

# Mobile Health and Nutrition Team Service Implementation in Somali and Afar Regions of Ethiopia: A Qualitative Implementation Science Study

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**Background:** Ethiopia has been implementing Mobile Health and Nutrition Teams (MHNTs) to improve the accessibility of essential healthcare services for unreached populations with poor infrastructure to ensure health for all target by Universal health coverage (UHC). However, the current implementation status of this MNHT is not assessed.

**Objective:** This study aimed to capture the current implementation status of the MHNT from the program managers, supporting partners and decision makers at each level of the health system structure in Afar and Somali regions.

**Methods:** We conducted qualitative study with phenomenological study design. The data was collected from RHB MHNT coordinator, woreda health office MHNT coordinator, MHNT leader and representatives from implementing partners. The interview guides were developed using the CFIR framework.

**Results:** Out of the 17 respondents, 13 responded all the standard service packages a MHNT is expected to deliver (76.5%). Overall, the KIIs mentioned that the MHNTs are effective in ensuring access and quality of health services. MHNT strategy has high demand and acceptability by the community and the service providers. The main barrier to program implementation is the gap in service integration within and across sectors. Inadequate staffing of the MHNT, gaps in ensuring proper professional mix, frequent turnover of contract health workers, and skill gaps hamper effective and sustainable implementation of the program.

**Conclusion:** MHNT establishment, effectiveness, acceptability and sustainability in the implementing woredas of Afar and Somali Regions is very promising. The culture of MHNT documentation and reporting needs some improvement. Besides, community engagement and government ownership are good drivers for sustainability of MHNT. Standardizing and adding additional professionals with capacity building is crucial to ensuring service quality. Furthermore, community mobilization and woreda leadership commitment boosting will be needed for granting sustainability. Finally, national scale up of this alternative strategy is recommended through standardized implementation modality.

**Keywords:** Mobile Health and Nutrition Team, Consolidated Framework for Implementation Research, implementation, Ethiopia

## Background

Most countries proclaim that populations have the right to have universal and equitable access to the highest acceptable health care.<sup>1-3</sup> As an alternative approach, mobile health teams are used to deliver health service for hard-to-reach and underserved settings and has been traced back in the 12th century. Mobile health service is defined as delivering health care for the community despite the clients need of travel to get the health services.<sup>4-6</sup>

In developed countries mobile health service provision is considered as an innovative alternative intervention model for providing health service for those in need.<sup>7-9</sup> Similarly, it has been recognized as the more effective service delivery approach in conflict and drought affected settings, in pastoral areas with marginalized populations as indicated by studies conducted in Afghanistan,<sup>5</sup> Chad<sup>10</sup> and Nigeria.<sup>11</sup> Similarly, Ethiopia has also initiated mobile health services introduced by development partners in two pastoralist (Somali and Afar) regions of the country.

Ethiopia has an estimated 115 million population by the year 2021 where the majority (79.2%) of the population resides in rural settings.<sup>12</sup> In addition, pastoralist communities are estimated to be 12% of the Ethiopian population. Despite the progress in the past two decades, the country is among the poorest nations globally with absolutely feeble human development metrics. Ethiopia still encounters unprecedented social and economic hardships, including political unrest, high levels of poverty, political unrest, ethnic conflicts, poor infrastructure, drought and food insecurity and inadequate social services.<sup>13,14</sup>

The constitution and health policy of Ethiopia also stated that all citizens have the right to access healthcare services.<sup>15–17</sup> The government of Ethiopia implemented MHNT program in both regions in order to improve accessibility and quality of essential healthcare services for unreached populations such as Pastoralists and Agro-pastoralists with poor or limited basic infrastructure in order to ensure universal health coverage UHC. However, the current implementation status of this MHNT is not assessed in a comprehensive manner.

## Objective

This study aimed to capture the current implementation status of the MHNT from the program managers, supporting partners and decision makers at each level of the health system structure in Afar and Somali regions to inform policy and practice at national level.

## Methods

### Study Design and Period

The study employed a qualitative phenomenological design. The study has been conducted in Afar and Somali regions of Ethiopia between January 1–30, 2022. A total of six woredas from Afar and Somali Regions having the MHNT program were included.

