Nutrition Learning Paper

The Family MUAC Approach in Ethiopia: Lessons learned from Concern Worldwide's experience in Somali Region

Introduction

A Mid-Upper Arm Circumference (MUAC) tape is a simple, low-cost tool used to assess whether a child is acutely malnourished. It is wrapped around the middle of the upper arm to measure its circumference in millimetres, providing a quick indication of nutritional status. MUAC tapes are usually colour-coded using a traffic-light system; green, yellow and red so that even with minimal training, health workers and caregivers can interpret the results easily. Green indicates that a child is likely well nourished, yellow suggests moderate acute malnutrition, and red signals severe acute malnutrition requiring urgent attention and treatment. Because MUAC tapes are easy to use, they are particularly useful in community and emergency settings where equipment such as scales or height boards may not be available.

The Family MUAC approach builds on this tool by training mothers and other caregivers to screen children aged 6–59 months at home using a MUAC tape and to check for bilateral pitting oedema. This allows families to identify signs of acute malnutrition early and seek care promptly.

Context

Ethiopia has a population of approximately 132 million people, making it the 10th most populous country in the world. The proportion of the population living below the poverty line declined from 30% in 2011 to 24% in 2016, reflecting progress in poverty reduction[1]. However, recent shocks including the COVID-19 pandemic, the 2021 northern conflict, and the 2023 Amhara crisis, along with the declaration of a state of emergency, have reversed gains, contributing to displacement, unemployment, and widening inequality.

The country also faces recurrent seasonal increases in acute malnutrition and childhood illnesses, often linked to drought, lean seasons, flooding, population movement and disease outbreaks such as cholera, measles and malaria. These predictable peaks place sustained pressure on primary health services, particularly in remote areas where staffing and supplies are constrained.

Malnutrition remains a major public health concern. The 2024–25 Ethiopian Demographic and Health Survey (EDHS) reports that 40% of children under five are stunted and 5% wasted. Similarly, the 2021–2022 Ethiopian Food and Nutrition Strategy (FNS) baseline survey found that 41% of children 0–59 months are stunted (21% moderate, 20% severe), 11% wasted (6% moderate, 5% severe), and 23% underweight. Prevalence is higher in rural areas, among boys, children of mothers with no formal education, and households with lower incomes.

Regional disparities are pronounced, with stunting highest in Tigray (48%), Afar, and Benishangul-Gumuz (44%), while wasting peaks in Tigray and Somali (17%). Children in rural areas are also more likely to be wasted than those

[1] This information is from the World Bank's Poverty & Equity Brief (2023), and the 2015/2016 data is the most recent data available for measuring the poverty line. In addition, the Global Hunger Index, which measures malnutrition, child stunting, child underweight, and child mortality, has decreased from 53.6 points in 2000 to 27.6 points in 2022.

in urban areas (12% compared to 9%). Overall, more than 1.7 million children experiencing acute malnutrition live in rural villages, often far from health facilities where treatment services are provided.

While Ethiopia has a decentralised health system with services delivered at health post level under the Health Extension Strategy, frontline workers are frequently overstretched. The Family MUAC approach aims to address this gap by enabling caregivers to identify malnutrition early and refer children for treatment.

Overview

Concern Worldwide has been working with government health authorities in West Imey Woreda since 2023, and previously in Raso Woreda (2023–2024), to strengthen the delivery of nutrition and health services through the 'Emergency Nutrition Response in West Imey and Raso Woreda' programme *(*funded under the Irish Aid CHC funding stream).

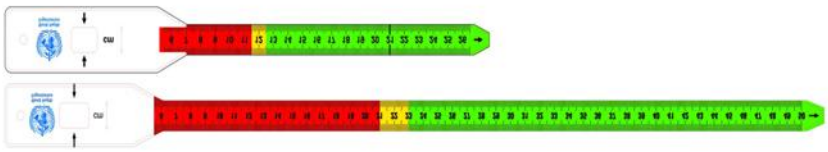
The project supports screening and treatment of acute malnutrition at health posts and health centres and screening, referral and promotion of optimal health and nutrition practices at community level. To help health workers anticipate and manage seasonal increases in caseloads of acute malnutrition and child illness, the project is also integrating the Surge Approach, an eight-step process to monitor and prepare for 'surges' in caseloads. Finally, the project has provided a platform to test practical innovations and support national advocacy.

