Refugee camps and livestock: child malnutrition and health implications in Dadaab Refugee Camp, Kenya.

Rosie Herrington MSc BVM&S BSc(Hons) MRCVS – Clinical Research Training Fellow & ILRI Graduate Fellow

Correspondence: rosie.herrington@ed.ac.uk
Supervisors: Lian Thomas, Judith Okoth & Lisa Boden

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Background

In a world where the number of forcibly displaced people is at an all-time high, reaching over 110 million people in 2023, there is a critical need to identify means to keep those people safe and healthy as well as empower them to maintain or return to their livelihoods (UNHCR, 2023).

Given the increasing trends of global climate disasters and conflict this is likely to only increase in severity and so timely research and action is needed. The majority of refugees in Kenya come from a rural background yet livestock in refugee camps have been little researched, likely owing to a sense of urgency during crises which sees immediate life-saving initiatives prioritised. However, living in displacement has become a chronic situation for many and so investigation of such is overdue.

This study will for the first time gain empirical evidence on the nutritional impact of livestock ownership in the refugee camp context and the causal relationships behind this. Through identifying target areas for enhancing refugee child health and improving livelihood opportunities, this research has the potential to positively benefit displaced communities both in the short and long term.
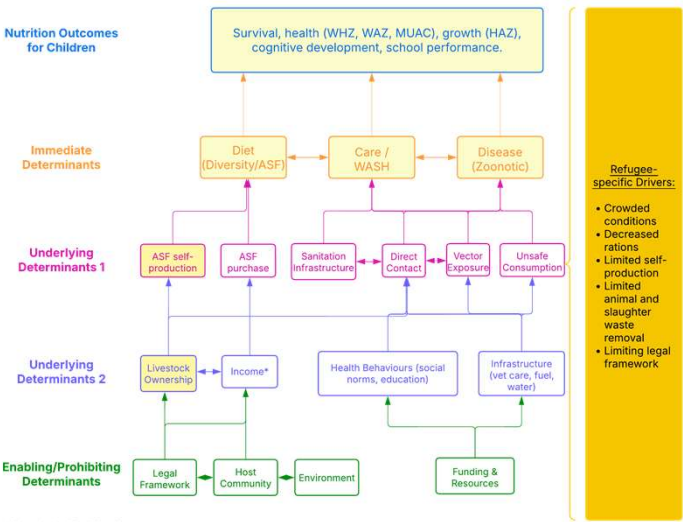
Conceptual Framework

Figure 1 – Conceptual Framework of the links between livestock ownership and health in refugee camp contexts (Authors own, 2025)

Research Questions

The overarching aim of this research is to investigate the benefits and risks of livestock keeping among refugees in East Africa. It will explore this through achieving five objectives:

- Evaluate critically the current literature on livestock's role on refugee health, nutrition, and livelihoods.

- Measure the difference in child nutritional outcomes between refugee households who own livestock and those who do not.

- Explore refugee perceptions of livestock ownership in the refugee camp context.

- Explore the causal relationships between livestock ownership and child nutritional outcomes in a refugee camp context.

- Formulate evidence-based recommendations for decision-makers and project-staff on livestock in refugee settings.
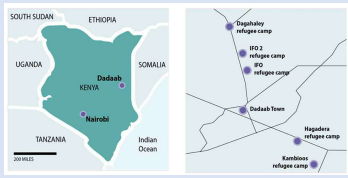

Figure 2 – Location of Dadaab Refugee Camp (McAlpine et al. 2020)

Participatory Modelling Study

What are refugee communities lived experiences and opinions on livestock's impact on health in the refugee camp?

This project utilises a concurrent embedded mixed method, combining quantitative nutritional outcome measuring and household surveys with participatory systems dynamic modelling (SDM) and fuzzy cognitive mapping (FCM) (Cresswell, 2009). The combination of these techniques is novel and has never been published in the literature.

Participatory modelling methodologies represent a flexible yet robust, cost-effective means of utilising and combining expert local knowledge in resource-constrained settings. SDM and FCM investigate associations and causal relationships between variables in complex scenarios, such as those explored in this study. Their results can be used to visualise complex systems for use in outreach/policy-making and to predict and model outcomes. They both represent rigorous techniques used in health, as detailed in recent reviews by Apostolopoulos et al. (2024) and Davahli et al. (2020).
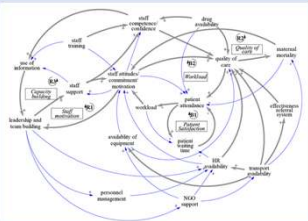
A final SDM diagram

Figure 4 – Example SDM Diagram (Lembani et al., 2020)
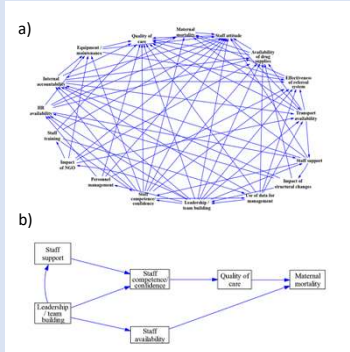
Steps in producing a SDM

Figure 3 - Example a) Interrelationship Diagraph and b) Related Seed Model (Lembani et al., 2020)

SDM / FCM process:

1. Problem Analysis and Individual Interviews
2. Primary thematic analysis and production of seed variables
3. Group model building (GMB) planning to produce seed model (Figure 3b)
   3.1 Rich pictures
   3.2 Interrelationship diagraphs (Figure 3a)
4. Group model building
5. Transcription into Vensim to produce single representative module (Figure 4)
6. Dynamic analysis of key feedback loops

Quantitative Nutritional Outcome Study

Does livestock ownership have an impact on nutritional outcomes in refugee settings?

Hypothesis - Children aged between 6 and 59 months old from refugee households who engage in livestock ownership have better nutritional outcomes than those that are from households that do not own livestock.

Camp leadership will be requested for two household lists, one owning any domestic livestock species and one without while matching the inclusion criteria of at least 3 months in the camp and having at least one child aged between 6 and 59 months of age. Households (sample size calculation described below) will be sampled using a random number generator. Examples of key data to be collected in the HH survey are dietary diversity, animal protein consumption, breast milk consumption, livestock use, and recent disease burden such as upper respiratory infections, fever, and diarrhoea.
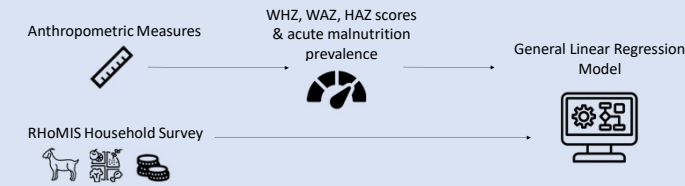
Anthropometric Measures → WHZ, WAZ, HAZ scores & acute malnutrition prevalence → General Linear Regression Model

RHoMIS Household Survey →

Figure 5 – Diagrammatic representation of nutritional outcome study methodology (Authors own, 2025)

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Anticipated Outcomes

Scoping Review | Context Mapping | Community Voices | Partnerships | Empirical Evidence | Policy Brief | Practitioner Recommendations