth commitments, and promote women's participation, but these commitments are not reflected in budget allocations.

At the local level, the council of elders is most important in decision-making on community needs and on the role of women. There are well-established informal systems with significant influence over cultural issues, but they are often discordant with government laws (e.g., Gabbra (Guumi Gaayo), Borana (Gadda) council of elders).

Male engagement in health and nutrition programs is inevitable given women's limited access to and control of productive assets and resources. Women also have limited decision-making power. These limitations hinder them from accessing critical resources, health, and nutrition services.

**Limitations**

Lack of peer reviewed publications. This study only includes publications from 2015 and 2020.

Studies treat women as a homogenous group and fail to consider them in relation to their individual, social, cultural, and economic identities, among others.
The impact of conflict on pastoralism, social networks, and social protection is not considered, yet conflict likely has an influence on relations between groups, migration, splitting of households, etc.

**Implications for Nawiri**

1. Nawiri program design should approach targeted communities with behavior change interventions to address harmful traditional practices and advocate for more desirable behaviors that promote maternal health and child nutrition. Nawiri should work closely with traditional systems and structures on social cultural norms and practices as well as adherence to government laws and policies through social behavior change programs.

2. Political advocacy should support national and county governments' provision of adequate resources (funding and personnel) for health and nutrition programs.

3. Social dynamics beyond gender and intra-household power relations need to be examined. Examination of basic social causes involves looking at dynamics between and within social groupings (e.g., different clans vying for natural resources and political positions), in informal institutions (elders, religious leaders), and local government.

4. More investigations are needed on the role and effect of technology. How do traditionally pastoralist communities interact with the rapid technological and socio-cultural change triggered by access to mobile telephony, and how has this interaction changed social dynamics?

**Gender, Youth and Social Dynamics – Field Study (Catholic Relief Services, 2021f)**

**Research questions:** What are the social and cultural norms associated with persistent acute malnutrition? How does gender affect underlying and immediate drivers of persistent global acute malnutrition?

**Overview and methods:** This qualitative research explored the systemic and social dynamics that drive persistent acute malnutrition in Isiolo and Marsabit Counties, building on the desk study (CRS, 2021i). Caregivers (pregnant and lactating mothers, mothers with children under 5, and fathers) aged 15 to 49 years old and elderly women and men above 49 years old, from areas with high prevalence of acute malnutrition, were interviewed. Relevant county government and civil society organization staff, youth leaders, and traditional birth attendants were also interviewed. The data obtained were corroborated and triangulated across different data sources and validated by study participants and counties.

**Key findings**

**Women's heavy workload.** Women's reproductive, productive, and community roles and their little rest compromise child and mother's health and nutrition.

**Patriarchy and social cultural norms that define men's activities overburden women with long hours of work, poor mental health, and malnutrition.** Men control decision-making over critical assets and resources (e.g., water, land, livestock, income, healthcare, and education), often to the detriment of women/children's health and nutrition.

**Conflict between preferred cultural norms and formal laws/policies hinders effective implementation of nutrition programs.** Harmful traditional practices (e.g., CEFM, FGM/C, IPV) negatively impact maternal and child health, and nutrition outcomes. Social and cultural norms and taboos (e.g., colostrum avoidance, pre-lacteal feeding, early weaning, and forbidden foods) contrary to health and nutrition guidelines lead to malnutrition.
Limitations

Some of the sampled data collection sites were inaccessible due to insecurity and bad road network and will be replaced by sites with similar characteristics to the original sites. Implementation of COVID-19 protocols, e.g., wearing masks, faced resistance but were resolved after COVID-19 sensitization.

Implications for Nawiri

1. Nawiri program activities should significantly reduce women’s heavy workload, address their time poverty, and free their hands for more productive activities, e.g., innovation and technology.

2. Nawiri activities should promote joint decision-making at household level and empowerment of women, girls, and youth to participate in decisions that affect their lives. Male engagement in reproductive activities should be promoted, as should positive masculinity using male champions of desired health and nutrition behaviors.

3. Nawiri should engage in capacity building, advocacy, and sensitization against harmful traditional practices (HTP) by trusted community/religious leaders to discourage HTP among target communities. Activities should be designed that challenge taboos prohibiting eating of nutritious foods or determine food preferences, e.g., fish, chicken, and eggs.

4. Nawiri needs to get buy-in from target communities and enhance enforcement of relevant laws and policies, e.g., the Anti-FGM Act, Sexual Offences Act, Basic Education Act, Family Act, Children’s Act, etc.

5. Nawiri should consider holistic management of malnutrition, factoring preventive and social cultural dynamics beyond the current treatment approach, which has created dependency on nutrition commodities.

Social and Behavior Change Formative Assessment – Assessment (Catholic Relief Services, 2021b)

Research questions: Who needs to do what to reduce GAM?