### Study Population and Sample Size

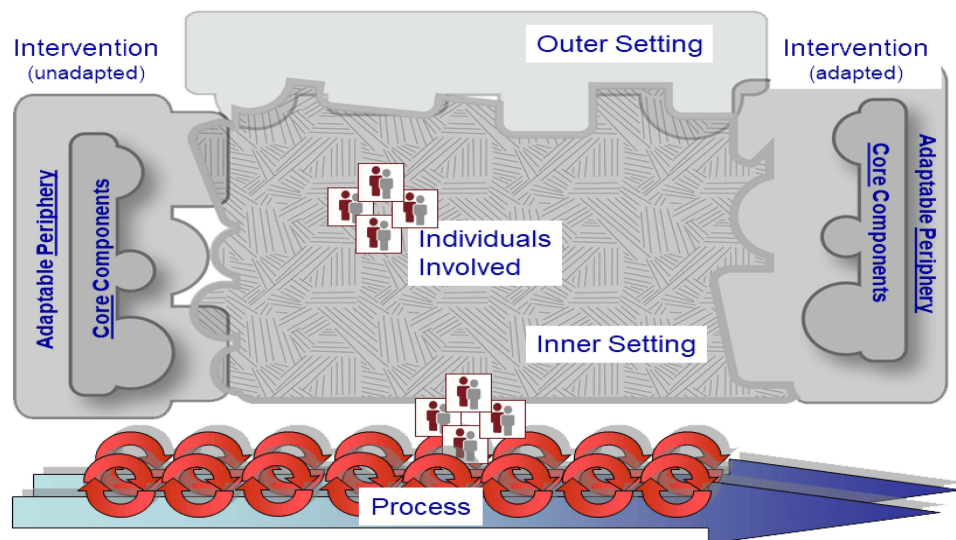
The study consists of document review and interview of study participants who were part of the MHNT program implementation. The study participants were grouped into: RHB MHNT coordinator, woreda health office MHNT coordinator, MHNT leader and representatives from active implementing partners. The final sample size for this particular study was determined by considering the point of information saturation. For this particular study, 17 study participants were included for the KIIs. Respondents were selected purposively based on their work positions, experiences and organizational affiliations.

### Data Collection and Management

The interview guides were developed using the elements of the CFIR framework. We adapted the CFIR by considering the realities of the local setting and the nature of the MHNT program as an intervention package.

The CFIR is being widely used in implementation research because of its comprehensive overarching constructs to include multilevel factors that affect the implementation of interventions. The CFIR contains five major domains: intervention characteristics, inner and outer settings, individual characteristics, and the implementation process (Figure 1). These areas interact in a complicated way to influence implementation effectiveness. In our study, with the CFIR framework, the intervention is the MHNT program; the outer setting entails the political commitment and donor support; the inner setting encompasses the health office and health facility readiness along with functionality of MHNTs; characteristics of individuals refer to the health workers commitment and perception of the community about the MHNT, and the process of implementation has been considered in terms of facilitators and barriers of implementation.

The data collection tool was reviewed by experts on the field and corrections were made accordingly. In addition, the data collection tool was pretested before actual data collection. We collected the data from the study participants by using key informant interview and document review techniques.



**Figure 1** CIFR diagram with domains and respective constructs.

We undertook in-depth interviews with key RHB MHNT program coordinators, woreda coordinators and representatives from implementing partners to capture their views on the establishment, effectiveness, existing challenges and the sustainability of the new program in both regions.

Additionally, data were collected from activity and technical reports that showed the program performance at each level including management minutes, administrative and supportive supervision. Besides, data on health care utilization was considered for the period between 2010 and 2013 to assess the trend over time. The data was collected by senior trained experts working at the Ministry of Health of Ethiopia. The qualitative data was captured with the audio-recorded face-to-face interviews. During data collection, probing questions were asked to respondents to further explain the questions in-detail. Each interview took on average 45 minutes.

## Data Analysis

The data analysis was done by the six research team members (1 PhD and 5 MPH) having expertise in qualitative studies. First, audio-recorded interviews have been transcribed verbatim and then translated to English. Subsequently, the investigators checked the correct transcription and translation of the audio file. Open-code software was used for final data analysis. Accordingly, coding was done to capture and relate existing patterns. Then, themes were identified based on related patterns from the data. At the time of analysis, revisions to identified themes and codes were considered taking in to account the information captured based on subsequent additional interviews. Eventually, to organize the findings of this particular study, thematic analysis was considered with illustrative quotes presented as necessary.

## Ethical Consideration

Ethical clearance to conduct this study has been secured from the Ethiopian Public Health Institute (EPHI) IRB. During data collection, informed consent was sought from each study participant. Moreover, confidentiality of respondent's information was ensured during data analysis, interpretation and presentation.

## Results

This exploratory assessment informed the status of MHNT service implementation modality. In addition, the assessment summarized both internal and external facilitators, barriers of the service provision modality and the overview of respondent's perception on the effectiveness, acceptability, sustainability and their personal recommendation regarding MHNT program. The results are organized by five major domains as presented below.

