THE NATIONAL ASSESSMENT OF THE ETHIOPIAN HEALTH EXTENSION PROGRAM

Abridged Report

MAY, 2020
ADDIS ABABA, ETHIOPIA

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MINISTRY OF HEALTH - ETHIOPIA
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National Assessment of The Ethiopian Health Extension Program

Abridged Report May 2020

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RECOMMENDED CITATION

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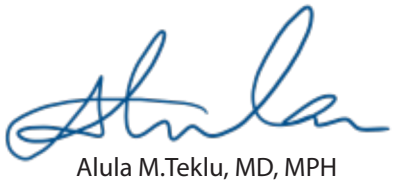

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TABLE OF CONTENTS

List of Figures

List of Tables

EXECUTIVE SUMMARY

Introduction

The Health Extension Program (HEP), launched in 2003, is one of Ethiopia's major investments designed to improve the health of communities. The HEP is a community-based health program that was initially designed to deliver 16 packages of health services to agrarian communities. Later, the program evolved in various ways, including adaptations for pastoralist and urban communities, making changes to existing packages, and including 2 additional packages and upgrading training of Health Extension Workers (HEWs). In 2019, the program involved more than 39878 HEWs and 17587 community health posts (HPs).

The program has been acknowledged as a flagship program and a major contributor to recent gains in health outcomes in the country. However, there is little evidence of the recent status of the program. In response, the Ministry of Health (MoH), in collaboration with the Bill and Melinda Gates Foundation, commissioned MERQ Consultancy PLC to conduct a comprehensive national assessment of the HEP.

Objectives

The objectives of the assessment were to assess the status, determinants, and areas of the HEP that need further attention, and to identify challenges and areas of intervention for program and policy decisions.

Methods

A national assessment of the agrarian, pastoralist, and urban HEP was conducted from October 2018 to September 2019. All 9 regional states and two city administrations were included. The assessment was guided by the Primary Health Care Performance Initiative (PHCPI) framework. Data was collected at all levels of the health system, including the MoH, Regional Health Bureaus (RHBs), Woreda Health Offices (WorHOs), Health Centers (HCs), HPs, and communities. The assessment had 3 components: 2 components for evidence generation (mixed methods primary data and systematic review),followed by 1 component for evidence synthesis and the formulation of recommendations.

Primary data were collected through a household survey, a survey of HEWs, a health facility assessment, key informant interviews, and focus group discussions (FGDs). Data were collected from 6430 households from the general population, 618 Women's Development Army (WDA) leaders' households, 343 HPs, 179 HCs, and 62 WorHOs from 62 woredas randomly selected from all regions. The household survey involved women, men, and youth girls; a total of 11,746 respondents were interviewed from the sample households in the general population and 1122 from WDA households, respectively. Qualitative data were collected through 172 interviews and 109 FGDs.

The urban HEP was also assessed by collecting data from 1912 households (1287 from Addis Ababa and 625 from Dire Dawa). In addition, 404 urban HEPrs from Addis Ababa, 87 from Dire Dawa and 113 from other cities were included in the study. A total of 132 qualitative interviews were conducted with community members, policy advisors, partners, and urban HEWs. All HCs in Dire Dawa and Addis Ababa were included in the study.

In addition to the primary assessment, in-depth studies were also conducted on attrition among HEWs, the quality of pre-service HEWs' training institutions, the role of the HEP in public health emergency management, and the cost-effectiveness of HEP interventions.

Results

Relevance of HEP packages and service delivery modalities

The current service packages and service delivery arrangements of the HEP through home-, HP-, and community-based services was reported to be appropriate by a large proportion of community members. Home visits by HEWs are believed appropriate by 82.2% of women, 81.7% of men, and 76.6% of youth girls. Among the respondents who had ever visited an HP, 43.9% of women, 51.5% of men, and 49.3% of youth girls recommended either expanding the current packages or adding new packages of services. More comprehensive maternal and child health services and the treatment of sick adults were the most frequently suggested changes to the HEP packages. Communities perceive that HEWs are generally trustworthy and friendly, considered models of good behaviour, and seen as helpful in empowering women and communities to solve their own health problems. Trust is limited, however, when it comes to more clinical or curative services.

Inputs of the Health Extension Program

Human resources: Compared to the volume of work and skill sets required for the effective delivery of HEP packages, the staffing standard for HPs—2 HEWs per HP—was found to be inadequate. A high proportion (86%) of HPs meet the minimum standard of 2 HEWs per HP. Almost all HEWs (98%) have attended level III or level IV education and training programs, and at least 1 level IV HEW was available in 62.4% of HPs. In 5% of HPs, there was at least 1 nurse or midwife. Knowledge and skills of HEWs emerged as a key gap of the HEP workforce; only 51.1% of HEWs could correctly describe the current national guideline on the schedule of child vaccinations. Rate of attrition was 21% since the beginning of the program in 2003 to 2019. Overall, 51% of HEWs were dissatisfied with their jobs.

Facilities and infrastructure: Almost all kebeles (98%) have at least 1 HP. Overall, the HP-to-population ratio is 1:5760. Most HPs' buildings are sub-standard; only 37% of HPs meet the required building standard. Most HPs also lack basic amenities. Electric power supply, improved water source, and latrine were available in 26.5%, 27.1%, and 87.4% of HPs, respectively. The lack of basic equipment is a major gap in the majority of HPs; only 5% had all basic tracer equipment (blood pressure apparatus, stethoscope, thermometer, adult scale, child scale, and artificial light sources).

Drugs and medical supplies: Stockout of tracer drugs and medical supplies was common. For 6 of the 14 items assessed, more than 50% of HPs had stockout on the date of data collection. Oral rehydration solution (ORS), Depo-Provera, zinc acetate, and Vitamin A capsules were the most commonly available items, each being available in more than 80% of HPs. Paracetamol suspension or suppositories, tetracycline eye ointment, paracetamol tablets, amoxicillin suspension, and pentavalent vaccine were available in fewer than 50% of HPs. Only 18% of HPs had a bin card for stock management. A majority, 81%, of HPs were using HPMRR, but only 25% of the HPs' HPMRR data were complete and accurate. Only 57% of HPs had implemented first expiry, first out (FEFO) stock rotation; damaged and expired products were available in 75% of HPs.

Financing of the HEP: Between 2010/11 and 2016/17, HEP spending increased from 2.4 billion ETB (USD 0.52 billion in terms of PPP) to 5.1 billion ETB (USD 0.58 billion in terms of PPP). Over the same period, the share of the total PHCU-level spending represented by HEP spending declined from 25% to 22%. Similarly, the HEP's share of the Total Health Expenditure declined from 8.9% in 2010/11 to 7.1% in 2016/17. The government's share of HEP spending increased from 20.8% in 2010/11 to 40.3% in 2016/17. Child health represents the largest portion of HEP spending, accounting for 46% of the program's total expenditure.

Health service delivery through the HEP

Of the 352 kebeles included in the assessment, 343 (97.4%) had at least 1 HP. Community members' awareness of the availability of different HEP services was only 58.8%. During the 1-year period preceding the study, the women, men, and youth girls reporting at least 1 exposure to the HEP through any modality were 54.8%, 32.1%, and 21.9%, respectively. The proportion of households reporting ever having had a visit by an HEWwas 55.1% (22.3% in pastoralist settings and 56.6% in agrarian settings). On average, the implementation of the HEP packages at the household level was 50.8% among households in the general population and 60.6% among the households of Women's Development Army (WDA) leaders.

Community engagement

WDA structures were reported to be available in 97.0% of agrarian kebeles. Similarly, 92.5% of pastoralist HPs reported the availability of either a WDA, a 1-to-5 network, or an SMC structure that supported the HEP in their respective kebeles. However, only 25.9% kebeles have a WDA density of more than 30 per 1000 households. The functionality of the existing structures is also very low. The limited capacity of WDA leaders and SMC members was the other major challenge to community engagement with the HEP. Only 14.9% of women in agrarian settings and 8.0% of women in pastoralist settings reported being aware of the model family training. Enrolment and graduation rates were very low, with only 2.9% of agrarian and 2.1% of pastoralist households reporting having ever been enrolled in the training.

Among the six areas of the health information system assessed (M&E structure, capability andfunctionalities; inputs or resources; data collection and reporting forms,tools, and guidelines; data-management process; and information ordata use for improvement), no single component achieved a score of 75% or higher. M&E structure, data management, and the availability of inputs were relatively better implemented. The data verification factor for the 10 selected indicators showed enormous over-reporting (manifested in 9 of the indicators). Nearly one third of HPs over-reported all 10 tracer indicators. Under-reporting was observed in about 10% of HPs. Information use at the HP level was minimal in all regions.

Coverage of HEP-related services

The coverage of improved sanitation facilities and an improved source of drinking water was 20.0% and 71.4%, respectively. Appropriate waste-disposal practices were observed in only 10.7% and 10.8% of households for solid and liquid wastes, respectively. Half of the households in malarious areas own at least one insecticide-treated bed net (ITN). The prevalence of sleeping under an ITN was 27% among household members in malarious areas and 47% among those who own at least 1 ITN. Only half of children and one third of pregnant women in malarious areas slept under an ITN the night before data collection. Large proportions of women, men, and youth girls were aware of HIV and TB, but comprehensive knowledge about their transmission and prevention methods was very low.

Contraceptive prevalence rate reached 44.6%, and attendance of at least four ANC visits and health facility delivery was 48.3% and 54.9%, respectively. Only 25.5% women who delivered during the 2 years preceding the study having had a postnatal check-up. Coverage of full basic vaccinations among children 12-23 months of age was 35.7%. Treatment-seeking for children with diarrhea, pneumonia, or fever was inadequate, with fewer than half of those children being brought to the attention of a health professional.

HEP service delivery outcomes

Generally, there is a substantial improvement in health outcomes since the inception of HEP. Meta-analysis of studies thatinvestigated the effectiveness of the HEP in improving health outcomesshowed that both the HEP as a package and its specific components areassociated with improved maternal and child health outcomes. In addition, analyses of data from the household survey performed in this study showed significant associations between the implementation intensity of the HEP and the adoption of healthy behaviours at the household level. A 10% increase in the proportion of households reached through home visits was associated with a 19% increase in the adoption of HEP-related behaviours among households. Similarly, a 10% increase in the proportion of pastoralist households who had interactions with HEWs through HP visits was associated with a 16% increase in the adoption of HEP-related behaviours at the household level.

Governance, leadership and management of the HEP

The HEP structure that extends from the federal to the community level is well designed and accepted. Governance and leadership roles, however, are not functioning well, particularly at the woreda and kebele levels. The rapid and massive construction of HPs, which now cover 98% of kebeles, and the deployment of over 40 000 full-time, salaried HEWs are signs of strong government commitment to the HEP. The HEP is integrated into primary health care units (PHCUs), but attention to the HEP by the government has been declining in recent years.

Conclusion and Recommendations

The HEP has been a major contributor to Ethiopia's recent gains in health outcomes. The program's original 16 packages of health interventions, as well as the 2 packages added recently, are relevant in addressing the priority health needs of communities. The packages lack the comprehensiveness needed and are currently exhibiting sub-optimal quality and coverage as a result of inadequate inputs, particularly in the area of human resources, as well as implementation challenges related to community-engagement strategies, the information system, and leadership and governance. Men and youth have largely been excluded by the HEP in both service delivery and community-mobilization strategies.

Comprehensive optimization of the HEP is necessary to improve the quality and coverage of existing HEP interventions and expand packages to ensure access to more comprehensive services. Developing a document that can serve as a long-term guide to ensure the design and implementation of responsive HEP that envisions the evolving needs of the populations is vital. Changes in service packages should be guided by long-term plans to ensure universal health coverage and consider the availability of alternative sources of services.

Service delivery modalities should also be expanded to reach all segments of the population, including women, men, and youth. The HEP's inputs should be revised to ensure an adequate supply of human and material resources required for the effective delivery of more comprehensive service packages. Stratifying HPs based on the relative distance of kebeles from their nearest respective HCs is a priority to encourage further investment in the HEP.

Introducing a professional mix at the HP level, accompanied by the creation of an enabling environment, is key to the provision of more comprehensive services. The urban HEP requires rethinking in light of its contextual factors, including access, control over key interventions, and demographic factors. Contextualization of the packages and implementation strategies is needed for pastoralist communities. Given the vital role expected to be played by community volunteers, it is necessary to redesign community engagement strategies with a focus on identifying and engaging community members who can influence their community members both directly and indirectly.

INTRODUCTION

Ethiopia's major health problems remain to be preventable communicable diseases; maternal, neonatal, and child health conditions; and nutritional disorders, while non-communicable diseases (NCDs) are also on the rise, predicting a double burden of disease [1]. The underlying causes of these health problems are poor socio-economic conditions, adverse health impacts of climate change, food insecurity, lifestyle and nutritional habits, a low level of awareness about health, and inadequate health service delivery across the country. In response to these states of affairs, the Government of Ethiopia (GoE) and its partners have made significant efforts that have brought remarkable improvements in the health systems and health outcomes over the last 2 decades. One such effort is the implementation of the Health Extension Program (HEP) [2-7].