The Family MUAC approach has been a central strategy for the CHC programme, beginning with a pilot in 2023-2024, which was one of the first in Ethiopia. The Family MUAC approach equips and trains caregivers to screen their own children (6–59 months) at home using a simple, colour-coded MUAC tape and by checking for nutritional oedema. These are the signs of acute malnutrition that health workers use to determine if a child should be admitted for treatment. By training parents and caregivers, the Family MUAC approach helps families identify malnutrition in their children early and seek care sooner.

The Approach

Family MUAC is implemented through a cascade model aligned with Ethiopia's national guidance for piloting Family MUAC. Health Workers (who deliver services at health centres) and Health Extension Workers (HEWs) (who deliver services at health posts) receive orientation and coaching on how to train caregivers, promote routine household screening and verify the measurements done by parents and their children who 'self-refer' to health facilities. Mothers and caregivers are then trained by HEWs in small groups (typically 10 to 15 mother and child pairs) using simple, locally delivered messages with practical demonstration and hands-on practice on the following areas:

1. Correct MUAC positioning and interpretation of the colour zones (green, yellow, red) on the tape.



2. Identifying nutritional oedema.

Trained caregivers are encouraged to screen their children regularly and bring any child with a red MUAC, yellow MUAC, or oedema to the nearest health post or health centre for confirmation and enrolment into nutrition services as appropriate.

Implementation Steps (as per the National Guideline for Piloting Family/Mother Mid-Upper Arm Circumference in Ethiopia April 2023)

1. **Contextual readiness check:** review malnutrition trends, screening coverage, access constraints and CMAM/IMAM capacity to absorb increased self-referrals.
2. **Define the design:** identify target kebeles, who will be trained (caregivers) and sensitised (leaders or fathers), training modality and screening frequency.
3. **Resource and prepare budget:** for training/supervision and procure colour-coded MUAC tapes/standard MUAC tapes; translate/adapt job aids and monitoring tools.
4. **Stakeholder engagement:** secure interest from health authorities and community structures; communicate that Family MUAC complements HEW screening.
5. **Cascade training:** train health workers/HEWs first, then train caregivers in small groups using demonstrations and hands-on practice on MUAC measurement and oedema checking.
6. **Referral and verification:** caregivers refer children with yellow or red MUAC or oedema; facilities verify, admit per protocol, and provide feedback to support caregiver accuracy.
7. **Maintain and monitor:** plan refresher support, spot-checks and tape replacement; track training outputs, self-referrals, verification results and learning for adaptation.

Results

Concern supported cascade sessions reaching 118 mothers (73 in West Imey; 45 in Raso) across 13 kebeles. The programme also provided on-the-job training for 14 healthcare providers (4 health workers and 10 Health Extension Workers (HEWs)), trained 11 Health Development Army members and community volunteers, and oriented an additional 28 HEWs during Surge and Infant and Young Child Feeding (IYCF) training. A total of 118 MUAC tapes were distributed directly to trained mothers, with a further 327 tapes pre-positioned at health facilities for replacement and use by newly trained caregivers.

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Between October 2023 and August 2024, trained caregivers made 782 nutrition self-referrals to health facilities across West Imey and Raso woredas. Of these, 409 children were verified by health workers, demonstrating the potential of family-led screening to increase community-level case detection and improve access to nutrition services, while highlighting the need for ongoing training, feedback, and support to improve referral accuracy.

During the pilot period, training focused on female caregivers, reflecting local caregiving practices in the Somali Region where women are typically the primary caregivers of young children. The programme intentionally started with mothers to test the approach before exploring opportunities to engage fathers and other household decision-makers in future implementation.

Key Challenges and Lessons Learned

Managing incentive expectations and sustaining engagement: Some caregivers associated screening with receiving treatment commodities (for example RUTF or RUSF), and when children were not admitted for treatment, this could reduce the motivation to return.

Learning: Clear, consistent communication is essential to explain the purpose of screening (early detection, not guaranteed treatment). Strengthening non-monetary motivation such as social recognition and peer support through mother-to-mother groups helps sustain engagement and reinforce appropriate care-seeking behaviour.

