WHAT is the state of acute malnutrition in Marsabit and Isiolo Counties and WHO is at risk?

Background

Child acute malnutrition persists in dry-land contexts and often exceeds emergency levels despite significant efforts by many actors. Prevention of persistent acute malnutrition is hindered by a lack of attention to the role of the basic drivers, namely, environment and seasonality, livelihoods, and systems and institutions **(Figure 1).**

Research Methods

The mixed methods study took place in four sentinel sites across Isiolo and Marsabit Counties from September 2021 through September 2022 **(Figure 2)**. Each of the sentinel sites represents distinct livelihood strategies **(Figure 3)**, each comprising multiple villages and fora **(Table 1)**. The study collected 6 rounds of quantitative survey data and iterative qualitative inquiries.

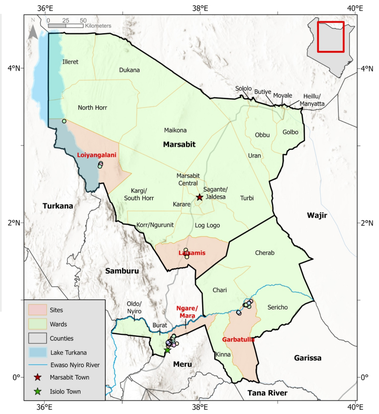

Figure 2. Map of Marsabit and Isiolo Counties sentinel sites.

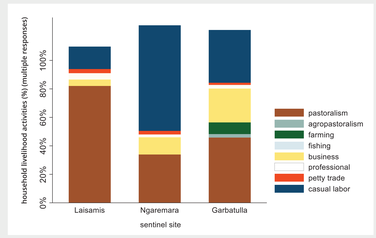

Figure 3. What does your household do for a living by sentinel site?

Sentinel Site	Sub-location	# of household level observations
Laisamis	Koya, Sakardala (and fora)	712
Loiyangalani	Loiyangalani, Moite	No survey collection in year 1
Garbatulla	Malkadaka, Muchuro, Kombola	762
Ngaremara	Ngaramara, Manyatta Zebra, Attan, Aregae, Kisile, Kiwanja	946

Table 1. Sentinel sites, sub-locations and livelihood systems, and sample size

1

Key Message

The sentinel sites persistently experienced above the emergency threshold of acute malnutrition (15%) (using weight for height z-scores/WHZ) (Figure 4); however prevalence varied by location.

- Emergency levels of acute malnutrition occurred during a drought **(figure 4)** but despite significant investment from humanitarian and development actors.
- Laisamis had significantly higher prevalence of acute malnutrition (23%) compared to Ngaremara (15%) and Garbatulla (17%).

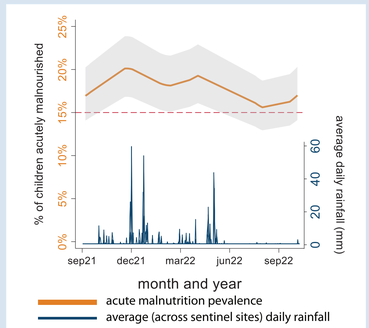

Figure 4. Acute malnutrition (using WHZ) and rainfall over time

2

Key Message

Older children (36-59 months), boys (Figure 5), and children with a female caretaker with a worse nutritional status were more likely to be acutely malnourished.

- 20% of children 24-59 months were acutely malnourished compared to 13% of children 6-23 months. The qualitative data identified several hypotheses for this relationship:
  - i. Older children are likely to be more vulnerable during high levels of food insecurity while in more 'normal' times, younger children are more vulnerable due to higher susceptibility to disease.
  - ii. Increased reliance on secondary caretakers for older children when women migrate to the fora or have an increased workload.
- 20% of boys were acutely malnourished compared to 16% of girls, consistent with research across Africa showing boys are more vulnerable when it comes to nutrition, morbidity, and mortality.

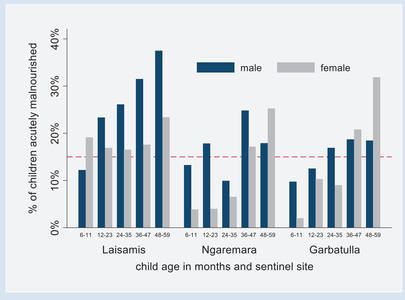

Figure 5. Acute malnutrition (using WHZ) by sex and age (in months) by sentinal sites