## Program Establishment and Implementation Process

The program started in 2004 for malnutrition, measles, and drought response just as a fire-fighter mechanism without any identified structure and guideline targeting selected woredas in the Somali region. The formal guideline-based practice started in 2011 with a broad goal and structured technical and leadership structure.

Almost all the respondents from regional level coordinators to MHNTs level indicated there is aligned planning of MHNT service with all concerned stakeholders at the woreda level. The planning follows annual Woreda-based planning and the MHNT specific plan disaggregated by the identified hard-to-reach areas.

One of the Woreda MHNT coordinator explained that:

Following annual woreda based planning, the monthly and weekly plan of MHNTs is prepared at woreda and PHCU level.

A detailed movement plan and schedule communicated to the community through the social mobilizer and kebele leaders.

The reporting of the MHNTs follows the regular District health information system 2 (DHIS2) trends. But, they did not meet the standard data completeness and timelines. Moreover, the documentation and archiving are poor. But most of the visited teams did not regularly review performance against the plan before reporting. A delegate from UNICEF and RHBs also suggested incorporation of MHNT reporting column on DHIS2 for easily tracking of the performance by MHNT service providers.

The number and professional mixing of the team indicated below the standard in all assessed MHNTs. In addition, MHNT team members technical and knowledge gap was reported in both regions.

One of the respondents mentioned that

Even those with standard team composition fail to avail themselves in all the planned work sites under their catchment causing compromised service provision in terms of access and quality.

A delegate from USAID Transform-HDR also mentioned that

...during implementation, health workers with necessary professional mix should be selected to provide service through prescheduled and selected hard to reach areas in the PHCU catchment.

Another respondent from Gewane Woreda commented that:

MHNT standard is present but, there is gap in availing the prescribed mix always and at all places.

Most of the visited MHNTs reported that the logistics and supply for providing service packages are available. But most of the teams missed having anthropometric measurements, vital sign measurements, other diagnostic aids, registration, and recording materials. Moreover, the need for additional service packages is reported from Afar and Somali regions.

## Program Effectiveness

Overall, the key informants mentioned that the MHNTs are effective in ensuring access and quality of health services. In this study, the MHNTs were reported as an effective modality to manage health conditions during drought and emergencies.

Somali RHB MHNT coordinator reported that

The MHNT play a key role in emergency response and active surveillance as they are always reaching the most unreachable and pocket areas that are not reachable with formal facility-based health service provisions.

There is also a universal acknowledgment for the MHNT program in providing service to the underserved communities in this particular study.

One of the respondents mentioned that:

The services provided by the MHNTs to the community remain adequate in terms of scope and addressing priority health services. In particular, service uptakes increment in most service delivery indicators has been observed especially in maternal and child health service areas.

In terms of cost-effectiveness, some respondents mentioned that the program incurs a huge budget related to the vehicle, fuel, and per diems. On the other hand, the majority of the key informants believe that it is still cost-effective since the MHNT is designed and implemented to address population groups that are not reached with formal facility-based health service provision.

## Facilitators and Barriers

There have been several success factors in the functioning of MHNTs in both regions. The installation of government ownership of the program and institutionalization using reviewing performances and supportive supervision platforms is one of the facilitators for the successful implementation of the program. The comprehensive support from developmental partners in both regions is another facilitator for the effective implementation of the program.

Different challenges compromise the effectiveness of MHNTs in both regions. The main barrier to program implementation is the gap in service integration within and across sectors at all levels of the health sector.

Goljano woreda MHNT focal mentioned that

there is gap in integration within sector and across sectors (other sectors consider issues of IDPs, Hard to reach areas and even natural disasters as only the issue of health sectors).

The inadequate staffing of the MHNT, gaps in ensuring proper professional mix as per the standard, frequent turnover of contract health workers, and skill gaps hamper the effective and sustainable implementation of the program in both Afar and Somali regions.

A MHNT coordinator reported that

staffs being contract there is turnover and capacity gap among MHNT teams.

The implementation of the MHNT program is also largely dependent on NGO funding creating donor fatigue which imposes sustainability issues for the future. Besides, the recurrent budget shortage, especially for vehicle fuel and maintenance is a common challenge reported by the key informants.

Gewane Woreda MHNT coordinator said that

...in the woreda, there is recurrent budget shortage specially for Vehicle fuel and maintenance.

The other challenge that hinders MHTNs program implementation is movement restraint with concerns like recurrent conflicts and associated security issues in both regions. On top of this, the unpredicted mobility of the community has also affected the service provided through the MHNT.