Maintaining caregiver skills and routine practice: Caregivers often require ongoing support to maintain correct MUAC measurement techniques and continue regular screening, while household-level supervision is not feasible.

Learning: Integrating refresher support, periodic spot-checks, and follow-up into existing community platforms helps reinforce skills over time. Keeping training practical; using short, clear messages in local languages, combined with demonstrations and hands-on practice builds caregiver confidence and improves accuracy, particularly in low-literacy contexts.

Ensuring quality assurance and positive caregiver experience: Differences between caregiver-identified cases and facility verification can discourage future care-seeking if feedback is not handled appropriately.

Learning: Health facilities need to combine consistent verification with supportive, non-judgemental communication. Caregivers benefit from clear explanations of results, reassurance to return in future, and guidance on what to do next. Establishing and reinforcing a clear, simple referral pathway; what to do for yellow/red MUAC or oedema, where to go, and what to expect, strengthens trust and encourages timely care-seeking.

Managing MUAC tape supply and replacement: MUAC tapes can be lost or worn out over time, and replacement requires ongoing supply management.

Learning: Pre-positioning replacement MUAC tapes at health facilities, alongside routine stock tracking and planned re-supply, is essential to sustain household-level screening. Sustainability depends on ensuring systems are in place from the outset for distribution, replacement, and follow-up, rather than relying on one-off provision during initial training.

Addressing gaps in treatment supply (TSFP): Intermittent availability of TSFP commodities can undermine caregiver confidence when referrals do not result in treatment.

Learning: Regular and proactive communication with communities on service availability is critical. Informing caregivers in advance about stock-outs or service interruptions helps reduce unnecessary facility visits, manage expectations, and maintain trust in the referral system.

Strengthening community acceptance and uptake: Uptake can be limited when key household decision-makers are not engaged and where training is delivered in isolation.

Learning: Engaging fathers, religious leaders, and other influencers strengthens trust and supports wider adoption at household level. Integrating Family MUAC into existing platforms such as Mother-to-Mother Support Groups enhances reach, reinforces behaviour change, and helps establish local role models, contributing to more sustained community uptake.

Family MUAC orientation. Photo: Concern Worldwide.

Recommendations

Embed Family MUAC within routine systems: integrate caregiver training and follow-up into existing outreach, GMP/CMAM days, and community group platforms (e.g., mother-to-mother groups) to reduce reliance on ad hoc campaigns.

Strengthen quality assurance: use practical competency checks during training, periodic spot-checks, and structured feedback at facilities to maintain correct MUAC technique and oedema identification.

Clarify the caregiver referral pathway and expectations: standardise messages on what to do for yellow/red MUAC or oedema, where to go, and what services are available; proactively address incentive expectations through clear, consistent communication.

Plan for MUAC tape supply and replacement: pre-position replacement tapes at health posts/centres, track distribution and replacements, and include re-supply in routine logistics planning to avoid interruptions.

Family MUAC orientation. Photo: Concern Worldwide.

Increase community acceptance through broader engagement: involve fathers, religious leaders and other household decision-makers in sensitisation to reinforce timely care-seeking and reduce stigma or misconceptions.

Institutionalise learning and monitoring: routinely record caregiver self-referrals, verification outcomes and admissions, and use the data to refine training content, supervision frequency and targeting (including seasonal peaks).

Budget for refreshers and supervision from the outset: include at least biannual refresher support and defined supervision responsibilities (HEW/HW) to sustain practice beyond the initial training period.

Conclusion

The Family MUAC approach has helped reduce the workload for caregivers. While its primary goal was to enable timely detection of malnutrition and referral to the nearest health post, caregivers have also reported that they no longer need to visit the health post for routine monitoring unless their child's MUAC measurement falls into a yellow and red colour zone according to the MUAC tape.

Following the success of the pilot, the approach has since been incorporated permanently into the CHC. The Ministry of Health subsequently decided to pilot the approach amongst different woredas with support from both Concern and other international organisations. Concern Worldwide and other implementing partners support the Ministry of Health's Family MUAC programme by building the capacity of health extension workers and caregivers to identify malnutrition and refer cases early, documenting and generating learning from implementation, monitoring referral accuracy, and providing essential tools and materials to support standardised data collection and effective programme delivery.

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Place of registration Dublin, Ireland. Registered number 39647. Registered Charity No. CHY5745.