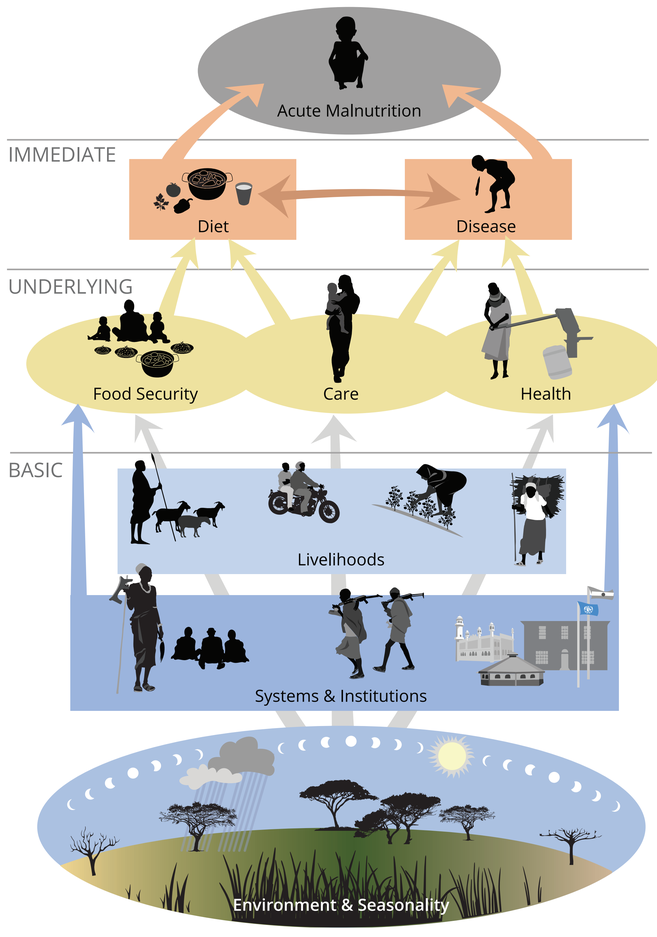

Figure 1. The drivers of child acute malnutrition.

3

Key Message

Few individual and household-level variables were consistently associated with acute malnutrition, pointing to the role of basic drivers on the community-level: livelihood systems, institutions, and environment and seasonality (Table 2).

Indicators		Ngaremara	Garbatulla	Laisamis
Morbidity + healthseeking behaviour**	Child sick (2 weeks recall)	75.9%	71.2%	**53.5%**
	Malaria-confirmed	6.0%	20.3%	12.4%
	Watery diarrhea	13.4%	6.5% ***	9.4%
	Fever	20.7%	48.5% ***	53.7%
	Respritory illness	55.1%	54.1%	43.0%
	Health seeking behaviour for sick children	96.9% ****	87.7% ****	76.6% ****
WASH**	Distance to main water source(<500 meters)	81.3%	67.4% ***	41.4%
	Household type of toilet (open defecation/bush/garden)	33.2%	40.0%	90.6%
House Food security	House Food Insecure Access Security (HFIAS) (Severe)	93.9%	**86.5%**	75.5%
Complementary feeding (6-23 months)*	Minimum Meal Frequency (MMF)	36.1%	54.8%	33.3%
	Minimum Dietary Diversity (MDD)	32.8%	14.3%	9.3%
	Minimum Acceptable Diet (MAD)	14.8%	9.5%	5.6%
Child Immunization**	Fully immunized	74.7%	44.1%	56.8%
Bed nets*	Use of bednets	**75.9%**	74.2%	49.5%
ANC*	≥4 times	57.3%	71.3%	57.4%
Deworming*		81.7%	85.1%	74.0%
Vitamin A supplementation in the last 6 months *		78.5%	81.4%	65.7%

*Annual survey
** Average of the 6 rounds of data collection
*** Seasonal variability
**** Sept 2022- Health facility shot up in all sites- improved drug supply

Table 2. Potential drivers of acute malnutrition

Implications

1. The persistence of emergency levels of acute malnutrition indicate that the appropriateness, coverage, and efficacy of typical programs aimed at prevention and emergency response need to be reviewed.
2. Older children are more likely to be acutely malnourished across all of our sites and recently for Kenya broadly:
   - Nutrition interventions need to go beyond the first 1000 days.
   - WHZ might be more appropriate than mid-upper arm circumference (MUAC) for nutrition surveillance, as MUAC is better at identifying malnutrition in younger children.
3. Boys are more vulnerable than girls to acute malnutrition in our study and other research across Africa.
4. Child acute malnutrition is closely tied to the malnutrition of the female caretaker. Programming that aims to alleviate acute malnutrition needs to target and program for not only children of all ages, but also their household, particularly women.
5. To effectively address persistent acute malnutrition, it is crucial to understand community-level and basic drivers as laid out in the Nutrition Conceptual Framework for the Drylands. This shift requires the nutrition community to develop data collection, programming and policy approaches that go beyond the focus on individuals or households and address the basic drivers of acute malnutrition.