Overview and methods: The report summarizes the results of a desk review that identified and prioritized key behaviors, actors, and their roles that are most likely to contribute to the reduction of acute malnutrition. Results of a field-based study were then presented to better understand WHY those behaviors were or were not practiced and how the project could best support the actors to adopt those behaviors. The report is based on a social-ecological model for understanding the effects of personal, social, and environmental factors that determine behaviors, and for identifying behavioral and organizational leverage points for health promotion within organizations. There is a clear and empirical theory-of-change analytic framework. Social and behavioral change can create an enabling environment where change can happen, ensuring the basic systems and supplies are in place, and generating demand and use for them. A prioritization tool by The Manoff Group listing nutrition behaviors critical in preventing malnutrition globally was contextualized to reflect Nawiri’s analytical framework and theory of change relevant to each focus county, based on existing literature, data from local services, and surveys and qualitative understandings on opportunity, willingness, and ability to practice the priority behaviors of different families within the counties.

Key findings

One result of stakeholder workshops was the understanding of “hotspots and cold spots” for acute malnutrition within the same locality. The county and subcounty Multisectoral Platform for Nutrition (MSP-N) teams that participated in reviewing the field data were able to appreciate the role that social and behavior change (SBC) plays in ensuring that the solutions are contextual, sustainable, and will have impact, not just on immediate outcomes but over generations.
Limitations

There needs to be more explanation of how prioritized behaviors were drawn out from the desk review and prioritization process. Assessment sample size is not well explained. The report is vague on specifics, e.g., “Appropriate community entry strategies to identify potential study participants to be recruited into the assessment were used” (p. 3 of report).

Due to its cross-sectional design, the assessment was not able to capture variations in behavior due to seasonality (p. 9), which is unfortunate given the semi-arid climate of a pastoral system where there are large seasonal fluctuations in human food availability from livestock. Not everyone will have the same “typical day” (pp. 11–13).

Government Sector Framework on Nutrition in ASALs Desk Review (Catholic Relief Services, 2021a)

Research questions: To what extent are existing nutrition policies, program frameworks, strategies, and action plans effectively addressing acute malnutrition? What is the public sector and donor financial investment for prevention and treatment? What coordination structures and capacities exist to support scale-up of multisectoral interventions?

Overview and methodology: This desk study identifies and analyzes national and county nutrition policies related to acute malnutrition, and reviews program frameworks, strategies, and action plans, and their application in Isiolo and Marsabit Counties. The desk review covers published literature (policy documents, program reports, good practice guidelines), standards, and assessment tools, drawn from international-, national-, and county-level sources. The report analyzes county government budgets and operational planning documents from 2013–2021. A performance review is presented, using a traffic lights system: green for good or adequate performance; yellow for moderate performance; and red for failing to reach an adequate standard.

Key findings

Extent to which national and county policies, strategies, and action plans address issues of acute malnutrition

Global level. Kenya is on target to meet the World Health Assembly 2025 nutrition targets, is an active member of the Scaling Up Nutrition (SUN) Movement, and has aligned most of its plans to the Sustainable Development Goals (SDGs).


National level:

- Over the years, there has been a gradual improvement in the prominence of nutrition and food security aspects in national and county policies, strategies, and action plans, but this improvement has happened more after 2015;
- Nutrition as a development issue for Kenya is gradually being embedded in various policy strategies and development plans at all levels of government. This has happened more after the review of the 2013–17 version of the Food and Nutrition Security Policy Implementation Framework;
- There is still work to be done to ensure that nutrition and food security aspects are not just mentioned but are mainstreamed in government planning, budgeting, and implementation at all levels;
- The majority of nutrition policies, strategies, and plans have tended to be dominated by nutrition-specific approaches (e.g., treatment) as opposed to nutrition-sensitive (preventive) approaches;
The critical roles of development partners and non-state actors are stated vaguely in the national policy, yet these are critical players in the fight against acute malnutrition from an institutional standpoint.

**Extent of the inclusion of key vulnerability themes (gender equity, disability, youth, climate change, etc.) in County Frameworks on Nutrition**

The majority of the documents reviewed have included these vulnerability themes.

The Kenya Constitution, the National Health Policy (2014–2030), and the Marsabit Country Nutrition Action Plan (2019–23) need to consider the inclusion of climate change issues, which affect the majority of populations in the Kenyan ASALs.

The National Food and Nutrition Security Policy (2011) is silent on disability inclusion, including youth and leadership, although it mentions learning for reformation.

Considerations, therefore, need to be made to ensure the mainstreaming of cross-cutting key vulnerability themes (gender equity, disability, youth, climate change and environmental issues, etc.) in national and county frameworks, policies, and strategies on nutrition. These issues should be an integral dimension of the design, implementation, and monitoring and evaluation of nutrition policies and programs.