The HEP is a nationwide community-based health program that involves training 2 female Health Extension Workers (HEW) per village, constructing a health post (HP), and delivering 16 packages of health services. This has been considered an appropriate strategy for tackling the main health problems of rural communities since its introduction in 2003. The program has evolved in many ways since its inception, as have the national and global priorities and health systems' approaches. The agrarian HEP was adapted in various ways, including in the designation of male HEWs, for pastoralist communities. In addition, an UHEP was designed and implanted, with various adaptations made to the package and composition of the cadres who deliver services. The series of health strategic plans, as well as the Health Sector Development/ Transformation Plans (HSDP and HSTP), strongly emphasize ensuring universal health coverage, as well as meeting the targets of the Millennium Development Goals (MDG) and subsequently the Sustainable Development Goals (SDG), with the HEP being a primary vehicle for doing so [2-4, 6].

Despite these expectations and contributions, stakeholders have in recent years been concerned by signs of deterioration in the performance of the program that warrant prompt corrective actions. To this end, the Ministry of Health (MoH), in collaboration with its partners and funded by the Bill and Melinda Gates Foundation, has launched a comprehensive national assessment of the HEP with the purpose of understanding the status, determinants, and prospects of the program and informing its programmatic and policy decisions. This assessment was conducted by MERQ Consultancy Private Limited Company.

The purposes of this assessment were to generate the information needed to meet the challenges and to form recommendations for guiding the refinement and implementation of the program in the coming decades. The general objective of the assessment was to assess the status, determinants, and prospects of the HEP and identify challenges and areas of intervention for programmatic and policy decisions in the Ethiopian health sector. The study is a nationwide assessment that looks into both the demand and supply sides through a well-crafted approach that includes a review of the literature and quantitative as well as qualitative methods. It touches on the critical health system components based on the World Health Organization's (WHO) building blocks.

This report is an abridged report of the National Assessment of the Ethiopian Health Extension Program. The abridged report takes similar structure from the comprehensive report of the program. This report focuses on the main findings of the assessment and targets policy makers, implementers and experts who need to get the highlight of the findings of the assessment. This report will also serve as a guide towards the main report of the assessment.

The report is divided into four parts. Part 1 presents the context and objectives of the assessment in two sections. In the first section, it describes the context of the Ethiopian health system. In the second section, it lists the general and specific objectives of the assessment. Part 2 presents the methods of the HEP assessment (rural, urban and special studies). It includes 7 sections which elaborate the methodology of the study (general approach, population and sampling, data collection and management, and methods of synthesis of evidence and formulation of recommendations. A brief description of the limitations is included in this part.

Part 3 describes the findings of the assessment of the rural HEP, which includes agrarian and pastoralist settings. This part has two sections. The results section is further divided into 9 chapters, each chapter representing the different components of the health system. The findings from the special studies are reported as part of the health system where it is relevant. Chapter 1 presents a summary of

the general characteristics of the respondents to the quantitative and qualitative data collection activities. Chapter 2 examines the relevance of the HEP service packages and the delivery modalities applied thus far. Chapter 3 discusses the status of the HEP's inputs. This chapter covers several key inputs to the program, including human resources, infrastructure, and pharmaceuticals. Chapter 4 presents the status of health service delivery through the HEP. It describes the physical accessibility of HPs and the availability of HEP services. This chapter also examines the level of awareness of community members of available HEP services and their exposure to the program through home visits, HP visits, and outreach services.

Chapter 5 discusses community engagement and ownership in the HEP. The current status of strategies intended to engage community members is presented. Chapter 6 describes the Health Information System (HIS) for the HEP. It presents an assessment of the soundness of the design of the HEP's HIS, its simplicity, and its cost, as well as the status of the various determinants of the availability and use of the HIS within the context of the HEP. Chapter 7 describes the coverage of HEP-related services at the population level. Chapter 8 examines the outcomes of HEP service delivery. Lastly, Chapter 9 examines the governance, leadership, and management of the HEP.

Section II of Part 3 synthesizes findings presented in Section I to reach conclusions and recommendations for future improvement actions. The section presents conclusions and recommendations in 10 sub-sections, each of which includes conclusions on specific aspects of the HEP, followed by recommendations on what to maintain, modify, add, and drop.

Part 4 describes methods and results of the assessment on the UHEP followed by conclusions and recommendations. The findings are organized with specific sections for different aspects of the program, including relevance, human resources, and implementation.

Part 1

CONTEXT AND OBJECTIVES OF THE ASSESSMENT

1. CONTEXT OF THE ETHIOPIAN HEALTH SYSTEM

1.1. Health Status

Ethiopia's major health problems largely remain preventable communicable diseases (CDs) and nutritional disorders. Despite major progress in improving the health status of the population over the last couple of decades, Ethiopia's population still faces high rates of morbidity and mortality from preventable causes. Maternal mortality ratio (MMR) stands at 412 per 100,000 live births. This is a decline from the estimates of 871 in the 2000 Ethiopian Demographic and Health Survey (EDHS) and 676 in the 2011 EDHS. According to the Global Burden of Disease (GBD) study for Ethiopia, communicable, maternal, neonatal, and nutritional diseases (CMNNDs) account for 60% of the disability-adjusted life years (DALYs) lost [8]. Non-communicable diseases (NCDs) and injuries account for 33% and 7% of the total DALYs lost, respectively [1]. There are significant improvements in service use mainly due to the expanded access to essential service. The improvements, however, have long distance to go to ensure Universal Health Coverage (UHC) and are still in need of comprehensive efforts [8, 9].

1.2. Health policy

The Transitional Government of Ethiopia produced the existing Health Policy in 1993, the first of its kind in the country; this was among a number of major political and socio-economic transformation measures [10]. The policy was followed by the formulation of four five-year strategic plan – Health Sector Development Plan (HSDP I, II, III, and IV) and other program and operational level initiatives.Health Extension Program was introduced, as part of the HSDP II and continued till now, with the aim of institutionalization of the voluntary-base community health service for better health service delivery and quality of care [2-5].

After the completion of HSDP in 2015, the Health Sector Transformation Plan (HSTP) continues to serve as the strategic guide of the health sector under the national Growth and Transformation Plan (GTP). HSTP set ambitious goals of improving the equity, coverage, and use of essential health services, including improving the quality of healthcare and enhancing the implementation capacity of the health sector at all levels. In HSTP's era the HEP, which largely serves segments of the population that are mostly underserved by higher levels of the health service delivery tier system, has been considered an important vehicle for narrowing disparities in health service coverage[6].

1.3. Organization of the health system

Currently, the Ethiopian health system is built upon a three-tier healthcare delivery arrangement where each tier has defined service and professional standards, referral and feedback linkages, technical and administrative support lines and volume of population to serve. As described in the Figure 1 below, the Health Extension Program is designed to serve as the first entry point to the healthcare system [2].

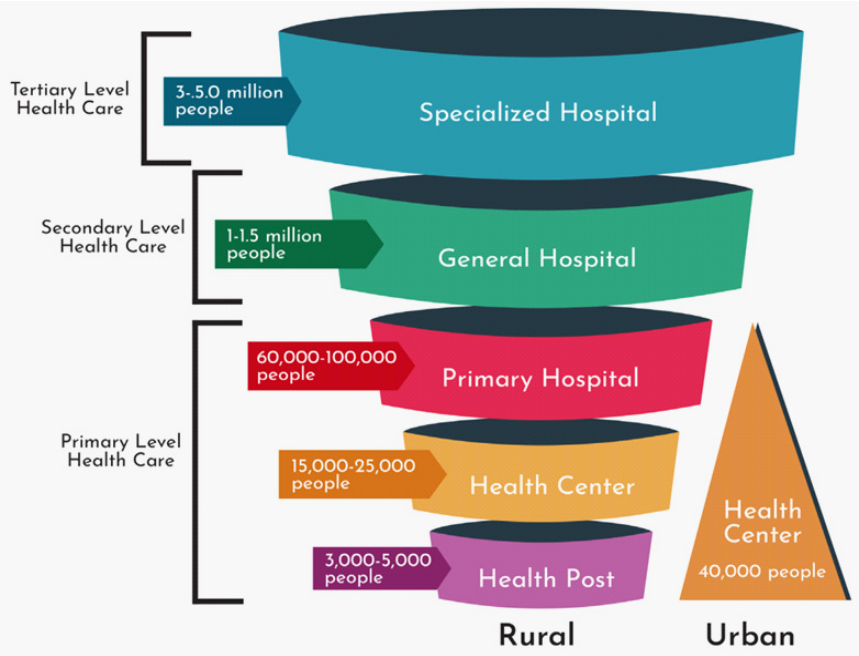


Figure 1. The Ethiopian 3 -tier Healthcare Delivery System

1.4. The Health Extension Program

The HEP has been initiated and owned by the GoE. Its development has passed through several learning processes. This ranges from the recognition of many home-grown experiences to learning from other countries, including the adoption of relevant international initiatives. All these in combination have provided enormous input for the inception, designing, piloting, and initial implementation of the program.

1.4.1. Factors Which led to the Introduction of HEP

- **Global health system factors and international experiences:** In order to deliver the promises of the Alma-Ata Declaration and mitigate the causes of its failure in some countries, WHO strongly advised that essential health services cannot be provided by people working on a voluntary basis if they are to be sustainable [4,11,12]. HEP is instrumental to institutionalize a sustained community health service in a way that ensures community ownership and community empowerment. In addition, learning from the operational history of the Chinese "barefoot doctors" and visiting the Kerala CHW program (Pakistan) were among the major experiences taken during HEP's introduction [13-15].
- **Political Factors:** The changes in the health sector that involved HEP, after the revolutionary government come to power were derived by historical (emerging out of conflict) as well as ideological (a grassroots-based and pro-poor orientation) combined with political imperatives (the need to deliver basic services to a large, poor population as a new regime) and a healthy dose of pragmatism (other options were not feasible with the resources available) [10,16].
- **Epidemiological and health system factors:** The high mortality and morbidity due to preventable diseases and health conditions and their underlying causes were definitely the substantial reasons that guide the decision of the GoE to introduce HEP [4,17-19].
- **Recommendations from Local Experiences:** A positive lesson was also learned from the scattered but village-based small health delivery units in northern Ethiopia during the armed struggle that necessitated the provision of basic and essential services. The early inception of the program was developed under the "Healthy Family" initiative of the Tigray RHB and then the southern ZHD in 2 villages of Southern Tigray in 1995-96. More importantly, Ethiopia learned a useful lesson from its own practice: despite its efforts, the community-based health services using voluntary community-based health agents (CHAs), community-based reproductive health agents (CBRHAs), and TBAs did not produce any significant changes in the health conditions of the rural population.

1.4.2. Evolution of the Health Extension Program

Efforts to scale up the HEP were launched in 2003, right after the completion of the pilot program. Several standards for recruiting and training HEWs, as well as the operational processes of the HEP, were defined during this scaling-up phase. The major milestones undertaken since then are summarized in the Table 1 below.

Table 1. Summary of Major Milestones in the HEP

Year	Major Milestones	Description and Results
2002	HEP inception	16 high-impact interventions identified.
2003	HEP formally launched as part of HSDP-II	Government decided to employ HEWs as salaried government staff and construct rural HPs.
	Selection and training of HEWs	Graduation of the first HEWs.
2004	Deployment of HEWs	2,737 HEWs deployed to HPs.
2006	Early performance assessment and gap identification	Gaps identified: HEWs' knowledge and skill gap, inadequate resources, and inadequate supportive supervision.
		Integrated refresher training (IRT) initiated.
		HP kits distributed.
		HEP supervisors trained.
	Introduction of Model Family training initiative	Initially used as community engagement and empowerment strategy
	HEP expanded to pastoralist areas	Adaptation of HEP to pastoralist settings; Mobile Health Team initiated.
2008	Introduction of Family Folder – Community Health Information System (CHIS)	Stalled due to absence of implementation guide.
2009	HEP expanded to urban areas	Urban HEWs training and deployment.
2010	Introduction of treatment of pneumonia in to HEP	Integrated community case management fully implemented.
	National HEP evaluation	
	CHIS reinitiated and scaled-up	
2011	Introduction of Health/Women Development Army (WDA/HDA)	More than 990,000 WDA groups organized by 2018/19.
2016	Second Generation HEP	HEP packages increased from 16 to 18; changes in standards and service delivery modalities initiated.
2018	Rapid HEP assessment and HEP optimization	Rapid assessment followed by initiatives to address identified challenges
	Family Health Team (FHT) introduced under Urban HEP as part of the Urban Primary Health Care Reform	The FHT is composed of two physicians/health officers/ Bachelor's Degree in Science Nurse, 2 diploma nurses, and 4-5 urban HEWs. By 2018/19, 123 HCs implemented the reform.
	Upgrading of HEWs	More than ¼ of HEWs upgraded to Level IV
	Competency-based training program for WDA leaders initiated	422,524 WDA leaders completed the training; 51, 243 were assessed; 47,641 were found to be competent.
2019	Degree program in Family Health launched	Curriculum for a post-basic degree program in the field of Family Health was adapted. Eight universities from six regions started the program by enrolling a total of 240 students in the first year.