Acknowledgments:

This poster presents Year 1 preliminary findings from the USAID Nawiri longitudinal research study, implemented by a consortium led by Catholic Relief Services.

Research Team:

Tufts University: Helen Young, Elizabeth Stites, Anastasia Marshak. Achiba Gargule (Achiba.Gargule@tufts.edu)
Kenyatta University: Sophie Ochola, Elijah Odundo.

https://bit.ly/nawiri

Managing Risks and Opportunities for Malnutrition Prevention in the Kenyan Drylands

Background

Child acute malnutrition persists in dry-land contexts and often exceeds emergency levels despite significant efforts by many actors. Prevention of persistent acute malnutrition is hindered by a lack of attention to the role of the basic drivers, namely, environment and seasonality, livelihoods, and systems and institutions **(Figure 1)**.

Research Methods

The mixed methods study took place in four sentinel sites across Isiolo and Marsabit Counties from September 2021 through September 2022 **(Figure 2)**. Each of the sentinel sites represents distinct livelihood strategies **(Figure 3)**, each comprising multiple villages and *fora* **(Table 1)**. The study collected 6 rounds of quantitative survey data and iterative qualitative inquiries.

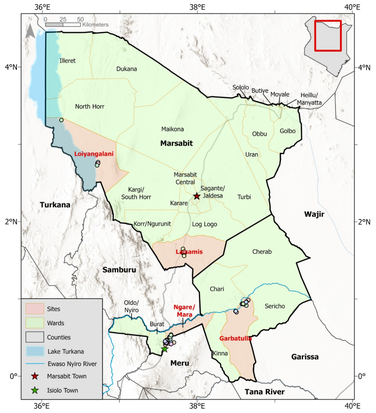

Figure 2. **Sentinal site location in Marsabit and Isiolo Counties**

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Table 1. **Sentinel sites, sub-locations and livelihood systems, and sample size**

1

Key Message

Pastoralism remains the main livelihood for most people and a critical source of human nutrition.

Pastoralism continues to be the primary livelihood in the region—culturally, economically, and environmentally—adapting to changing circumstances seasonally or annually. Productivity varies, although even during droughts pastoralism remains a vital livelihood **(Table 2)**.

Mobility follows predictable seasonal patterns, with variations to take advantage of opportunities (access to resources or trade) while minimizing risks (conflict or disease). **Figure 3** illustrates this mobility. Pastoral mobility is crucial for the health and nutrition of animals and people.

variable	*Laisamis n=712*	*Ngaremara n=786*	*Garbatulla n=640*
own cattle	54% (50-57%)	6% (5-8%)	9% (7-11%)
own camels	48% (44-52%)	1% (0-1%)	2% (1-3%)
own sheep	86% (83-88%)	45% (41-48%)	75% (71-78%)
own goats	88% (85-90%)	58% (54-61%)	78% (74-81%)
Tropical Livestock Units (average)	*5.83 (4.36-7.31)*	*0.18 (0.11-0.25)*	*1,33 (0.77-1.88)*

Table 2. **Household livestock ownership by species in Laisamis, Ngaremara, and Garbatulla**

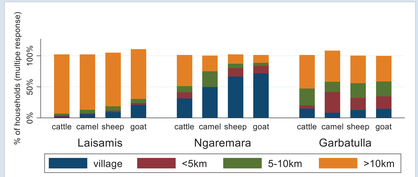

Figure 3. **Proportion of households who reported that animals (by species) were more than 10 km distance from the village, by sentinel site.**

2

Key Message

Livelihood diversification occurs for many reasons and can both benefit and undermine nutrition.

Livelihood activities are more diverse than in previous generations **(Figure 4)**. Individuals adapt their livelihoods to specific opportunities; small-scale business in Ngaremara and Garbatulla, fishing in Loiyangalani, and motorbike transport everywhere. These income streams enhance nutrition by bolstering livelihoods, supporting household food security, and spreading risk.

Pastoral households also diversify in response to livestock loss from climate shocks and conflict. Such diversifications are gendered, with women often resorting to precarious, labor-intensive and low-return livelihood activities.

Women's growing work burden increases their reliance on secondary caregivers, especially grandmothers. The strain on childcare is exacerbated by the caregivers minimal resources, including food, for the children they care for. Thus, acute food insecurity is compounded by over-stretched childcare, which in turn exacerbates child malnutrition.