**Multisectoral institutional and coordination structures for nutrition interventions**

**Lack of an elaborate legal framework and linkages on multisectoral nutrition coordination.**

While policies, strategies, and action plans exist at the national and county levels, there is limited legal and policy basis to provide clarity around leadership and ownership, as well as a hierarchical alignment of who is responsible for results.

**Weak linkages between the national coordination structures.** The official mandate for nutrition is with the Kenya Ministry of Health, Nutrition and Dietetic Unit (NDU). The head of this unit is meant to be the SUN government focal point (though currently this is not the case) and chair of the National Interagency Coordination Committee (NICC), a coordination structure within NDU that brings together other multisectoral stakeholders. The Kenya’s nutrition and food security sector is guided by the Kenya National Food and Nutrition Security Policy Implementation Framework (2017–2022). At the apex of the structure is the National Food and Nutrition Security Council and other structures that cascade this institutional setup down to the grassroots. It was observed that the NICC has a weak linkage to the National Food and Nutrition Security Council, and the same applies for other sectoral committees.

**Multiple county-level multisectoral coordination structures, some lacking the legal framework for institutionalization, and weak linkages between the various structures:**

- The Kenya Health Policy 2014–2030 proposes the formation of county health departments whose role will be to create and provide an enabling institutional and management structure responsible for “coordinating and managing the delivery of healthcare (including nutrition) mandates and services at the county level.” The county health management teams provide “professional and technical management structures” to coordinate the delivery of services through health facilities in each county;

- In many counties, including Isiolo and Marsabit, there exists the County Steering Group (CSG), a multisector coordination forum with sub-structures at subcounty level, which brings together several government departments and other stakeholders to coordinate drought response. The county governor (the highest county authority) and county commissioner are co-chairs. The NDMA is the secretariat of the CSG. The CSG is not institutionalized; the main agenda is mainly related to drought response and security issues. Nutrition is central to the work of the forum in providing, analyzing, and interpreting critical health and nutrition data such as MUAC trends at sentinel sites, malnutrition admission trends from health facilities, and morbidity trends and their impact on nutrition;
Some counties, including Isiolo and Marsabit, have constituted the Multisectoral Platform for Nutrition (MSP-N), a structure drawn from the SUN structures. The structure is still at nascent stages in many of the counties. It is not institutionalized in any legal framework, and some have already developed their terms of reference (TORs), mostly drawn from the Food and Nutrition Security Policy Implementation Framework in its agenda.

**There is no over-arching government structure that coordinates nutrition functions across ministries.** There is no indication of a higher body (for instance the presidency, the prime minister, or parliament) to which the National Food and Nutrition Security Council is accountable. This curtails opportunities to place nutrition at the highest agenda of government. Proposals have therefore been made for a higher umbrella structure to bring county and national structures under, for example, the Office of H.E. the Vice President.

**The challenge of sectoral mandates.** Progress has been made, particularly over the past five years, in ensuring various sectors reflect nutrition interventions in their programming. However, linkages across and within sectors remain weak—especially at the level of synchronizing activities, messaging, interactions, budgeting, and putting a sector-specific allocation formula in place. This weakness stems from the fact that whereas there is good will to coordinate, sectors and counties tend to crawl back to their mandates and budgets, leaving gaps in ensuring adequacy in financial and other support to multisector coordination efforts to address acute malnutrition.

**Engagement of all relevant stakeholders.** The institutional alignment for tackling malnutrition from the government- and county-level perspective needs to urgently onboard both formal and informal systems to address the problem.

**Divergences in capacities and methods of work.** Like many developing countries, Kenya faces a challenge in that various implementing institutions have divergences in their capacities to implement. Development partners that support various projects and programs tend to have a higher capacity to implement than local non-governmental organizations (NGOs) do. These divergences, including differences in approaches, bring about varying results.

**Analysis of political, institutional, and governance capabilities**

At present, there is a high focus of effort at the national level, a lean provision of support at the county level, and limited impact at the grassroots level.

Overall, while the institutional alignment for health services delivery is largely focused on curative (treatment) aspects, multisectoral nutrition interventions require an intertwined approach based on involving formal and informal systems of state and non-state actors to address basic causes of acute malnutrition.

**A critical role of the private sector and civil society** is noted as a key to the fight against malnutrition.

**Overburdened frontline workers.** As has been witnessed with the advent of COVID-19, frontline workers are the run-to staff to take on multiple tasks and responsibilities that relate to nutrition. Often these staff are overburdened, low paid, and stretched—which reduces their morale and enthusiasm.