1.4.3. The Components, Structure and Logic Model of the HEP

A. Components of the HEP

Table 2. The summary of major components of the HEP

Component of the Program	Descriptions
Human Resource	Selected based on nationally-agreed criteria: completion of grade 10, residence in the village in which they will practice, and the ability to speak the language of the community they serve.
	Health Extension Workers in rural (Level-II, II & IV) and Health Extension Professionals in the UHEP (Diploma Nurses);
	Currently reached around 39,878
Health Posts	The operational hubs of the rural HEP with 2 HEWs;
	Supplied with the basic equipment, materials, basic and essential drugs, and medical supplies;
	Expected to serve 3000 – 5000 population;
	Currently reached around 17,587
Services/Packages	Originally, the HEP included 16 packages, namely:
	Family Health: Maternal and child health, family planning, immunization, nutrition and adolescent reproductive health.
	Disease Prevention and Control: HIV/AIDS and other sexually transmitted infections (STIs) and tuberculosis (TB) prevention and control, Malaria prevention and control, and First aid emergency measures.
	Hygiene and Environmental Sanitation: Safe excreta disposal, Safe solid and liquid waste disposal, Water supply and safety measures, Food hygiene and safety measures, Healthy home environment, Control of insects and rodents, and Personal hygiene.
	Health Education and Communication: After the HEP optimization, the content of existing services and service packages expand which have increased their number 16 to 18.
Delivery Modalities	Static at Health post level
	Household visits
	Outreach services (schools, community gatherings, religious institutions, etc)
	Family Health Team in Urban Settings

B. *The structure of the HEP*

The important structures of the HEP are stretched from the community to the federal level and optimally involve key actors. The most important actors include Model Families, Women Development Army/Group (Health Development Army/Group), Community, Kebele Council, PHCUS (HPs and HCs), Woreda Administration & Woreda Health Office, RHB/ZHD and Technical and Vocational Training Institutions, MOH and Implementing Partners. The interaction of administrative structures at all levels of HEP is described in the *Figure 2*.

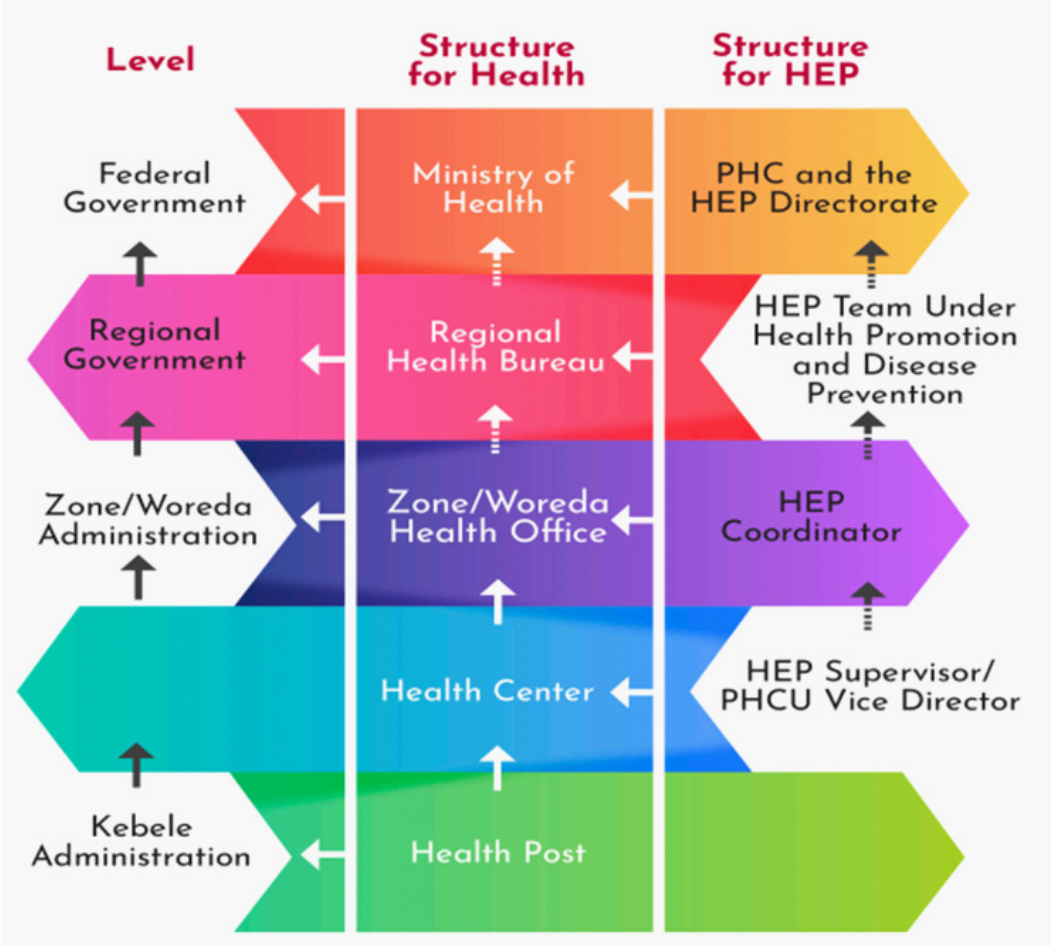


Figure 2. Administrative Structure of the HEP

C. *The simplified logic model of the HEP*

The HEP is too large and complex for its full components to be represented in a program logic model. A simplified logic model of the HEP at the kebele level is presented in *Figure 3*.

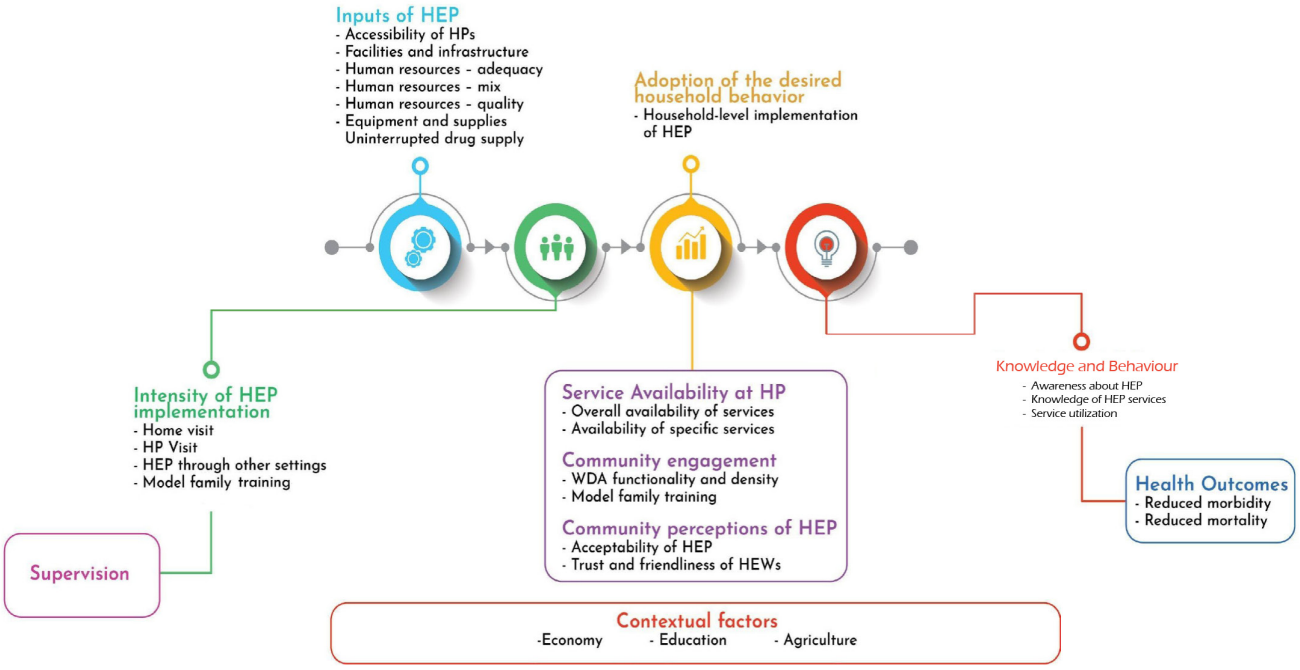


Figure 3. A simplified logic model of the Ethiopian HEP

2 OBJECTIVES OF THE ASSESSMENT

Ethiopia has been implementing the HEP as a strategy for reaching its citizens with essential health services for the last 15 years. Despite significant improvements in the health status of the population during this period and claims to attribute gains to the HEP, there is little evidence about the status and progress of the HEP. The purpose of this National Assessment was to generate the information needed to inform the actions taken toward alleviating program challenges and to formulate actionable recommendations that could guide further refinement and implementation of the program.

2.1 General objective

The general objective of the assessment was to examine the status, determinants, and areas of improvement of HEP and identify challenges and areas of intervention for program and policy decisions in the Ethiopian health sector.

2.2 Specific objectives

The specific objectives of the assessment were to assess the:

- relevance of the HEP components to Ethiopians' health needs;
- implementation status of the HEP;
- population coverage of essential services related to the HEP;
- adequacy of resources needed to implement the HEP;
- contribution of the HEP to recent gains in health status;
- determinants of implementation of the HEP; and
- key areas of intervention for the future improvement of the HEP.

Part 2

METHODS OF THE HEALTH EXTENSION PROGRAM ASSESSMENT

1 GENERAL APPROACH

1.1 Study area and study period

The HEP assessment was conducted at a national level stratified by livelihood (i.e. agrarian, pastoralist, and urban) and administrative regions (i.e. 9 regions and two city administrations) *(Figure 4)*. In addition, four in-depth investigations were conducted to understand (a) attrition and intention to leave of HEWs in rural areas and that of UHEPrs in urban areas, (b) institutions in the country engaged in training of HEWs, (c) the role of HEP in the Public Health Emergency Management and (d) Cost-effectiveness of HEP. Protocol development to submission of draft report took one year from October 2018 to September 2019 and primary data were collected from March to May 2019. Systematic review of existing evidence about HEP covering published and grey literature was carried out by an independent group of experts during the same study period.

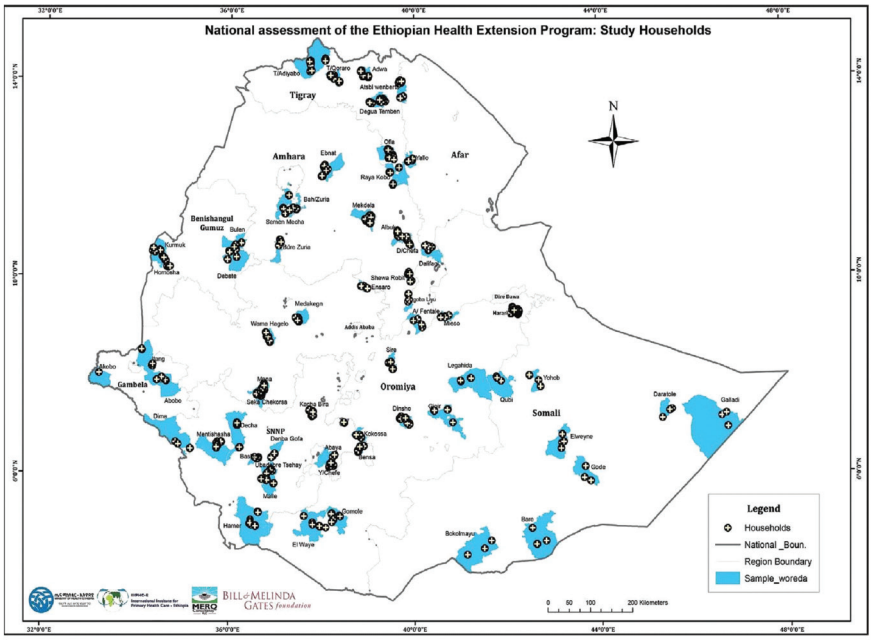


Figure 4. Study sites of the HEP Assessment

1.2 Framework and general approach

The HEP assessment was informed by a conceptual framework that was developed based on the Primary Health Care Performance Initiative (PHCPI) framework [20,21]. The framework was prepared in the form of a program logic model showing the cause-effect relationship among the 5 domains of measurement related to PHC: (a) system, (b) inputs, (c) service delivery, (d) outputs, and (e) outcomes (Figure 5). Measuring each of these domains clarified the implementation status of the HEP as a primary mechanism for the delivery of PHC in Ethiopia, the factors that limited or facilitated its implementation, and its effectiveness in addressing the health needs of the population. The framework was adapted to fit priority information needs that should be targeted by the comprehensive assessment of the HEP in Ethiopia.

The assessment had two components to generate evidence and a third component intended to consolidate the generated evidence and to formulate recommendations. The first component of evidence generation involved quantitative and qualitative assessment of the current status of the HEP through the collection and analysis of primary data. The second component involved a thorough review of the HEP literature (including published and grey literature) with the purpose of understanding the challenges, facilitators, and effectiveness of the HEP at different points in time throughout its history. The findings from the first two sources of evidence were synthesized, and practical recommendations were formulated as part of the third component of the assessment.