## Acceptability and Sustainability

Based on this assessment MHNT strategy has high demand and acceptability by the community and the service provider. Regarding the community satisfaction, the perception about the MHNT is huge and their testimonial is heartwarming. A respondent explained his perception by saying;

There is no doubt about the acceptability of the mobile health service in the community, MHNTs service providers and woreda experts as it is the only way in my view. We can reach the unserved community in all parts of the woreda.

Another respondent expressed his opinion about MHT as

...The backbone of Afar people.

In some areas, a community slaughtered goats to welcome and demonstrate their appreciation towards MHNT service indicating the community's acceptance and appreciation for the team and the service they provide. A respondent shared his experience of helping a mother through delivery and she called her newborn name following his name.

For sustaining the program, the key informants mentioned that government ownership is the good driver for sustainability with the leadership focus at each level of the health system. There is also a suggestion that the program should be scaled up at national level with tailored implementation strategies that take in to account the local context.

A coordinator from Afar region reported that

I recommend for the program to be led by the woreda and may be PHCU level.

Tulu Guled woreda health office head also complimented that: “National level policy and establishing structure at each level of the health system are important to ensure sustainability”.

## Discussion

This study showed that the MHNTs are effective in ensuring access and quality of health services. Based on this assessment MHNT strategy has high demand and acceptability by the community and the service provider. Institutionalization using reviewing performances and supportive supervision platforms is one of the facilitators for the successful implementation of the program. The main barrier to program implementation is the gap in service integration within and across sectors at all levels of the health sector. The inadequate staffing of the MHNT, gaps in ensuring proper professional mix as per the standard, frequent turnover of contract health workers and skill gaps hamper the effective implementation in both regions.

Overall, the key informants mentioned that the MHNTs are effective in ensuring access and quality of health services. All the KIIs indicated that the MHNTs are alternative solutions to address remote areas not covered by the static health service delivery approach which is consistent with a finding from another study.<sup>18</sup> Similarly, another study reported that MHNT programs are relevant to increase health service access based on the growing demands of the society.<sup>8,19</sup> A study from Afghanistan also showed that sustained and scheduled MHNT program implementation resulted in better performance on maternal and child health.<sup>5</sup> Likewise in Nigeria, dedicated mobile teams increase service access for remote settings.<sup>11</sup>

This study also showed that there is a universal acknowledgment on the need for MHNTs to provide equitable health care for the underserved communities. An evaluation study from UNICEF also reported similar finding where MHNTs could be considered as an option to support the existing routine health system in both regions.<sup>18</sup>

In terms of cost-effectiveness, some respondents mentioned that the program incurs a huge budget related to the vehicle, fuel, and per diems. On the other hand, the majority of the key informants believe that it is still cost-effective since the MHNT is designed and implemented to address population groups that are not reached with formal facility-based health service provision. Evidence also suggested that that mobile health teams are more effective strategies to improve health outcomes in developing countries.<sup>8</sup> A global report also showed that MHNT programs are cost-effective in remote and hard to reach areas.<sup>20</sup> On the other hand, MHNTs programs are reported as high-priced in terms of availing vehicles and human resource related costs.<sup>21</sup> This implies that the program has extra costs related to vehicle fuel and health workers DSA that would justify the need to consider adequate budget for national level implementation.

Pertaining to MHNT recruitment and deployment, usually, health workers having better commitment and experience are recruited for the MHNT program. Alongside this, medical kits and supplies for MHNT program are being made available through the RHBs and supporting partners in each region. Woredas and partners are also filling sporadic shortages of kits and supplies regularly. This is consistent with a report from another study where availability of kits and supplies for the MHNT program is much enhanced than routine approaches.<sup>18</sup>

One of the challenges that hinders MHTN program implementation is movement restraint due to concerns like recurrent conflicts and associated security problems in both regions. On top of this, the unpredicted mobility of the community has also affected the service provided through the MHNT. This finding corroborates with a study by Olaji et al which reported that movement restrictions affected the successful implementation of MHNT programs in pastoral areas.<sup>19</sup> This implies that the pastoral lifestyle and their movement pattern should be considered for appropriate design and implementation of effective MHNT strategy in the local context.

This study also indicated that MHNT service delivery approach is well accepted by both the community and health workers in Afar and Somali regions. The finding is consistent with another study which showed that MHNT program is documented as a convenient approach of health service delivery in the pastoral areas of Ethiopia.<sup>19</sup> In another study it has been also reported that the opinion of the society about the usefulness of the MHNT approach is entirely encouraging.<sup>18</sup>

This study also revealed that the implementation of MHNTs is vastly reliant on the NGO support which is consistent with another study.<sup>18</sup> Moreover, the cars used for the program are getting old and their price of maintenance is rising. This would result in frequent interruptions in service provision.