**Nutrition financing to address acute malnutrition:**

1. Over the past five years, there has been a demonstrable bold focus at the national level (under the big-four agenda), showing an allocation increase to nutrition-sensitive interventions—although not as desired for nutrition-specific interventions. However, more work needs to be done;
2. According to the annualized budget for implementing the Kenya Nutrition Action Plan, the nutrition requirement for FY 2020/21 is Kenya shillings (KES) 77.71 billion. However, only KES 52.8 billion has been earmarked, creating a shortfall of KES 24.91 billion (a drop of 47.1%).
3. It is recommended that fiscal planning within the nutrition sector rally towards development partner support for nutrition-specific interventions to bring about a much-needed balancing act;

4. Commendably, the multilateral and bilateral development partners have supported the counties to develop their own nutrition action plans. These plans have helped cascade the national nutrition action plan to the county level. The challenge is that the financing architecture of these nutrition action plans at the county level is not tied to the overall county integrated development plans. There needs to be a mechanism in which the budgeting under the action plans and implementation is aligned to overall county development plan budgeting and financing—including for key aspects like school feeding, irrigation, livestock farming, and advocacy;

5. In addition, it remains unclear if the mobilization of resources for the development plans and the nutrition action plans is being done cohesively. It is important to stress that planning and budgeting for the nutrition action and development plans at the county level need to be coordinated and that a clear results framework should be designed. This would enable tracking of progress and demonstrate the county's progress in addressing acute malnutrition from an array of interventions—both nutrition-sensitive and nutrition-specific ones.

**Limitations**

The main limitation of the study is an inadequate review of documents from other sectors due to the unavailability of documentation in the literature searched. Documents reviewed had limited information on certain themes; for example, on the institutional framework and multisectoral coordination, nutrition governance, and financing in Kenya.

**Implications for Nawiri**

1. Nawiri should lend support to county governments to ensure nutrition-specific and nutrition-sensitive approaches, food security, and cross-cutting key vulnerability themes (gender equity, disability, youth, climate change and environmental issues, etc.) are mainstreamed in government policies, planning, budgeting, and implementation at all levels, making these issues an integral dimension of the design, implementation, and monitoring and evaluation of multisectoral nutrition policies and programs.

2. In collaboration with other partners at county level (including subcounty and ward level), support the multisectoral institutional and coordination structures for multisectoral nutrition interventions, including a legal framework for their institutionalization, with clear and strengthened linkages across and within sectors; clear mandates for the various structures; and inclusion and onboarding of relevant stakeholders (formal and informal) in the coordination structures.

3. Facilitate the county government MSP-Ns on **layering, sequencing, and integration of interventions** to ensure convergence in approaches, capacities, and methods of work between the development partners and the county government for a coordinated approach to service delivery.

4. Facilitate the county government MSP-Ns on **nutrition planning and budgeting** to ensure adequacy in financial, human, and other resources and sector budgets for multisectoral efforts to address acute malnutrition.
Participatory Institutional Capacity Assessment (PICA) (Catholic Relief Services, 2021c)

**Research question:** What are the institutional capacity gaps and opportunities on implementing multisectoral nutrition approaches?

**Overview and methods:** This assessment of institutional capacity gaps examines formal and informal institutions and local systems' adaptation to manage interventions and approaches to reduce acute malnutrition. This aligns with Nawiri's objective of working with and through strengthened local systems and institutions, to implement and adapt a sustainable multisectoral approach to reduce acute malnutrition and to effectively manage, adapt, and scale the approach in context-informed ways.

To guide sustained ownership of the institutional capacity development process, Nawiri facilitated the Multisectoral Platform for Nutrition (MSP-N) of the two counties to self-assess their institutional capacity gaps and opportunities through a participatory institutional capacity assessment using the Catholic Relief Services (CRS) adapted Holistic Organizational Capacity Assessment Instrument (HOCAI) tool. Subsequently, the MSP-Ns of the two counties separately planned and budgeted for capacity strengthening in planning, designing, implementing, and monitoring the multisectoral nutrition actions. To fully contextualize necessary capacity-strengthening efforts, and to promote holistic approaches to addressing acute malnutrition in sustainable ways, county nutrition budgets and the political economy were also assessed and analyzed.

**Key findings**

**Weak institutional capacity.** Among the five capacity themes assessed, save for the theme on cross-cutting issues where Isiolo County scored above 50% and was categorized as “good,” the performance in other capacity themes was “weak,” indicating the need to strengthen the capacity of these dimensions in both Isiolo and Marsabit Counties. The five capacity themes assessed were: (i) policies, programs, and frameworks; (ii) resources (human, financial) and infrastructure; (iii) coordination and partnerships; (iv) evidence-based decision-making; and (v) cross-cutting themes.

**Limited integration of nutrition into other sectors.** While sectoral nutrition targets exist, their actions not well mainstreamed to optimize nutrition sensitivity, e.g., nutrition education is not streamlined into sectors other than health. A sector-by-sector orientation on streamlining of their respective policies, strategies, and actions to be more nutrition sensitive will be needed, accompanied by the attendant revision of sector/departmental functions, TORs, job descriptions of nutrition focal persons, and training of staff.