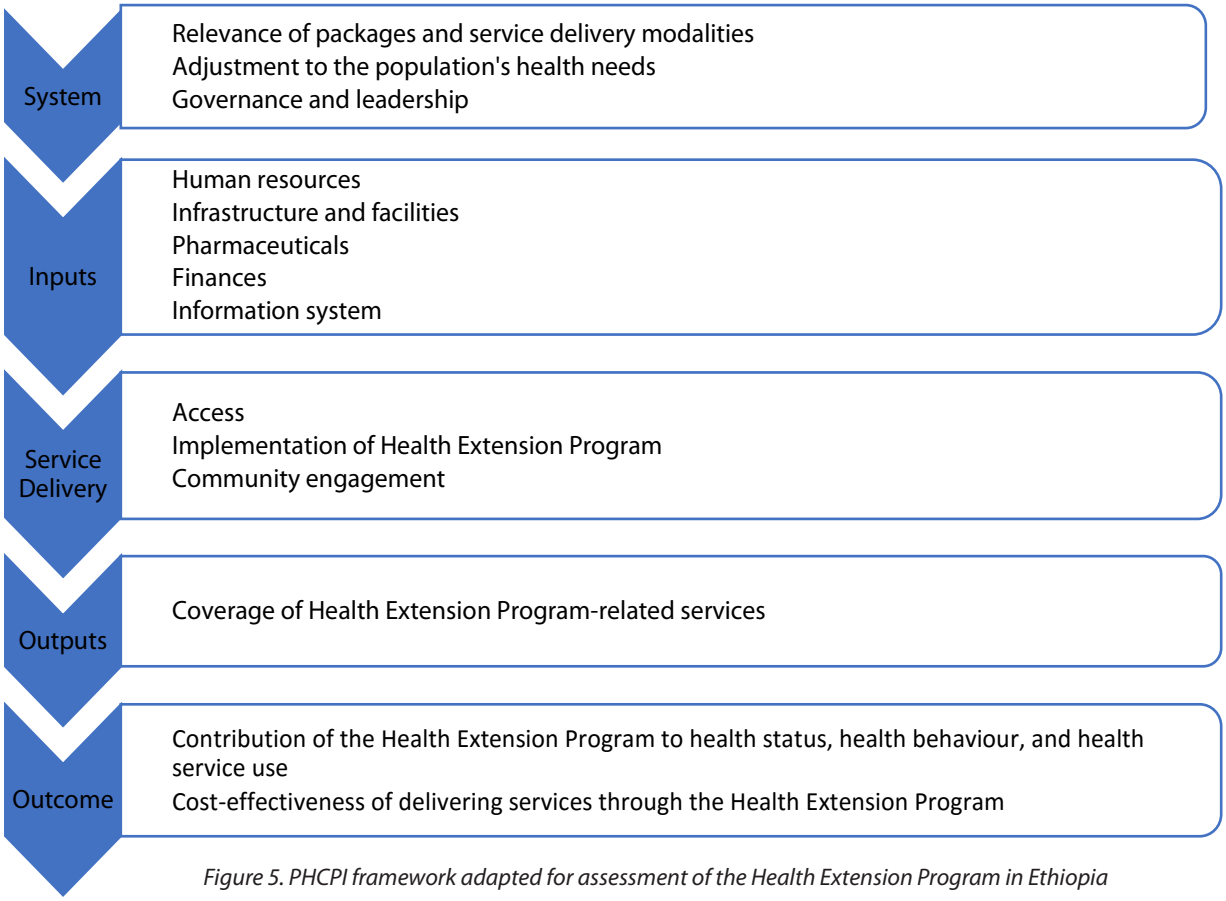


Figure 5. PHCPI framework adapted for assessment of the Health Extension Program in Ethiopia

2 POPULATION AND SAMPLING

2.1 Study population

Data for the national HEP assessment (rural and urban) and in-depth investigation of four selected components that has potential to influence impacts of HEP on the health of Ethiopians were collected at all levels of the health system, including the MoH, RHBs, WorHOs, HCs, HPs, community members supposed to get service from HEP, health workers that deliver or facilitate the HEP service delivery (HEW/UHEPrs), institutions that train HEWs and various partners that support the implementation of HEP. Details of rural and urban quantitative investigations including study population, sampling units and attained sample size are summarized in *Table 3*.

Table 3. Description of various quantitative investigations of the HEP assessment

Primary sampling Unit	2nd stage sampling unit	3rd stage sampling unit	Respondent/assessed	Number assessed
Assessment of Rural HEP (Agrarian and Pastoralist				
Woreda within region (n=62)	Kebele (n=186)	Household (n=34/ kebele)	Woman of the house	6430
			Man of the house	4416
			15-24 year-old girl	900
		WDA (n=4/kebele)	Woman of the house	613
			Man of the house	389
			15-24 year-old girl	120
	HP (n=343)		HP	343
	HP/Kebele (n=343)	HEW	All HEW in 343 HP/ kebele	584
	HP	HC*	HC that mentor the 343 HPs	179
Assessment of Urban HEP (AA, Dire-Dawa and other towns)				
Woreda having SafetyNet program in Addis Ababa (n=90)	HH from SafetyNet register		Female HH heads/ spouses of HH heads	1287
Kebele (n=8) in Dire-Dawa	HH from ITN distributed register		Female HH heads/ spouses of HH head	625
HC in Addis Ababa (n=98)	UHEPrs		UHEPrs	404
UHEPrs in Dire Dawa (n=87)			UHEPrs	87
Woreda in other regions (n=62)	UHEPrs that work in the woreda town		UHEPrs (Max of 2/ woreda town)	113
HC (98/98) in Addis Ababa			HC	98
HC (7/8) in Dire Dawa			HC	7
Woreda in other regions (n=62)	HP (n=343)	HC that provide support to HP	HC	34

2.2 Sample size determination

Household survey: This involves sample size estimation for household survey and WDA households in rural areas, and households in urban areas (i.e. Addis Ababa and Dire Dawa). The minimum number of households required to estimate selected HEP performance indicator parameters in rural areas was determined using best available estimates from the 2016 EDHS [8], and adjusted for a design effect of 2 and an expected response rate of 95%. These variables were health facility delivery (26.2%), the contraceptive prevalence rate among married women (35.9%), full immunization coverage among children aged 12 to 23 months (38.5%), the proportion of households with latrine facilities (39.7%), and the proportion of women with comprehensive knowledge about HIV (20.2%). The number of households to be included for each indicator was then calculated by dividing each sample size by the expected proportion of households with at least 1 eligible person. The proportion of households with at least 1 eligible person was determined for each of the 5 indicators. The scenario that yielded the maximum number of households was then taken as the final sample size for the household survey. Full vaccination coverage required the maximum sample size of 6 364 households. The final sample size was, therefore, considered 6364 households. Moreover, it was decided to interview four households of WDA leaders in each of the rural kebeles to be visited for the household survey. The minimum number of households required for the survey in Addis Ababa and Dire Dawa was estimated by taking the base available evidence from DHS 2016 on the proportion of households with a handwashing facility from DHS 2016 (67.4% with 4% margin of error, 95% confidence and design effect of 2 in Addis Ababa and 36.2% with 5% margin of error, 95% confidence and design effect of 1.5). Assuming 90% response the required number of households was 1287 in Addis Ababa and 625 in Dire-Dawa.

Health Post assessment: The number of HPs required for the HP assessment in agrarian and pastoralist areas was calculated using the 2016 service availability and readiness assessment [22] as a source of estimates for different proportions related to the HEP, with a 95% confidence and a 5% margin of error for HP-level variables. The percentage of HPs with latrine facilities (60%), the availability of basic equipment among HPs (57%), the percentage of HPs with a non-zero stock of oral rehydration solution (ORS; 40%), the percentage of HPs providing FP services (95%), and the percentage of HPs with at least 1 staff member trained to diagnose and treat malaria (47%) were the best available estimates used for sample size estimation. This last percentage (staff trained in malaria) yielded the maximum sample size of 384 HPs and it was used in the assessment.

Woreda, HC, HEWs and households per kebele: The number of woredas and HCs was determined based on the sample size of households and HPs. With due consideration to the assumptions behind different statistical tests and logistics-related issues, the minimum number of sample households per HP (or per kebele) was determined to be 34 and the number of HPs per woreda was determined to be 6. This required sampling of HPs to guide household survey and WDA leaders, which was, therefore, conducted in the catchment kebeles of 3 HPs from each woreda.

All HEWs working in the six study HPs and HCs that supervise these HPs were eligible for the study.

Sample size for HC as part of urban HEP assessment: It was decided to include all the 98 HC in Addis Ababa, the 7 HCs operating under the Dire Dawa city administrations, all HCs to be identified as part of the rural HEP assessment

Urban Health Extension Professionals (UHEPrs): The minimum number UHEPrs that should be included in the assessment of HEP in Addis Ababa was determined with the assumption that 50% of UHEPrs are satisfied with their current job, 95% confidence, 5% margin of error and 5% non-response. This resulted in a sample size of 404. Since the total number of UHEPrs in Dire-Dawa were 87, it was decided to include all of them in the study. In all other regions it was decided to interview at most two UHEPrs in each of the capital cities of the regions and in the Woreda towns of those Woredas selected for the rural HEP assessment.

Institutions that train HEWs, teachers and trainees: During the study period there were 23 initiations in the country that train HEWs. It was planned to include all these institutions and teachers that are involved in teaching HEW. The planned total sample size for quantitative survey of trainees was 1600 and it was planned to be proportionally allocated to the training institutions.

Sample size of study participants for PHEM: The planned number of study participants for the quantitative assessment included: (1) 62 Woredas selected for the rural HEP assessment and the Dire-Dawa city administration; (2) one HCs from each of the study woredas; (3) two HPs per study woreda nested within the selected HC and (4) all HEWs working in the HPs selected for the study.

Sample size for the assessment of HEWs'/ UHEPrs' attrition and cost effectiveness of HEP: The attrition studywas nested within a national assessment of rural and urban HEP program and cost-effectives was nested within rural HEP assessment. Attrition study was planned to be carried out in all 62 woredas included in rural HEP assessment, 20 randomly selected HC in Addis Ababa (2 HC per sub-city) and the city administration in Dire-Dawa. Cost-effectives study was planned (a) to use data collected from women in rural HEP assessment, (b) collect HP level data from HEWs working in one of the six HPs in every study woreda (n=62), (c) collect HC level data from one HC that supervise one of the six HPs in every study woreda,

2.3 Sampling strategy

Sampling of households, HPs, HEWs and HCs in agrarian and pastoralist areas: A 3-stage sampling strategy was employed to identify the study woredas, HPs, HCs, and community members in both agrarian and pastoralist settings. The woredas in each region were further classified by their predominant means of livelihood to create 11 strata (7 agrarian and 4 pastoralist). Within each stratum, a predetermined number of woredas were randomly selected from the list of all woredas in that stratum. Six kebeles were then selected at random from each of these woredas. All HPs providing services to communities in the selected kebeles were included in the HP assessment, while the first 3 selected kebeles were included in the household survey. All HEWs that are assigned to these HPs and HCs that supervise these HPs were included in the assessment. In each of the kebeles randomly selected for the household survey, the sampling frame of households was obtained from the HEWs that provide service to the kebele. In Each kebele a predetermined number of households (34-38) were randomly selected for the household survey. From each of the selected households, three members (i.e. the household head, the wife of the head (if the household head was a man), and a youth girl (aged 15-24 years)) were interviewed. In addition, an independent sample of households of 4 WDA leaders in each kebele were included in the household survey.

Sampling of households in Addis Ababa and in Dire-Dawa: The 10 sub-cities were used as strata for the household survey in Addis Ababa. The SafetyNet program was being implemented in 90 woredas across the 10 sub-cities. The total sample size for Addis Ababa was distributed to these 90 woredas proportional to their number of SafetyNet members. Households participating in the survey were selected using systematic random sampling from the list of SafetyNet within each of these 90 woredas. Similarly, the total sample size of 625 households determined for the household survey in Dire-Dawa was allocated to the 8 kebeles proportional to the number of households on registration books used for ITN distribution for the 2018/2019 fiscal year. Then, a systematic random sampling method was used to identify study participants from each of the 8 kebeles.

Sampling of HC in Addis Ababa, in Dire-Dawa and in other cities/towns: All the 98 HC that were functional during the study, all the 7 HC in Dire-Dawa and 34 HCs that were supervising HPs selected for the study during the rural HEP assessment were included in this study.

Sampling of documents for the assessment of HEWs'/UHEPrs' attrition: This study was nested within a national assessment of rural and urban HEP program. Fifty three out of 62 woredas included in rural HEP assessment, 20 randomly selected HC in Addis Ababa (2 HC per sub-city) and the city administration in Dire-Dawa were assessed. In these Woredas/HC/City administrations, records of HEWs deployed since the launch of rural HEP (2004-2019) were reviewed. This resulted in a total of 3486 HEW deployment documents.

Sampling of Institutions that train HEWs, instructors and trainees in these institutions: The assessment was done in 21 out of the 23 HEW training colleges in the whole country. One of the Institution was excluded because of security reasons and the other one was excluded because the trainees were not in the college during the assessment. There were 192 instructors in these colleges and all of them were included in the survey. After proportionally allocating the sample size of 1600 into these colleges, study participant trainees were randomly selected from the registration list. This resulted in a total number of 1245 of trainees and response rate was 77.8%.