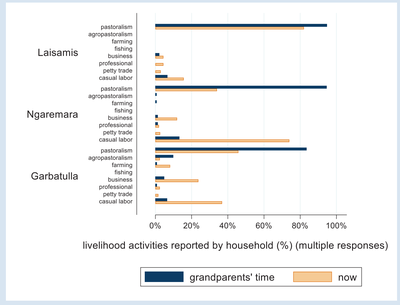

Figure 4. **Changes in household livelihoods since the grandparents time**

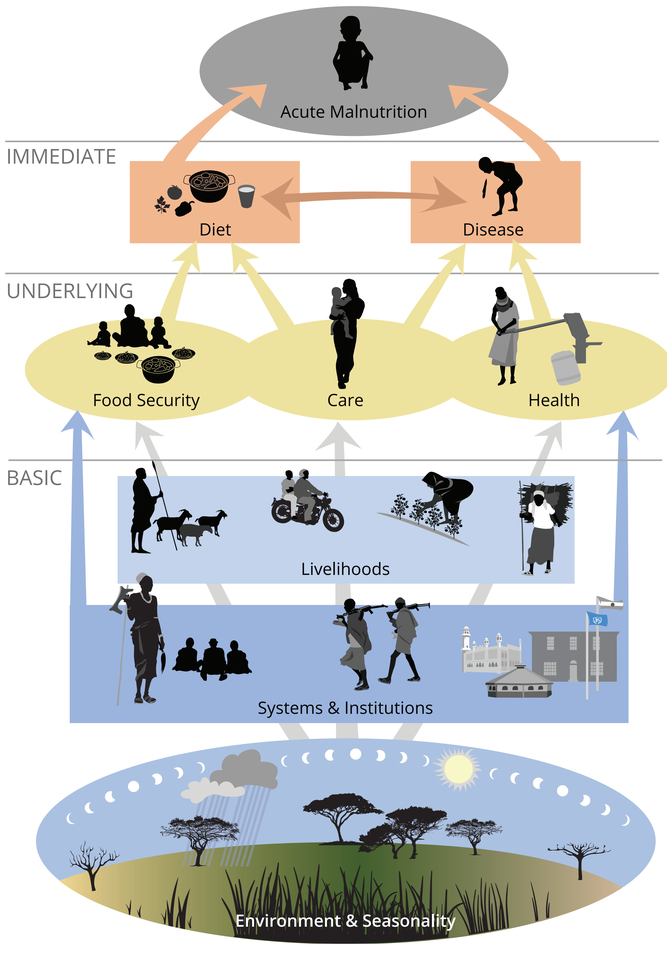

Figure 1. **The drivers of child acute malnutrition.**

3

Key Message

The coexistence of risks and resilience requires actions at all levels to leverage opportunities and support risk management strategies.

The resilience of pastoralism relies on adaptable local institutions and robust social support systems sustaining communities over the long term. In addition to mobility, herders employ diverse drought management strategies, such as extended *fora* stays, limited herd reproduction, night grazing, cooperative herding and management of dry season water use and security.

Natural resource management (NRM) institutions establish drought reserves, set rules of use, and cooperate with government agencies, showcasing a model for conflict mitigation, rule enforcement, and enhancing local adaptation practices. Kinship networks enable resource-sharing of livestock, food, and labor and exchanges between the villages and the *fora*. Motorbike transport and mobile phones boost these exchanges of food, milk, and cash.

Overall, pastoral social support mechanisms are protective in relation to child wasting and potentially help to lessen the burden on the most impoverished households.

Implications

Policy Priorities to Support Pastoralist Systems and Institutions:

- Protection of land and NRM rights and access to grazing reserves.
- Co-management of water resources.
- Conflict sensitivity in program design, conflict resolution and peacebuilding.
- Pastoral mobility, protection of migration routes and access to resources.
- Outreach for treatment, surveys and surveillance to include *fora* children and women.

Stakeholder Awareness and Learning on Nutritional Benefits

- Understanding of the nutritional benefits of pastoralism.
- Understanding of the significance of livestock mobility in supporting nutrition.

Support for Positive Livelihood Diversification:

- Strengthening value chains for milk products and fish.
- Enhancing transport systems and networks.
- Supporting irrigated farming.
- Supporting secondary caregivers (childcare clubs, grandmother outreach and targeting).

Conclusions

Persistent drought and insecurity have perpetuated a crisis narrative, emphasizing risk and vulnerability, leading to a continuous cycle of emergency response. Humanitarian efforts primarily address immediate and underlying drivers of child malnutrition but offer limited prevention post treatment. Without consistent and effective addressing of malnutrition's systemic basic drivers, this cycle of malnutrition, recovery and relapse persists.

The USAID Nawiri Longitudinal Study findings can inform strategies to address the basic drivers. At County level, priorities must include evidence based learning to ensure a balanced response, strengthening positive social support systems, and supporting pastoralism's potential for climate adaptation and food security.

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