**Limited county coordination of multisectoral nutrition activities.** While the MSP-N is functional at the county level, it is not formally recognized and not robustly linked to the possible subcounty- and ward-level multisectoral systems. The counties will need to formalize and institutionalize—and where not present, form—the MSP-N structures. Counties will need to strongly link the MSP-N structures up with strengthened subcounty-, ward-, and sub-ward-level multisectoral platforms, structures, and sector working groups. Linking the MSP-N structures with these will spearhead the collaboration and coordination of nutrition-sensitive and nutrition-specific actions at all levels in the county. It will ensure that as many relevant sectors as possible are represented and active.

**Limited government funding/financing for nutrition interventions.** When compared to the CNAP budgets as a benchmark, the government's contribution to nutrition in both counties was inadequate, though external sources of funds were increasing in Marsabit to match and exceed government allocations for

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7 This broad question broke down into three research areas:

1. Using the Catholic Relief Services (CRS) Holistic Organizational Capacity Assessment Instrument (HOCAI), what are the strengths and weaknesses of the institutional capacity at county, subcounty, and ward levels to lead a multisectoral approach?
2. What is the status of nutrition financing, and how can it be improved through new advocacy opportunities and funding mechanisms?
3. What are the political, economic, and social drivers that influence decision-making with regards to nutrition and women?
nutrition. Generally, the nutrition-sensitive allocation was on the rise, with a decline in the nutrition-specific allocation.

**Limited tracking of nutrition budget allocation and expenditures.** In both counties, tracking nutrition financing and expenditures is an ad-hoc activity conducted from time to time and not systemized due to: 1) lack of a suitable adapted tool agreed upon by all department for use; and 2) the absence of staff trained on it. Therefore, evidence-based feedback for the nutrition budgeting process is not within reach.

**Limited capacity on nutrition tracking and advocacy skills.** There is limited capacity among key nutrition-affiliated staff on nutrition budget tracking processes and limited capacity of the MSP-N members on necessary “soft” advocacy skills to influence budget allocation at higher levels of the executive and county assembly.

**Low awareness and priority for multisectoral nutrition among key political leaders.** Low awareness and priority for multisectoral nutrition was noted among key political leaders, as was limited prioritization of nutrition as a development agenda.

**Politicians’ priorities.** Politicians are more concerned with issues that affect the community in significant ways, namely the severe drought and the attendant effects such as conflicts, acute lack of food, and outbreak of diseases.

Limited gender representation and equity. Efforts to support women’s equal representation at the cabinet level or decision-making levels are ongoing but hampered by persisting cultural beliefs and attitudes.

**Limitations**

The PICA assessment used a group self-assessment methodology around five key capacity themes but did not assess sector-level capacities. A capacity assessment for each department contributing to nutrition outcomes would be required to understand the capacity gaps and opportunities in each department.

The capacity assessment assessed county-level structures and systems but did not consider the lower subcounty, ward, and village levels.

**Implications for Nawiri**

1. The MSP-Ns at county level have plans to strengthen multisectoral approaches at the county, subcounty, and ward level, and improve capacity across 5 broad themes and 16 capacity areas (see Table 1 below). The MSP-N will monitor capacity-strengthening efforts.

2. To gauge progress and inform additional multisectoral nutrition actions, additional HOCAI processes should be adapted during and after capacity-strengthening efforts.

3. Promote inter-county learning on capacity strengthening; for example, share experiences, challenges, and best or novel practices/approaches in sustainably addressing acute malnutrition.

**Understanding Nutrition and Health Systems Drivers of Acute Malnutrition – Desk Review (Catholic Relief Services, 2021d)**

**Research question:** To what extent has the functionality of nutrition and health systems in the northern ASALs influenced persistent Global Acute Malnutrition (PGAM)?

**Overview and methods:** The study focuses on how the health system functionality affects persistent acute malnutrition, i.e., the basic/systemic drivers of acute malnutrition.8

8 Research Area 1: Key Question 3.
The objectives of the review are to determine the extent to which the functionality of the nutrition and health systems in Kenya’s northern ASALs has influenced persistent acute malnutrition rates and to propose how identified weaknesses can be addressed through Nawiri’s programming to strengthen the nutrition and health systems.

The primary focus of this review addresses the underlying cause, “access to healthcare and healthcare environment,” as well as the systemic drivers of malnutrition linked to health systems.

**Key findings**

**Numbers of acutely malnourished children admitted to outpatient therapeutic and supplementary feeding services in both counties remained consistently high** over the 10-year period and has a seasonal pattern.

**This review confirms findings from other work** that highlight persistent emergency levels of GAM in the ASALs, which fluctuate seasonally.