Sampling of Woredas, HC, HPs and HEWs for PHEM survey: This study was nested within a nationwide rural and urban HEP assessment. Quantitative data were collected from 50 out of 62 woredas included in rural HEP assessment, maximum of 2 randomly selected HPs per study woreda resulting in a total of 71 HPs, 52 HCs that supervise the study HPs and from Dire-Dawa city administration and 141 HEWs working in the HPs selected for this study.

Sampling of Woredas, HC and HPs for attrition of HEWs/UHEPrs: This study was nested within a nationwide rural and urban HEP assessment. Quantitative data were collected from 53 out of 62 woredas included in rural HEP assessment because of security reason, 20 randomly selected HC in Addis Ababa (2 HC per sub-city) and the city administration in Dire-Dawa. In these Woredas/ HC/City administrations, Records of HEWs/UHEPrs deployed since the launch of rural HEP (2004-2019) and archived in these Woredas/HC/City administrations offices were reviewed. This resulted in a total of 3486 HEW deployment documents.

Sampling of Woreda, HC and HPs and households for cost effectiveness of HEP: The cost-effectives study was nested within rural HEP assessment and it was planned (a) to use data collected from women in rural HEP assessment, (b) collect HP level data from HEWs working in one randomly selected HP out of the six HPs in every study woreda (n=62) included in rural HEP assessment , (c) collect HC level data from one HC that supervise the HP described in (b)

2.4 Respondent categories and number of transcripts of qualitative investigation

Qualitative investigation had a key role in generating evidence in the national assessment of rural and urban HEP, and in the four in-depth investigations of selected dimensions of the HEP program. Both key informant interview and focus group discussions were used to collect the required information.

(a) The national HEP assessment in rural and urban areas: qualitative investigation involved officials/managers, experts, and service providers from different levels of the health system MoH, RHBs, ZHDs, sub-city health offices, WorHOs/town health offices, and HCs), UHEPr, HEWs and community members (including WDA leaders, women from households that are UHEP service users/model households, and women and men from non-service user households) and partners that support the HEP program. Qualitative data were collected through 172 KII interviews and 109 FGDs regarding rural HEP. Similarly, a total of 132 qualitative interviews (55 FGDs and 77 KII) to understand the status of urban HEP.

(b) Assessment of the quality of Health Extension Workers' Training institutions Participants of qualitative investigation carried out through KII (n=43) were trainees, instructors, department heads, deans, preceptors (who supervise trainees during their internships), COC assessors, and focal persons (officials responsible for HEP matters within organizations) from Regional Health Bureaus (RHBs), regional TVET agencies, and the MoH, as well as the Federal TVET Agency.

(c) The role of the Health Extension Program in Public Health Emergency Management: qualitative data were collected using focus group discussion (1 FGD per region) and 91 key informant interviews (KII) with participants selected from (1) Health Offices of the study woredas; (2) HCs of the study woredas; (3) HEWs; and (4) Women Development Army leaders at the community level.

(d) Attrition of HEWs in Ethiopia: Key informant interview was conducted with 16 HEWs who have left their jobs.

3 DATA COLLECTION

3.1 Development of data collection tools

Data collection tools for the nation-wide survey were developed for different category of respondents: (a) a household questionnaire with separate modules for four study units (household, women, men, and youth girls' aged 15-24 years), (b) an HP assessment tool, (c) an HEW survey questionnaire, and (d) an HC assessment, tool. Qualitative data collection guides include key informant interview (KII) guides and focus group discussion (FGD) guides administered at different levels of the health system, including at the community level.

All data collection tools were prepared through a process that involved 4 major steps: (1) Sub-constructs related to the overarching research questions of the PHCPI framework were identified through a literature review by a team of professionals organized for each health system building block component (2) For each sub-construct, the data need was determined at the federal, regional, woreda, HC, HP, and community levels. (3) For each data need determined in step 2, standard questions were identified from different sources. For those with no pre-existing source of standard questions, new questions were formulated by the respective teams. (4) Questions were then arranged into data collection tools and guides based on their respective data sources.

Data collection tool development for the assessment of urban HEP and all the other in-depth studies followed the same procedures with appropriate customization to the objectives of each study. The tools developed for rural settings were taken as starting points whenever that was appropriate.

All survey tools for rural HEP assessment and four in-depth investigations and tools administered in regional towns were translated into six local languages (Amharic, Afaan-Oromoo, Tigrigna, Afar, Somali, Agnuak) and then translated back into English. The translated tools were pretested in communities outside of the sample woredas prior to data collection and observations from field-level pretesting were used to refine the data collection tools and procedures. Data collection tools administered in Addis Ababa and Dire-Dawa were translated into Amharic and followed the same procedures described above. All quantitative data collection tools were then prepared in the form of an Open Data Kit (ODK) data collection template with integrated data quality assurance features.

3.2 Data collection, supervision, and coordination team

Data was collected by a team of trained and experienced data collectors and supervisors. A team of enumerators, supervisors, and coordinators was established for data collection in each of the 9 regions and the two city administrations. Separate teams were established for the qualitative and quantitative data-collection activities. The number of quantitative and qualitative data collection teams in each region varied according to sample size in each region. Each team comprised 4 to 6 data collectors and a supervisor. In addition, a coordinator was assigned to each of the 9 regions.

3.3 Training of data collectors and supervisors

Comprehensive training was provided to all data-collection and supervision team members. Separate training sessions were prepared for (a) those conducting the household survey and (b) those performing qualitative and facility-level data collection. Each training session covered general guidelines on data-collection methods, sampling and data collection procedures, and the line-by-line contents of each data-collection tool. Each training session lasted 10 days. Each training session was also followed by pre-testing in real environment, by going to the field.

3.4 Data collection fieldwork

The data collection field work was organized in three broader categories: (a) national rural HEP assessment that covers selection of 62 woreda, and 6 kebele within each woreda, identification of HPs and HEWs assigned to these HPs, random sampling of 2 urban UHEPrs in study woreda towns, sampling of 34-38 households in each kebele, identification of HCs that supervise the study HPs and finally administer questioners and carry out qualitative data collection (i.e. KII and FGD), (b) Urand HEP assessment in Addis Ababa and in Dire-Dawa that covers identification of sampling frame and sampling of households, identification of sampling frame of UHEPrs and sampling of study participants, identification of participants for qualitative investigation and then conducting of data collection (i.e. both qualitative and quantitative, (c) data collection for in-depth studies(attrition, cost effectiveness of HEP, quality of HEW teaching institutions, role of HEP in PHEM.

Field data collection of the rural and urban HEP assessment were conducted in parallel but independently. Data collector screening, training, and central co-ordination were done by MERQ central team. Data collection tools used for urban HEP assessment were benefited from all process used to develop tools for rural HEP assessment. Field data collection of in-depth studies were conducted after completing rural HEP assessment and good performing data collectors in rural assessment were recruited for these studies. Except the assessment of HEWs teaching institutions, all other in-depth study were conducted in the same woredas, HCs, HPs and interviewed the same HEWs as that of rural HEP assessment. However, sampling of study units were done if small number unites were of interest in these studies. A different sampling frame was used for the assessment of HEWs' training institutions. Attrition study also covered Addis Ababa and Dire-Dawa city administration. Moreover, cost-effectiveness study extracted relevant data from women questionnaire administered during rural HEP assessment.

Household identification: In each region, the allocated number of woredas were randomly selected and listed for data collectors before their deployment. Once data collectors and supervisors arrived in each woreda, they sat with their respective WorHOs to obtain a sampling frame of kebeles. After this list was prepared, supervisors, along with relevant officials from the WorHOs, randomly selected 6 kebeles for HP assessment and 3 HPs for the household survey. Similarly, after reaching a selected kebele, supervisors obtained a sampling frame (i.e., a list of households) from the HEWs and kebele administrators. Supervisors then used an electronic random number generator to select 34 households from the sampling frame.

Household survey: A household survey was conducted through face-to-face interviews with women, men, and youth girls from selected households. A household questionnaire was used for the collection of data on household characteristics, exposure to the HEP, and the coverage of essential HEP-related services. Household characteristics were assessed for all sample households established at least 6 months before the data-collection period. The remaining modules were completed based on the availability of an eligible respondent in the household. Whenever available, 1 man and 1 youth girl were also interviewed from the sample households.

Survey of WDA: Four WDA leaders (1 to 30 network leaders) were randomly selected from a complete list of WDA leaders in each kebele selected for the household survey. The household questionnaire used for the household survey in the general population was administered to the household of each selected WDA leader.

HP assessment: An HP assessment tool, including sections on the availability of inputs, availability of services, and production of outputs, was used to assess selected HPs. In addition, the HP assessment included questions on the functionality of community structures, including WDAs, 1-to-5 networks, and social mobilization committees in pastoralist settings. The assessment was completed by interviewing the heads of HPs, making observations in the HPs, and reviewing HP records (files, family folders [FFs], registers, and reports).

Survey of HEWs: A survey of HEWs was conducted through face-to-face interviews with HEWs. All HEWs in the sampled HPs were included in the survey. The survey focused on the identification of factors that determine the performance of the HEP from the perspective of HEWs, as well as the characteristics of HEWs, including their level of education, knowledge, and satisfaction with their jobs. Knowledge assessment questions were also administered to assess objectively how knowledgeable HEWs were. The Health Extension Worker questionnaire was used for the HEW survey.

HC assessment: A quantitative HC assessment tool was prepared to collect data on the role of HCs in the implementation of the HEP, including HEP financing, supplies, drugs, and equipment, training on HEP, human resources, the HMIS, and other related activities. HC heads or their delegates were interviewed for this assessment. In addition, observations and document reviews were performed to assess the availability of HMIS tools and service statistics.

FGDS: WDA leaders participated in focus group discussions regarding 3 major thematic areas: (a) the role of the WDA in the HEP, (b) characteristics of HEWs, and (c) community perceptions of HEP-related services. The discussions were conducted in separate HPs to keep their length manageable. FGD guides were used to guide FGDs among the WDA leaders. In addition to the WDA leaders, FGDs were also held with community leaders and with men and women from the general population to explore external views.

Key informant interviews: KIIs were conducted at all levels of the health system. The interviewees included experts with experiences in HEP-related functions at WorHOs, RHBs, and the MoH. KIIs were also conducted with HC staff and HEWs. Experienced interviewers administered the KIIs at each level. KII guides were used to guide the interviews.

FGDS AT MOH AND RHBS: In addition to KIIs with officials at the MoH and RHB levels, FGDs were held among health promotion, disease prevention, and maternal and child health program experts who had been using the HEP as a platform to implement their respective programs.

4 DATA MANAGEMENT

4.1 Quantitative data management and analyses

Electronic data were exported from ODK to Stata 15 for analysis. Descriptive statistics were run with regional and livelihood disaggregation to determine the implementation status of the HEP in each of the 9 regional states and the two city administrations. Because of the disproportionate sample size allocation in different administrative structures, aggregate level estimates involved appropriate weighting. The weights were calculated by analysing the number of possible study units represented by each study unit. The population size of each region, the number of woredas in each region, the number of kebeles in each woreda, and the number of households in each of the selected kebeles were documented during the household survey and used to calculate the weights. Multivariable regression and logistic regression were used to identify the factors associated with the intensity of implementation of the HEP and the outcomes of the HEP at the individual and the household levels. Data management and analysis of the four in-depth studies followed similar procedures.

4.2 Qualitative data management and analyses

Each interviewer recorded answers to the demographic questions on a tablet and audio-recorded the interview on a digital recorder. Recordings were then uploaded to a central database, catalogued, and distributed to translators, who transcribed them in the English language. Transcriptions and translations were spot-checked for accuracy by a core team member and revised as necessary. Every effort was made to maintain participants' confidentiality during data collection, analysis, and writing. No names were attached to any of the data. In the results section, quotations are identified only by source (e.g., KII, FGD), location, and participant group (community, HEW, or program staff) where relevant.

Data was entered into NVivo, version 12, and analysed using thematic content analysis. A codebook was developed by the analysis team, including researchers involved in the project design and qualitative coders, and applied to the coding of all transcripts. The steps involved in codebook development were as follows: (a) initial codes derived from study goals and instrument questions, (b) codes adapted and augmented by a reading of 2 transcripts and the conceptual framework, (c) codes tested on 3 additional transcripts by multiple coders, and (d) codebook edited via the addition and deletion of codes as appropriate. All transcripts were open-coded using the final version of the codebook to capture the key themes and relevant ideas as identified in the data. At the initial phase, each transcript (n=12 in total) was coded by 2 independent coders and disagreements were resolved by the lead analyst, who reviewed all discrepancies and discussed them with the second coder as necessary to reconcile the coding. After this step the remaining transcripts were divided among the coders. Once the coding was complete, code reports were produced for each code, cleaned, and prepared for synthesis.

Each code report was synthesized by 1 team member as follows: (a) initially, text excerpts no longer appearing relevant to the code were grayed out, (b) all remaining excerpts were annotated with comments, (c) particularly illustrative quotes were highlighted, (d) comments were summarized in theme domains, and (e) subdomains with associated quotations were put into a table for each code report.