With regard to financing, both Somali and Afar regions cover the expenses of health workers deployed for the MHNT program. In addition, Somali regional health bureau allocates budget for maintenance of vehicles while partners cover the costs for fuel, supplies and purchasing of vehicles. This shows that national level scale up and sustaining MHNT program will continue as a challenge unless there are governmental funding mechanisms to own the program. A finding from another study also indicated that barriers to the MHNT program implementation should be addressed before integrated into the national health system.<sup>8</sup> This clearly shows that developing donor exit strategy and program sustainability plan towards MHNTs is necessary for its effective and standardized implementation at national level.<sup>18</sup>

## Implications for Policy and Practice

Though, not abundantly implemented yet in developing countries, MHNT programs are suggested as alternative approaches to provide health service for the underserved community.<sup>18</sup> Although the value of MHNT program is recognized in both regions, it has not been considered as optional approach for service delivery by the RHBs and consequently are not well budgeted. Hence, the FMOH, RHBs and implementing partners should develop a joint plan of action that will indicate on how the government health structure will take increasing accountability of financing MHNTs for long term sustainability.

While the ministry of health is looking for state-of-the-art models for brining health care to underserved areas at national level with an equitable manner, it is yet to approve and support the scale up of MHNT strategy at national level. Due to this fact, the FMOH has no large budget contribution to the MHNT program and similarly the RHBs are not mobilizing sufficient funding to support the program by their own. Hence, MHNTs in both Somali and Afar regions are entirely reliant on donor support. The findings of this particular study might guide the future realization of MHNT effective implementation as part of the routine health system of Ethiopia at national level. Moreover, MHNT standardization and scale up that considers possible challenges, may supplement the existing practice and augment the use of scarce resources. It might include designing mechanisms on how to integrate MHNTs with the existing care service delivery modalities. In addition, it is also important to revise and standardize the MHNT packages and the health work force requirements before planning national scale up.

Implementing partners that are currently supporting the MHNT program implementation should also closely work with the RHBs on smooth transfer and safe exit before withdrawal. Likewise, the model should be customized as an alternative health care provision modality in each district in the regions within the earmarked budget allocated from the government health offices. Finally, the MHNT program should also be led by each district for ensuring long term sustainability and efficient utilization of the scared resources.

## Limitation

The study did not address the cost-effectiveness of the MHNT program in terms of the operational costs in both regions. In addition, interviews would not best support to measure acceptability in this study. Besides, the qualitative findings might not fully support evaluation of implementation outcomes.

## Conclusion and Recommendation

Based on the current assessment MHNT establishment, effectiveness, acceptability and sustainably in the implementing woredas of Afar and Somali region is very promising. Community and service provider satisfaction and perception about the MHNT is huge and their testimonial is heart-warming. The standard professional mix and number of MHNT is not being abided in most of the teams. The culture of MHNT reporting, documentation and archiving in the two region needs some improvement. Besides, community engagement and Government ownership are the good driver for sustainability of MHNT service provision.

Standardizing and adding additional professional mix like GPs, Laboratory and even diagnostic aid like ultrasound were recommended. In addition, capacity building through mentoring, coaching and continuous professional

development is crucial to ensure service quality. The experiences of linking tertiary level health services needs like UVP, Fistula and eye related illness to Hospitals should be encouraged. And also, technical structure should be followed closely and better if program to be led by the woreda. There should also be a robust data capturing and reporting system on the digitalized routine data reporting mechanism through DHIS2 to monitor program effectiveness and proportion of health services provided by the MHNT service modality. For learning and program improvement purpose, it is recommended to generate evidence through monitoring, evaluation of effectiveness of MHNT service regular documentation of lessons learned and communicating with stakeholders. Furthermore, community mobilization and woreda leadership commitment boosting will be needed for granting sustainability. Finally, national scale up of this alternative strategy is recommended through standardized implementation modality.

## Abbreviations

CFIR, Consolidated Framework for Implementation Research; DHIS2, Demographic Health Information System 2; DSA, Daily Subsistence Allowance; KII, Key Informant Interview; MHNTs, Mobile Health and Nutrition Team service; MOH, Ministry of Health; RHB, PHCU, Primary Health Care Unit; Regional Health Bureau; SDGs, Sustainable Development Goals; UHC, Universal Health Coverage; UNICEF, United Nations Children's Fund.

## Data Sharing Statement

Data could be available upon a reasonable request from the corresponding author.

## Consent to Participate

Informed consent was sought from participants and anonymized responses were included. Accordingly, participants informed consent included publication of anonymized responses.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors report no conflicts of interest in this work.

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