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**Table 1. County capacity assessment themes and areas**

<table>
<thead>
<tr>
<th>Capacity themes</th>
<th>Capacity areas</th>
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<tbody>
<tr>
<td><strong>Policies, programs, and frameworks</strong></td>
<td>Political commitment and government leadership</td>
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<tr>
<td></td>
<td>Policy, multisector nutrition strategies and plans</td>
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<td></td>
<td>Supportive operational plans, technical guidance, and protocols for implementation of multisectoral nutrition approaches</td>
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<tr>
<td></td>
<td>Sectoral commitment</td>
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<tr>
<td><strong>Resources (human, financial) and infrastructure</strong></td>
<td>Adequately skilled human resources at all levels</td>
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<td></td>
<td>Performance oversight/supervision/monitoring</td>
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<td></td>
<td>Nutrition financing and resource mobilization</td>
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<tr>
<td></td>
<td>Infrastructure</td>
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<tr>
<td><strong>Coordination and partnerships</strong></td>
<td>Partnerships, collaborations, and coordination of nutrition actions at all levels</td>
</tr>
<tr>
<td><strong>Evidence-based decision-making</strong></td>
<td>Information skills, monitoring and evaluation (M&amp;E), and reporting</td>
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<td></td>
<td>Effective reporting and dissemination</td>
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<td></td>
<td>Organizational and adaptive learning</td>
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<td></td>
<td>Problem assessment/identification</td>
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<tr>
<td><strong>Cross-cutting issues</strong></td>
<td>Gender and related issues</td>
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<tr>
<td></td>
<td>Risk management</td>
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<td></td>
<td>Environmental sustainability</td>
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</table>
Within the health system of Kenya’s northern ASALs, there are many factors that are likely to be contributing to these high and persistent GAM levels. There is a chronic deficiency in allocation of resources to health and nutrition. There is sub-optimal positioning of nutrition in development, and limited understanding, guidance, and support from health leadership for the implementation of nutrition policy/strategy. Issues around poor quality and timeliness of health and nutrition data collection, and inadequate data, constrain use of data for decision-making.

Inadequate distribution of health facilities and considerable capacity gaps in human resources for health that are constraining access to quality nutrition services in many locations contribute to high GAM levels. Insufficient and poor spatial distribution of health facilities and service arrangements—particularly outside of towns—inhibit access to nutritional services. Furthermore, the functionality of the community health system is hampered by vast geographical areas, persistent conflict, and low deployment of community health volunteers (CHVs). Challenges for service delivery include a demotivated and unsupported community health infrastructure and breaks in essential nutrition and medicine supplies.

**Limitations**

The study adopted a review of existing information, so any undocumented changes are unrecorded. There is limited inclusion of qualitative information to explain or analyze the more quantitative data.

Survey prevalence data were used to assess the burden of acute malnutrition. These data are known to underestimate suffering from acute malnutrition due to its high incidence. Along with general gaps in data (e.g., there are no acute malnutrition treatment coverage data available), this underestimation presents challenges to an accurate understanding of the “true” burden of wasting and the effectiveness of its treatment in the ASALs.

There is a large amount of data and findings around prevalence of acute malnutrition and its drivers linked to organization and prioritization within the health sector. The challenge of this review is formulating recommendations that will help policy and program implementers prioritize effective, feasible actions that will help to reduce high levels of GAM.

**Implications for Nawiri**

1. Nawiri should use financial and service data to advocate for increased allocation of budgets for the health sector at the national and county levels.
2. There is a need to focus on the support for community health service policies to improve functionality of community units.
3. Systems must be enhanced by strengthening activities on reporting, joint planning, budgeting, and leveraging technology for information generation and transmission.

**The Role and Potential of the Private Sector – Desk Review (Catholic Relief Services, 2021e)**

**Research questions:** What are the major food commodities sold and purchased that have the potential to help address acute malnutrition? What is the capacity of populations in Isiolo and Marsabit to reach and benefit from the food value chains?

**Overview and methods:** The main study aim is to understand the functioning of market systems, in particular the role of the private sector in addressing acute malnutrition. This includes an exploration of how the private sector can be leveraged to improve the availability, accessibility, affordability, and desirability of nutritious foods. The methods include a literature review and five key informant interviews.
**Key findings**

**Women are responsible for the sale of milk**, but men are responsible for livestock movement, which affects women’s access to milk. Camel milk is a major source of food and income. Local traders/sellers experience high losses in milk and meat markets.

**Most communities in Isiolo and Marsabit have pastoral livelihoods.** They sell livestock, milk, and meat, and purchase a substantial proportion of their food from the market (maize, pulses mostly). The prices of both vary seasonally as rains affect production and road access.

**The main markets in the districts double as food commodity and livestock markets.** Cereals and pulses are imported from central Kenya (Nairobi, Nakuru, Samburu) or Ethiopia. Prices increase from hub to tertiary markets.

**Local county traders are few and do not have the power to negotiate prices with larger traders, contributing to high prices.** Cereal (and other key commodity) supply is controlled by traders outside the districts. There are some indications that large traders engage in activities to increase profit: bulk buying in Ethiopia and sale of small quantities in Kenya, or the closure of certain markets (Kinna in the report).