4.3 Cost-Effectiveness Analysis of the Health Extension Program

The costs of providing the HEP service packages were analysed using mixed methods (bottom-up and top-down). Twenty-one interventions were chosen from the HEP program covering the hygiene and sanitation, maternal and child health, and disease prevention and control packages. The cost components include personnel, medicine, supplies, infrastructure, capacity-building, and equipment. All costs are reported in terms of 2018 United States dollars (US$, using an exchange rate of US$1=27.6677 Ethiopian birr [ETB]) and a timeframe of 1-year is used. The final cost summary measure is cost per person per service used.

The measure of effectiveness is life years gained (LYG), calculated from the standpoint of the HEP's impact on the coverage of the health system. A full economic evaluation was applied to address the cost-effectiveness of introducing the HEP into the existing health system from the provider perspective. The cost-effectiveness of the interventions is reported in cost per LYG, compared with Ethiopia's per capita gross domestic product (GDP), in order to determine the cost-effectiveness of the interventions.

5. METHODS FOR SYSTEMATIC REVIEW OF THE HEALTH EXTENSION PROGRAM LITERATURE

A review of the HEP literature was conducted in 2019 in parallel with the collection and analysis of cross-sectional data. The review included national studies like service provision assessment (SPA), service availability and readiness assessment (SARA), emergency obstetric and newborn care assessment (EmONC), the EDHS, other published papers, and grey literature. Systematic review and meta-analysis were used as analytic approaches to synthesize the evidence from the existing literature.

Different databases that index review papers were searched for the presence of a review. These databases included: the Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports, the Cochrane Database of Systematic Reviews, the

Campbell Collaboration Library, the National Health Centre Reviews and Dissemination Databases, and Health Technology Assessment, and Evidence for Policy and Practice Information.

A scientific literature search from the AJOL, PubMed, Google Scholar, EMBASE, Ovid, and Scopus databases was conducted by combining "health extension," "community health worker," "HP," or "primary healthcare" and "Ethiopia" as search phrases and their corresponding MeSH terms. In addition, the literature was searched using Research Gate and cross-referenced using the reference lists of all identified articles for additional studies that may have been missed in the electronic search. The search for articles and reports from Google and Google Scholar were conducted using BOOLEAN terms.

Gray literature was searched from all academic institutions of the country, with a focus on the HEP and PHC, as well as government documents. All research reports and government reports on 1 or more aspects of the Ethiopian HEP were included in the review.

Data were extracted using a data-extraction tool adapted for HEP-related variables. All results were abstracted by 2 reviewers working independently to avoid extraction errors. The information extracted was synthesized qualitatively, summarizing the scope of studies conducted on the HEP, the gaps in the research, and the main findings of the studies in terms of the implementation status, effectiveness, challenges, and facilitators of the HEP. Meta-analysis was also considered for the concepts assessed and reported by an adequate number of studies.

6. METHODS OF SYNTHESIS OF EVIDENCE AND FORMULATION OF RECOMMENDATIONS

Various quantitative assessments, qualitative exploration, and systematic review of the literature identified several challenges to the current levels of performance of the HEP. These findings were synthesized through a participatory process involving decision-makers at the regional and federal levels.

A series of 9 consecutive workshops, supplemented by technical inputs from the assessment team, were conducted to develop a feasible and cost-effective set of recommendations based on the scientific evidence generated by the assessment.Debates were also organized to ponder on contentious issues.

7 LIMITATIONS OF THE NATIONAL ASSESSMENT OF THE HEALTH EXTENSION PROGRAM

Use of multiple sources of data and information to assess various aspects of the HEP is one of the strengths of the HEP assessment which allowed us to address the several challenges of using any single method. There are, however, some limitations whose sources include: (a) respondents' responses relying on recall, (b) universal coverage of the HEP, leaving no room for a comparative study to determine its impact, and (c) the possibility of social-desirability bias for the variables assessed using the self- reports of HEWs. These limitations might have under- or over-estimated the resource adequacy, the availability of services at the HP, the level of exposure of community members to the HEP, or the contribution of the HEP to health outcomes. Hence, the findings should be interpreted having these limitations into account.

Part 3

RESULTS OF THE RURAL HEALTH EXTENSION PROGRAM ASSESSMENT

SECTION 3.1: RESULTS OF THE RURAL HEALTH EXTENSION PROGRAM ASSESSMENT

1. SAMPLE AND BACKGROUND CHARACTERISTICS OF STUDY PARTICIPANTS

The National Assessment of the HEP covered a representative sample of households, HEWs, HPs, and HCs from 62 (96.9% of the sample woredas) randomly selected woredas in both agrarian and pastoralist settings. Pastoralist settings were represented by 32.3% of woredas, 31.2% of HPs, and 31.5% of households (Table 4, Table 5).

Table 4. Number of sampled woredas, health posts, health centers, and Health Extension Workers

	Woredas		Health posts		Health centres		HEWs	
	N	(%)	N	(%)	N	(%)	N	(%)
Total	62	100	343	100	179	100	584	100
Livelihood								
Agrarian	42	67.7	235	68.5	139	77.7	414	70.9
Pastoralist	20	32.3	108	31.5	40	22.3	170	29.1
Region								
Tigray	6	9.7	32	9.3	27	15.1	63	10.8
Afar	4	6.5	18	5.2	7	3.9	19	3.3
Amhara	10	16.1	60	17.5	39	21.8	95	16.3
Oromia	13	21	74	21.6	46	25.7	123	21.1
Somali	8	12.9	43	12.5	10	5.6	75	12.8
Ben-Gum	4	6.5	24	7	6	3.4	37	6.3
SNNPR	10	16.1	59	17.2	35	19.6	96	16.4
Gambela	4	6.5	17	5	5	2.8	42	7.2
Harari	3	4.8	16	4.7	4	2.2	34	5.8

Abbreviations: HEW, Health Extension Worker; Ben-Gum, Benishangul-Gumuz; SNNPR, Southern Nations, Nationalities, and Peoples.

Table 5. Number of households, women, men, and youth girls among households from the general population and from Women's Development Army/SMC households (unweighted report)

	Households from the general population								WDA/SMC households							
	Households		Women		Men		Youth		Households		Women		Men		Youth	
	N	%	N	%	N	%	N	%	N	%	N	%	N		N	%
Total	6504	100	6430	100	4416	100	900	100	618	100	613	100	389	100	120	100
Livelihood																
Agrarian	4454	68.5	4421	68.8	3157	71.5	658	73.1	400	64.7	400	65.3	250	64.3	88	73.3
Pastoralist	2050	31.5	2009	31.2	1259	28.5	242	26.9	218	35.3	213	34.7	139	35.7	32	26.7
Region																
Tigray	614	9.4	607	9.4	407	9.2	117	13	71	11.5	71	11.6	25	6.4	16	13.3
Afar	412	6.3	399	6.2	275	6.2	61	6.8	37	6	35	5.7	24	6.2	7	5.8
Amhara	1066	16.4	1060	16.5	603	13.7	169	18.8	71	11.5	71	11.6	33	8.5	16	13.3
Oromia	1323	20.3	1319	20.5	1139	25.8	162	18	152	24.6	152	24.8	121	31.1	30	25
Somali	821	12.6	798	12.4	376	8.5	97	10.8	93	15	90	14.7	63	16.2	13	10.8
Ben-Gum	407	6.3	406	6.3	340	7.7	50	5.6	46	7.4	46	7.5	36	9.3	16	13.3
SNNPR	1023	15.7	1009	15.7	759	17.2	150	16.7	112	18.1	112	18.3	60	15.4	17	14.2
Gambela	422	6.5	417	6.5	157	3.6	36	4	0	0	0	0	0	0	0	0
Harari	416	6.4	415	6.5	360	8.2	58	6.4	36	5.8	36	5.9	27	6.9	5	4.2

Abbreviations: SMC, Social Mobilization Committee; Ben-Gum, Benishangul-Gumuz; SNNPR, Southern Nations, Nationalities, and Peoples.

1.1 Socio-demographic characteristics of household survey respondents

The majority of female and male respondents were aged 25-44 years. There weremore older men than women. WDA leaders were in general older than womenfrom households from the general population. The majority of respondents inboth groups of households, both women and men, had no formal education,while the majority of youth girls from both groups of households did have someformal education. Currently married women constituted 80.3% of the womenfrom households and 76.0% of the women from WDA households. WDA leaders'households were wealthier than households from the general population (Table 6).

Table 6. Socio-demographic characteristics of women, men, and youth girl respondents, by type of household

		Households from the general population			WDA/SMC households		
		women	**men**	**youth girls**	**women**	**men**	**youth girls**
Number of respondents		**6430**	**4416**	**900**	**613**	**389**	**120**
Age category of respondent	15-19	4.4	0.5	80	1.1	0.3	80
	20-24	11.9	4.8	20	6.2	2.1	20
	25-29	18.8	12.8		15.5	6.4	
	30-34	14.7	14.9		13.9	10	
	35-39	14.4	14.4		20.4	15.2	
	40-44	8.1	14		14.8	15.4	
	45-49	5.5	9.4		9.5	16.7	
	50-54	8.8	7.5		11.9	11.6	
	55-59	5.3	5.3		4.7	9	
	60+	8.3	16.3		2	13.4	
Educational status (grades attended in formal school)	No formal education	74.8	56	18.8	68	57.6	19.2
	Grade 1-4	11.4	15.4	16	14.4	15.9	13.3
	Grade 5-8	9.4	17.7	41	13.1	14.7	43.3
	Grade 9 or above	4.4	10.8	24.2	4.6	11.8	24.2
Marital status of respondent	Currently married	80.3	98.3	8.3	76	99	5
	Divorced	4.6	0.5	3.9	7.7	0	5
	Widowed	11.2	0.5	0.3	10.4	0.8	0
	Separated	3.1	0.2	1.1	5.4	0	0
	Never married	0.8	0.5	86.3	0.5	0.3	90

Region	Tigray	9.4	9.2	13	11.6	6.4	13.3
	Afar	6.2	6.2	6.8	5.7	6.2	5.8
	Amhara	16.5	13.7	18.8	11.6	8.5	13.3
	Oromia	20.5	25.8	18	24.8	31.1	25
	Somali	12.4	8.5	10.8	14.7	16.2	10.8
	Ben-Gum	6.3	7.7	5.6	7.5	9.3	13.3
	SNNPR	15.7	17.2	16.7	18.3	15.4	14.2
	Gambela	6.5	3.6	4	0	0	0
	Harari	6.5	8.2	6.4	5.9	6.9	4.2
Wealth Quintile	Lowest	20.9	16	15.9	12.2	11.3	11.7
	Lower	20.1	19.1	17.4	17.5	15.2	13.3
	Middle	19.9	20	21.1	21.4	17	17.5
	Higher	19.8	23.3	21.2	20.6	21.9	26.7
	Highest	19.3	21.6	24.3	28.4	34.7	30.8
Abbreviations: WDA, Women's Development Army; SMC, Social Mobilization Committee; Ben-Gum, Benishangul-Gumuz; SNNPR, Southern Nations, Nationalities, and Peoples.							

1.2 Characteristics of key informants and FGD participants

A total of 172 interviews and 109 FGDs were conducted (MoH=5, partners=6, policy advisors=2, and, at the regional level=25, WorHO=40, HC heads and supervisors=49, HEWs=38, kebele leaders=13, male community member FGDs=13, female community member FGDs=29, and WDA FGDs=52

Table 7. Characteristics of key informants and focus group discussion participants

	Oromia	Amhara	SNNP	Tigray	Harari	Afar	BG	Gambella	Somali	Total
WDA/had	9	9	9	6	4	6	6	1	2	52
Women community members	5	4	5	4	2	3	3	1	2	29
Men and community leaders	2	4	3	4	1	2	3	2	1	22
Kebele administrators	3	2	2	0	0	2	2	1	1	13
HEWs	7	6	6	6	2	4	4	1	2	38
HC head	3	4	6	3	2	3	3	1	0	25
HEP supervisors	2	6	2	2	3	3	2	2	2	24
WorHO head	1	1	2	1	1	1	1	0	2	10
WorHO HEP coordinators	2	1	4	1	2	0	0	3	0	13
WorHO process owners	3	3	0	2	3	1	3	1	1	17
RHB head	1	1	1	1	1	1	1	1	0	8
RHB HEP coordinator	1	1	1	1	1	1	1	1	1	9
RHB program officers	1	1	1	1	1	1	1	1	0	8
Total	40	43	42	32	23	28	30	16	14	268

Abbreviations: SMC, Social Mobilization Committee; BG, Benishangul-Gumuz; SNNPR, Southern Nations, Nationalities, and Peoples; WDA, Women's Development Army; HDA, Health Development Army; HC, health centre; HEP, Health Extension Program; WorHO, Woreda Health Office; RHB, Regional Health Bureau.

2 RELEVANCE OF HEALTH EXTENSION PROGRAM PACKAGES AND SERVICE DELIVERY STRATEGIES

In this section, the relevance of the HEP was assessed looking specifically into the relevance of HEP packages in addressing the prevailing disease burden of the rural community (epidemiological relevance), the adaptability of the HEP over time (responsiveness of HEP), and the appropriateness and acceptability of the HEP service delivery modalities by drawing findings from both qualitative and quantitative sources.