**Livestock is sold in local markets and exported (out of the county).** Livestock buyers come from Nairobi, Meru, and coastal Kenya, and sell in markets in these cities. Demand for camel milk and meat has increased in urban areas (as has camel-rearing among non-traditional keepers).

There are private sector opportunities in the production, preservation, and processing of milk, meat, fish, tomatoes, and kale but the direct and indirect benefits and risks for nutrition require further exploration.

**Frequent drought affects price of foods bought and sale of livestock.**

**Market functioning is sometimes affected by conflict;** for example, some markets in Isiolo were closed due to insecurity at the time of the review.

**Limitations**

Literature on ASAL regions is limited, particularly on crop production and on consumption patterns. Price data are often old and out of date.

Available sources do not discuss the differences in the prevalence of acute malnutrition between the districts and whether markets and trade could explain the differences. There is no analysis of the role of different traders in food supply to the county. There is an assumption that private sector engagement is necessarily a positive for producers. A more exploratory examination is needed to consider impact on food security. There is little information on the impact of conflict on markets and trade (and ultimately food prices and access by groups).

**Implications**

1. There is need for an in-depth analysis of private actors in each stage of the food market system or network to understand their roles, influence (interests and motivations), and challenges faced. Roles, influence, and challenges need to be examined for key items bought (e.g., maize) and sold (different kinds of livestock).
2. Nawiri must examine the influence of government policies and regulations, and of conflict, on the marketing and trade of key commodities.
3. An important research gap is the market penetration and commercialization of the production of various foods such as nyir, camel milk, fish, etc., in Isiolo and Marsabit and their potential impact.
The availability and price of locally produced livestock products are strongly seasonal, with milk and meat readily available in the rainy seasons but more difficult to access and expensive in the dry seasons. Improved milk and meat preservation technologies and more widespread adoption of current technologies would help to even out these supply fluctuations. Existing meat processing and preservation techniques are all low cost and depend upon few purchased inputs or specialized equipment. These include drying meat, the use of heat, and the storing of desiccated meat in fat (Nyirinyiri). Most meat is sold fresh in butcheries. Common milk preservation techniques include boiling, fermentation, and (more rarely) the preparation of clarified butter. No mention was made in the study of smoking milk for short-term preservation or of by-products from the clarification of milk.

In Marsabit County, fish is mostly consumed along Lake Turkana and in towns. The main fishing ports are Loiyangalani, Ileret, El Molo Bay, Moite, and Telesgaye. An estimated 90% percent of the fish is sold outside the county, mainly as sun-dried fish. Small amounts of fresh fish are sold within Loiyangalani subcounty and transported for sale in Marsabit Town.

In Isiolo County, fish are consumed mostly in Merti and Isiolo, but the larger proportion is exported to other counties, including Nairobi and Busia. There are two types of fishing practiced: aquaculture and riverine line-capture fishing. In aquaculture, the main farmed fish are tilapia and African catfish, in which the production system is semi-intensive and for subsistence only. River fishing takes place along the River Ewaso Ng'iro for clarias, common carp, lungfish, tilapia, barbus, and labeo, which are either sold directly or taken to a government fish farm for holding and onward sale. There are 12 organized groups engaged in this trade.
Men do most of the fishing, but women are heavily involved in fish trading and retailing. The sale of fresh and fried fish in local markets is mainly undertaken by women, while men sell dried fish in distant markets such as Kisumu. Women fish traders purchase the fish at the shore and retail them either as fried or raw fish. Success in the fish trade has encouraged some women to invest in boats and hire fishermen.

The great contribution of this report is to document the vibrant and diverse small-scale commercial food sector in Marsabit and Isiolo Counties. The information on food processing, wholesaling, and retailing companies provided in the six-page table that is Annex A is particularly valuable for future project work.

Limitations
The underlying assumption is that better (and possibly more expensive) preservation techniques would increase the supply of meat and milk, especially milk in the dry season.

There is no discussion of the possibility that the supply of these products is a limiting factor, and that improved preservation might alter the seasonal distribution of their consumption or change the composition of the consumer population, but with little increase in overall product availability.

The study highlights “milk going to waste during the rainy season” without considering its role in sustaining young animals, which are eventually harvested by humans after improved livestock growth.

Implications for Nawiri

1. The report recommendations are generic—more capacity building, more financial support, increased supply of modern machinery for food processing and storage, nutrition education, etc. Targeted recommendations for specific kinds of capacity building, machinery, education, or financial support to address the specific, documented needs of particular groups are not given.

2. The report states that maize and rice are the primary staple foods in the study area and that both are commonly purchased. Almost no information or discussion is devoted to the value chains that supply these foods. As a result, the report does not look at where the great bulk of purchased or bartered food comes from. Given this oversight, what the report can say about the potential of the private sector to address acute malnutrition is limited.