2.1 Epidemiological relevance of HEP packages

The HEP packages were relevant in addressing the priority health needs of the population at the time of inception, and its objectives were in line with the national health policy. The packages are still relevant for the current health needs of the rural community. At the time of HEP inception, communicable-maternal-newborn and nutrition disorders (CMNNDs) were the leading causes of morbidity and mortality in Ethiopia. The HEP packages were designed to address these problems. Since then, Ethiopia has exhibited a substantial reduction in morbidity and mortality as a result of improvements in social determinants of health and increased access to health services [8,9]. Despite these improvements, CMNNDs still account for 60% of the total DALYs lost in Ethiopia, illustrating the relevance of HEP packages. Moreover, the HEP packages incorporated the most important risk factors driving disabilities and deaths, which are behavioural risk factors including malnutrition, and sexual behaviours, and environmental factors including WASH (Figure 6) [1,23,24].

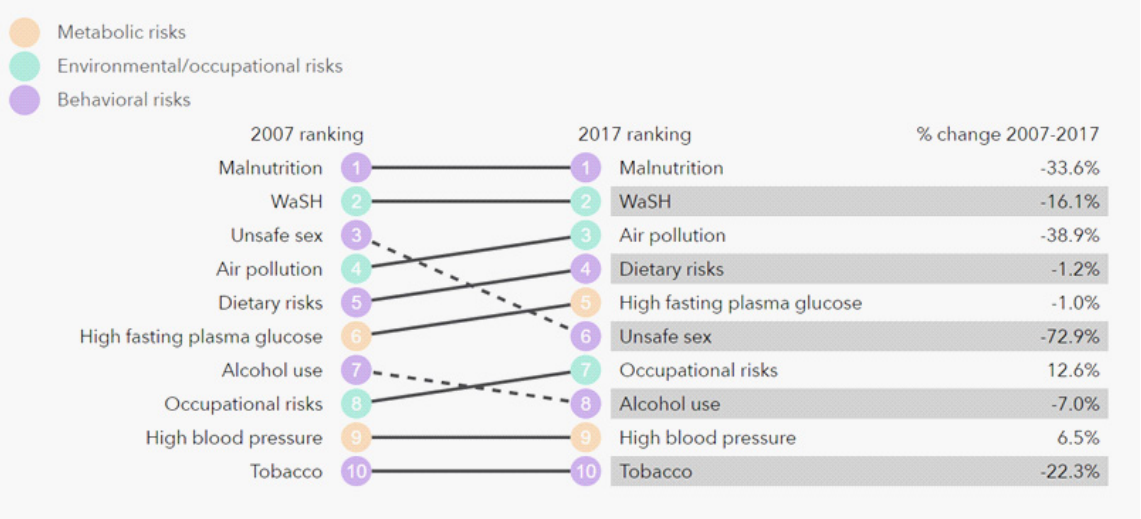


Figure 6. Risk factors driving deaths and disability in Ethiopia, 2007-2017

2.2 Relevance of HEP service delivery modalities and approaches

For a program to stay relevant it should be responsive to the changing needs, context and priorities of the government and the target population. In Ethiopia, the burden of non-communicable diseases (NCDs) is on the rise resulting in double burden of communicable and non-communicable diseases. By 2016, 39% of all deaths in Ethiopia were attributable to NCDs, where cardiovascular diseases and cancer accounted for 17% and 7% of all deaths, respectively [25]. In fact, NCDs are expected to be the leading causes of mortality in 2030, exceeding the combined mortality from CMNNDs, which necessitates the revision of the HEP packages to promptly address these emerging health needs. In response to these epidemiologic changes, in 2016, NCDs prevention and other priority communicable and neglected tropical diseases were incorporated in the HEP. Moreover, high impact curative services including iCCM and CBNC were also among the myriad of interventions added to the HEP. Although, these inclusions make the program responsive, it also increases the volume of work beyond HEWs capacity. Some activities might also be beyond the skill set of HEWs [2,3,6].

2.3. Adaptability of HEP packages and service delivery modalities

All the HEP packages are considered essential by the rural community. In the household survey, over 70% of respondents, confirmed that the HEP is accepted by the community. Similarly, over two thirds of respondents agreed that the HEP empowers communities to solve their health problems.

However, the community demands more comprehensive health services. The program emphasises on health-promotion and disease prevention activities and few high impact curative services. The absence of curative services has been the source of dissatisfaction, and limit the acceptance of services provided at HPs as evidenced by bypassing HPs to visit higher level health facilities, for services that can be provided at HP level. Among households whose members had ever visited an HP, 43.9% of women, 51.5% of men, and 49.3% of youth girls suggested that additional services be provided there. The treatment of sick adults, the treatment of sick children, and delivery services were the most recommended by women to be included as part of HEP packages. Allowing women to have all their ANC and PNC services at HPs was another recommendation made by women, men, and youth girls alike. (Figure 7)

2.4. Appropriateness of HEP service delivery modalities

The HEP employed different service delivery modalities including home visits, outreach services and static (services at HPs). HEWs are expected to spend 50-75% of their working time conducting home visits and outreach activities, and the remaining time at the HP. Service provisions through home visits are accepted by the majority of women and men (82% each) and 77% of youth girls. The acceptability of services through home visit was 82.4% in agrarian and 74.7% in pastoralist communities among women, 82.0% in agrarian communities and 72.0% in pastoralist communities among men, and 76.7% in agrarian communities and 68.5% in pastoralist settings among youth girls. Community members and program experts also asserted the usefulness of home visits in understanding community needs and building trust. However, service provision through home visits is challenging (specially in pastoralist communities) and it needs more time than static HP services. The HEP uses two community engagement and ownership strategies: WDA mobilization and model family training.

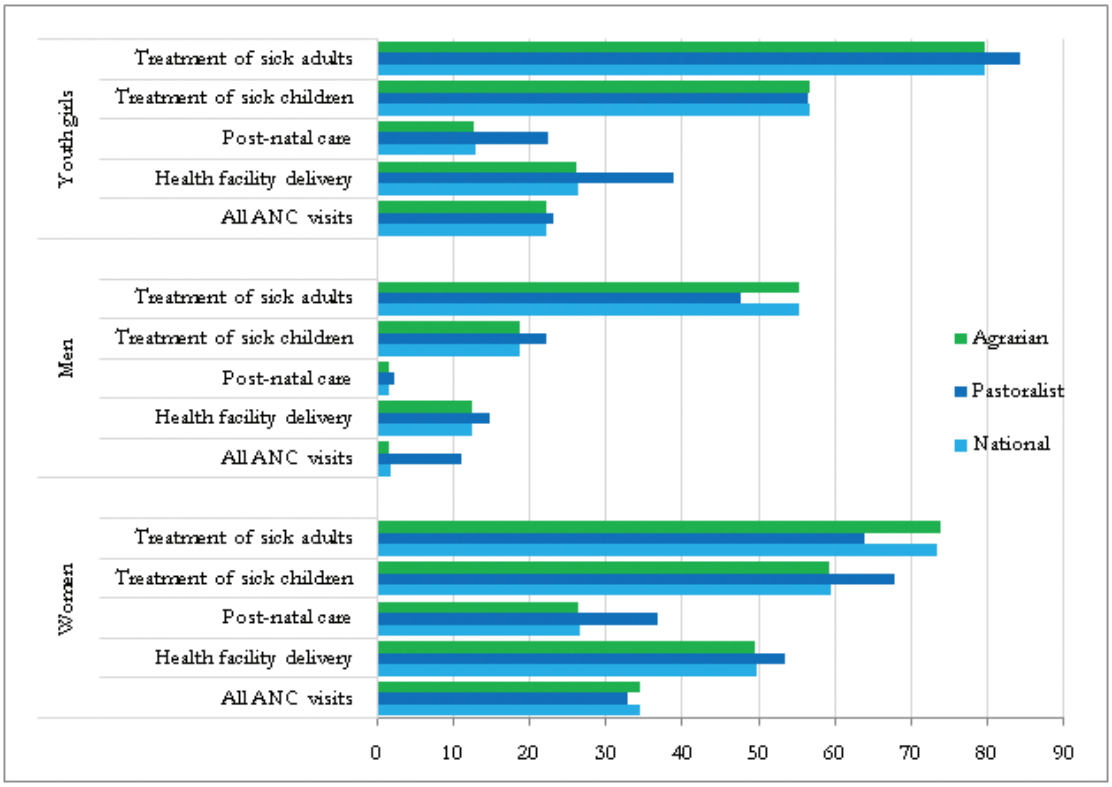


Figure 7. Percentage of household members who recommended additional services at HPs in response to their health needs

2.5. Acceptance of HEWs by the community

The HEP design recommended that HEWs should be women on the premises that women are more culturally acceptable than men to educate rural women on family health-related issues. HEWs conduct outreach activities and home visits and they are expected to do demonstrations (e.g., by showing mothers how to care for newborns, cook nutritious meals, and waste disposal). In fact, male HEWs are also deployed in the pastoralist areas, given the difficulty of the geography for women.11 In the current assessment, over 70% of respondents agreed that the community trust the HEWs, and consider them as a model for good behaviour. Household members were asked about their gender preference of HEWs and a large majority of women, men, and youth girls (88-89%) reported that they accept female HEWs. Mixing of male and female is also recommended by the community with the premises that males are more appropriate to educate and persuade men (eg. Latrine construction), while females are more appropriate to educate women (eg. Maternal and child health).

3 INPUTS OF THE HEALTH EXTENSION PROGRAM

Ensuring availability of inputs is essential for a successful implementation of any program. Like any other health programs, the HEP requires an adequate amount of human resource, infrastructure, drugs and other medical and laboratory supplies to function properly. In this section, the availability, and adequacy of the required inputs are presented.

3.1 Human resources in the HEP

In 2015, the government projected that around 41, 000 HEWs would be needed in 2020, and 58,260 in 2025 to fulfill the minimum requirement of 2 HEWs per HP. In 2019, there were 39,878 HEWs staffing 17,587 health posts throughout the country. In the current assessment, on average 2.4 HEWs were available per health post, and 87% health posts meet the minimum requirement of 2 HEWs per HP (Table 8). However, this number is found to be inadequate in relation to the volume of work expected from HEWs. In fact, the government has revised the standard to increase the number of HEWs per health post. HEWs have a varied level of training and qualification. Most of the HEWs have level III (one-year training) or level IV (three years training) qualification (Table 8). COC certification is required for qualification, however, a considerable proportion of HEWs are not qualified, while some failed to pass the certification test (25%), others did not take the examination at all (18%).

Table 8. Staffing level of health posts by region and livelihood, Ethiopia 2019

Background	Number of HEWs per HP (mean)	Proportion of health posts having:					
		two or more HEWs	at least one level IV HEW	at least one nurse/ midwife	at least one COC certified HEW	at least one HEW currently on training	Unweighted # of HPs
National	2.4	86.7	62.4	4	83.5	3.5	343
Livelihood							
Agrarian	2.4	86.5	65.3	3.5	85.8	3.1	235
Pastoralist	2.6	88.5	33.5	8.9	60.5	7.6	108
Region							
Tigray	2.5	90	80.9	6.4	100	6.4	32
Afar	3	100	20.7	91	29.7	71.5	18
Amhara	2.3	88.7	69	2.6	73.2	2.6	60
Oromia	2.3	84.5	64.9	1.8	93.1	1.8	74
Somali	2.6	85.7	33	4.2	41.6	4.2	43
Ben - Gum	2.6	92.5	52.3	46.4	35.2	32	24
SNNP	2.7	87.8	58	2.1	87.1	2.1	59
Gambella	5.8	94.9	66.5	74.5	87.2	51.4	17
Harari	3.1	100	58.7	13.5	69.1	8.7	16

3.1.1. Selection and recruitment of HEWs

The HEP implementation guideline recommended that HEWs should be females (except in pastoralist areas, where males can also be HEWs), be 18 years old or older, have at least a secondary school certificate (finishing grade 10), speak the local language, and live in the community and know the community culture and norms. However, the recruitment process is not necessarily in line with these recommendations. In some instances, HEWs are selected from communities which are different from their workplace. In fact, the current assessment disclosed that nearly one-third of HEWs are not living in the community (live in nearby towns). Individuals with low levels of schooling are recruited as HEWs in pastoralist communities, mainly due to shortage of recruits who meet the criteria. In fact, the schooling requirement (grade 10) is found to be inadequate to get candidates capable of comprehending the college education, and acquire the necessary skills.

3.1.2. Career advancement for HEWs

The HEWs' career development was not given due attention during the design of the HEP. Neither the HEWs system of promotion nor educational advancement opportunities were clearly articulated. As a result, HEWs have long been denied career advancement and education opportunities. Recently, the government has designed career advancement pathways for HEWs, where level III HEWs upgrade to level IV, and level V (equivalent to Bachelor's degree), once they pass the CoC exam and engage in college education for an additional year [25]. Still the current career advancement opportunities are considered inadequate by HEWs. The absence of pathways for HEWs to become clinicians or other public health professionals is also a major cause of discontent among HEWs.