3. Similar research gaps include the market around food aid, including resale by private sector actors (should this occur), and whether this resale constitutes value added or a distortion and reduction in value.
Climate Variability and Disasters in Kenya’s Arid and Semi-arid Lands (Marshak and Venkat, 2021).

Research question: What is the relationship between patterns of acute malnutrition with environmental trends, climate, and conflict shocks, in the two counties?

Overview and methods: Dryland environments are typically ecologically diverse and characterized by climatic aridity and rainfall variability, in time and space. Familiarity with seasonal and long-term climate and environmental variability is vital for understanding people's lives and livelihoods and for informing policy and program decision-making.

Key findings

Climate, seasons, and vegetation. Analysis of remote sensing data on climate (precipitation and temperature) and vegetation from 2000–2020 in nine Kenyan ASALs broadly confirm the bimodal rainfall pattern, the months of peak rainfall and peak temperature (with two exceptions; see below), and the extreme variability between and within counties, seasonally, and over years and decades.9

Regional differences between ASAL counties. Two or three counties show climatic differences from the general trend. For example, Turkana has only one precipitation peak and a small, less distinct second rainy season (shoulder); Marsabit has the lowest vegetation overall, and some of the hottest temperatures, but within Marsabit areas of higher elevation are cooler and experience higher rainfall; and Isiolo has a north to south annual rainfall gradient. These unique characteristics potentially help to explain regional differences.

Relationship between climate, environment, and acute malnutrition. Studies have shown increased vegetation and higher rainfall are statistically associated with better nutritional outcomes, while higher temperature is associated with worse outcomes. Higher normalized difference vegetation index (NDVI) is associated with better nutrition outcomes in the secondary data analysis, but this finding is likely capturing between-year as opposed to seasonal trends. Climatic characteristics can trigger the immediate and underlying drivers of AM. Without the appropriate data, the intermediary drivers can only be hypothesized.

Seasonality of nutritional outcomes. The few available quantitative studies that looked at seasonality show mixed results. Qualitative methods identify periods of drought and the dry season as linked with worse nutritional outcomes.

Disaster timeline. A review of online data on disasters from 2001–2019 shows a history of frequent covariate shocks affecting the two counties, including drought (3–6 episodes), floods (6–7 episodes), epidemics (1–3 episodes), and locusts. Isiolo and Marsabit were unaffected by shocks in 11 out of 20 years of data.

9 Short dry season (January to February (JF)) with temperature peak in February; longer rains (March to June (MAMJ)) with peak rainfall around April; long dry season (July to September (JAS)) with temperature peak in September, October; shorter rains (October to December (OND)) with peak rainfall around November.
Mismatch between disaster years and emergency levels of acute malnutrition. In Isiolo, malnutrition rates exceeded the emergency threshold in 2011, 2017, and 2020. Nutrition surveys were conducted at the beginning of the year in January/February, so they reflect conditions during the latter half of the previous years. In 2010, 2016, and 2019, floods and droughts were both reported in Isiolo. In Marsabit, emergency malnutrition rates were reported in June/July in four out of six drought years (2011, 2014, 2016, 2019). This illustrates the importance of seasonal timing of surveys. Disasters were not a significant predictor of nutrition outcomes in the secondary analysis.

Inconsistency across nutrition indices. MUAC and WHZ behave slightly differently across seasons, sex, and age group. MUAC mostly shows very limited seasonal variability and identifies younger children and girls as the most vulnerable, while WHZ identifies boys and older children as more vulnerable. This finding has implications for what nutrition data are collected for seasonal monitoring (NDMA) and how they are interpreted.

Limitations

Lack of attention to seasonality. Less than a third of papers reviewed considered seasonal variability in their design, while another third included no mention of seasonality. The remaining papers either mentioned the time of year of data collection or that lack of seasonal data was a limitation.

Implications for Nawiri

1. The diversity in geography and climatic variability has important implications for land use and livelihood systems, and for the generalizability of available research findings. Thus, it is critical for both programs and research to utilize remote sensing data on the most granular spatial level possible, in our case ward level rather than county level. Using ward-level data will ensure an accurate reflection of seasons rather than resting on assumed seasonal calendars that imply a consistency in the timing of seasons. In addition, it is important for Nawiri to understand seasonality through the perspective of local communities, as they have a far more nuanced understanding of the significance of the seasonal transition from dry and to rainy seasons.

2. Evidence from analysis of remote sensing data confirms the relationship between climate (temperature, rainfall), environment (vegetation), and child malnutrition. Thus real-time remote sensing data should be used to define seasons.

3. Altogether, the literature review points to the dry season as being a critical time for AM, but with insufficient information on when in the dry season. The secondary seasonality analysis is inconclusive. Furthermore, the start of the second rainy season around September/October is potentially particularly important, as it is also one of the peak temperature periods. However, the very limited evidence warrants further investigation.

4. Prevention programs should be designed and targeted to address specific seasonal drivers.
References


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