3.1.3. Pre-service and in-service training

A total of 23 TVET colleges scattered throughout the country are dedicated to providing HEWs. Assessment of the facilities in these colleges, and the curriculum revealed that the HEP curriculum contents are in line with the health policy and consistent with the job description of HEWs. The scope of the curriculum, however, is very broad, and the time allotted to cover the content is short. In addition, maintaining the balance between the theoretical and practical components (a 30% to 70% ratio, as specified in the curriculum) was found to be problematic as the training focuses more on theoretical subjects. The majority of HEW trainees rated the relevance of the courses as very good or good in developing their competence (85%) and skills (84%). Moreover, 81% of HEW trainees rated the relevance of the courses to produce professionals who could meet the needs of the community as either very good or good. The facilities, classrooms, libraries and skill labs of the colleges are inadequate.

Currently, HEP incorporates additional services, which were not part of the original HEP packages, this include high-impact curative services, such as iCCM, CBNC, and treatment of common childhood illnesses. This evolution amplifies the importance of in-service training for HEWs. In this regard, 69% of HEWs have participated in integrated refresher training (IRT) at least once and 42% have participated in IRT twice in the last five years. Specifically, 71% of HEWs took ICCM and 83% CBNC training.

3.1.4. Knowledge and skill of HEWs

Assessment of HEWs knowledge revealed that HEWs have a substantial knowledge and skill gap in relation to the commonest interventions expected from them. For instance, only half (51%) of HEWs have correctly mentioned the Ethiopian child vaccination schedules; HEWs with level IV qualification have better knowledge than level III HEWs (57% versus 47%). In spite of the observed knowledge gaps, HEWs have rated their skills in performing expected tasks relatively well. Majority (85%) of HEWs reported that they are able to detect signs of danger during pregnancy, 59% can attend a normal delivery, and 57% can diagnose complications of labor timely. Almost all HEWs can provide short term family planning methods, only few HEWs can provide long acting family planning, such as intrauterine contraceptive device (11%), and implanon (63%). (Table 9)

Table 9. HEWs' self-reported competence in attending labor, detecting signs of danger in delivery, and providing long-term FP, by background characteristics.

Characteristics	HEWs self-reported knowledge and competency (%)							Unweighted # of HEWs
	Detect danger signs in pregnancy	Attend normal labor	Timely detect complications of labor	Insert IUCD	Insert Implant	Remove IUCD	Remove Implant	
National	85.1	59	56.6	10.8	72.9	8.1	23.3	584
Qualification								
Below level III	85.6	57.5	63.7	7.3	72.1	2.4	2.4	24
Level III	81	49	47.6	2.5	58.8	1.9	13.2	321
Level IV	88.6	67.8	62.6	18.7	85.2	14.7	36.3	239
Livelihood								
Agrarian	85.7	59.3	56.3	10.6	76.9	8	24.4	414
Pastoralist	79.4	56.5	58.8	13.1	34.8	9.5	11.8	170
Region								
Tigray	100	57.8	50.5	17.8	94.7	19.3	53.9	63
Afar	89.3	49.5	57.6	15.6	15.6	15.6	15.6	19
Amhara	87.1	53.1	59.8	10.8	77.1	9.3	20	95
Oromia	81.2	59.7	44	10.7	78.5	8.7	30.4	123
Somali	69.4	72.2	73.6	18.6	18.6	14.3	17	75
B/ Gumuz	94.9	49.9	55.8	7	35.9	4.8	23.9	37
SNNP	92.3	60.5	74.2	7.9	73.7	2.1	9.6	96
Gambella	64.8	70.4	50.7	33.8	33.8	36.6	33.8	42
Harari	85.1	12.6	27.9	8.9	61.3	15.2	67.3	34

3.1.5. Job satisfaction and burnout

A Likert-type scale measurement was used to assess HEWs' job satisfaction. All items were answered on a 4-point scale, where 1 means "very dissatisfied," 2 "dissatisfied," 3 "moderately satisfied," and 4 "very satisfied." The measurement contains 33 items and consists of 8 dimensions of satisfaction: leadership, promotion, autonomy, work environment, professional training opportunity, job security and salary, recognition at work, and perceived other job opportunities. The overall level of satisfaction was measured using the mean of the scale as a cut-off point to categorize respondents as either satisfied or dissatisfied and respondents who scored above the mean were categorized as satisfied, and those who scored at and below the mean were considered dissatisfied. More than half of the HEWs (51%) were dissatisfied with their jobs. The major sources of dissatisfaction were salary and benefits (87%), presence of alternative job opportunities (75%) and promotion (71%), and training opportunity (67%). Whereas, HEWs were satisfied with their autonomy (72%), work environment and their relationships with co-workers (66%), and the recognition they get at work (54%). (Figure 8)

Figure 8. Satisfaction score of HEWs across eight domains

Burnout, a combination of emotional exhaustion, depersonalization, and low personal accomplishment caused by the chronic stress of medical practice, is increasingly recognized as one of the important factors affecting effectiveness of health professionals [28]. Burnout in this assessment was measured by an instrument consisting of 15 items and asking HEWs to give rating for each item using four response options: 1 "Rarely", 2 "Sometimes", 3 "Often" and 4 "Very often". Risk of burnout was analyzed by categorizing the total score of the scale into four ranges: between 15 to 18 "no risk of burnout" 19 to 22 "little sign of burnout" 33 to 49 "risk of burnout", 50 to 79 "severe risk of burnout". It was found that, a majority of the HEWs (75%) either showed little sign of burnout or were at risk of burnout. A small but meaningful percentage (4%) of HEWs have a severe risk of burnout. (Figure 9)

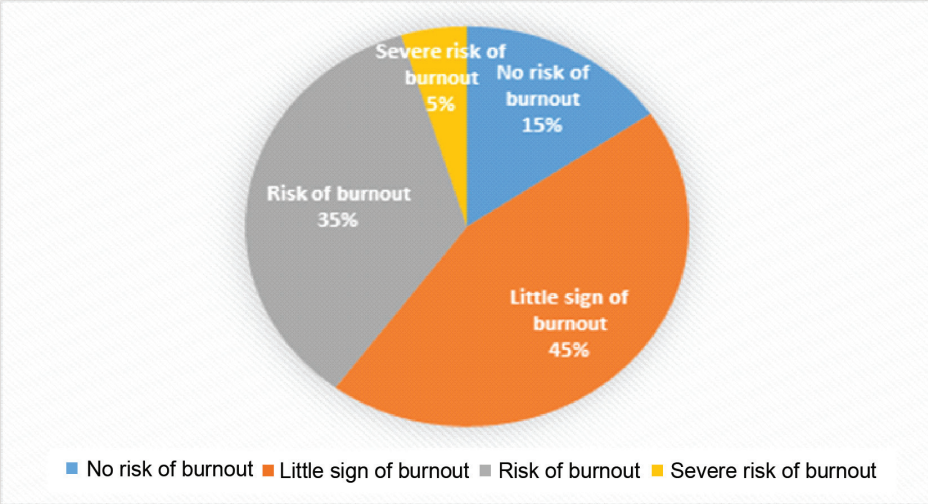


Figure 9. Level of burnout among HEWs

Work absenteeism can be an indication of dissatisfaction or burnout. In the current assessment, 198 (21%) were absent during the study visit. The reasons were leave (study (42%), training (19%), and annual leave. Qualitative study participants raised that clients/patients visiting HPs do not get services as HPs are closed in most days of the week. Shortage of staff, demotivation and place of residence of HEWs (some HEWs live in nearby towns) were some of the reasons.

3.1.6. Intention to leave and attrition

A relatively high level of intention to leave the job was observed among HEWs. Nearly one third (32%) reported their intention to leave jobs and 17% are currently looking for another job. The frequently cited reasons for intending to leave one's job were the low salary (31%), lack of career development opportunities (25%), the desire to live in an urban area (18%), and workload (15%). Despite high proportion of intention to leave, the actual rate of attrition was rather low. Only 21% of HEWs had left their job from the start of the program in 2004 to 2019, which might indicate absence of another job opportunity as a reason for low level of attrition.

3.2 Facilities and infrastructure

Since its introduction in 2003, the government has managed to construct 17,587 HPs in rural areas across all the regional states [27]. However, evidence on the status of HPs infrastructure, basic amenities, and medical equipment have not been sufficiently investigated, justifying the need for national scale study. Here the findings regarding HP infrastructure, availability of basic amenities, and medical equipment and supplies are presented.

3.2.1 Health Posts availability, accessibility and infrastructure

The current assessment indicates that, on average, one HP is serving 5 760 people. In agrarian communities, one HP serves an average of 6 057 people, whereas in pastoralist communities it serves an average of 2 919 people. The HEW-to-population ratio is 1:2 599 nationally; HEWs in agrarian communities serve an average of 2 728 people, and those in pastoralist communities serve an average of 1 361 people. According to the HEP guideline, a HP is expected to serve up to 5 000 people in agrarian community, and 3 000 people in pastoralist community. It is found that 42% HPs meet the standard for the population size they serve (i.e., fewer than 5 000 people; Figure 10).

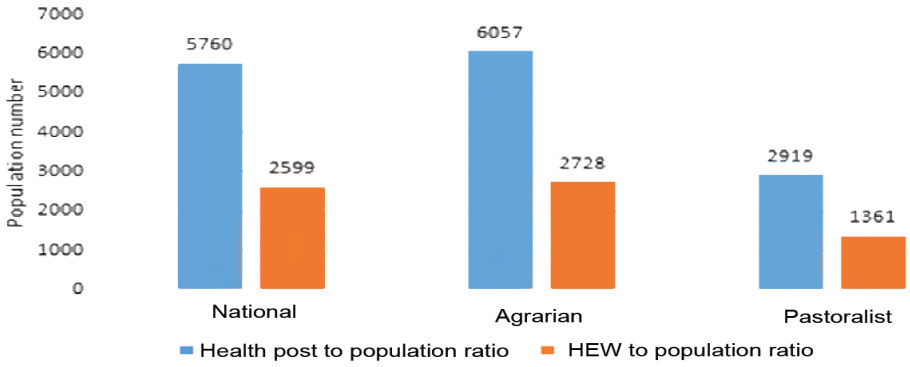


Figure 10. Health Post and Health Extension Workers to population ratio, by livelihood

A. Infrastructure and transportation

Per this study, 59% of HPs have an all-weather road connecting them to the nearest referral HC. A substantial number of HPs (35%), however, have access to roads that function only during dry seasons, and 6% of HPs have no access to a paved road connecting them to the referral HCs. In most HPs (89%), HEWs provide outreach services by walking. Few (7%) HPs use public transportation to provide outreach services, and 3% use bicycles or motorbikes.

B. Physical structure of HPs

About 87% of HPs have a stand-alone building, and 13% have a building shared with other government institutions (e.g., kebele administration office or Agriculture Office). Only 43% of HPs have their own fenced compound, which could compromise the quality of service delivery and the prevention of infection. The majority (81%) of the HPs meet the minimum standard number of rooms (3 or more). However, HP buildings are not convenient for healthcare services provision; on the one hand, the rooms are narrow to accommodate clients, and on the other hand, the poor quality of the buildings (made of mud and wood) are not inviting to clients. For instance, only 37% of health post buildings were up to the standard.

Guidelines recommend that an incinerator and a placenta pit should be available in any health facility, including HPs. Only 12% of HPs have incinerators, 7% have placenta pits, and 74% use open pits for solid waste disposal. (Table 10)

Table 10. Health posts road connectivity, building structure and facility, by livelihood.

Indicators	National	Livelihood	
		Agrarian	Pastoralist
Road connection			
HPs connected to all-weather road (%)	58.5	58.1	62.2
HPs connected to dry weather road (%)	35.3	35.6	32.6
Means of transportation			
HPs conducting outreach service by walking (%)	88.8	88.9	88.2
HPs provide outreach service using Bicycle/Motorbike (%)	7.4	8	1.9
HPs provide outreach service using public transportation (%)	3.8	3.1	9.9
HP building structure			
HPs with standalone building1 (%)	87.1	87.3	85.1
HPs with fenced compound2 (%)	43.2	43.1	44.8
HPs with 3 or more rooms (%)	81	81.9	71.6
HPs with a delivery room (%)	41.3	41.5	39.5
HPs met the building standard (%)	37.1	35.9	49.5
Waste disposal facilities			
HPs with incinerator (%)	12.3	11.4	21.9
HPs with placenta pit (%)	7.4	8	2
HPs use open pit for solid waste disposal (%)	73.8	77.7	35.8

[1]A stand-alone facility is defined as one having a separate building dedicated to the HP.

[2]A separate compound is defined as a clearly delineated/fenced compound.

[3] A health post is considered to meet the building standard when the floor is made of cement or tiles, and non-absorbent, and the walls are made of brick or block and ceilings are made of iron [28].

Abbreviations: HP, health post; HC, health center; SNNPR, Southern Nations, Nationalities, and Peoples Region.

3.2.2. Availability of basic amenities

The availability of electricity was assessed in 2 ways: (a) by assessing the HPs' connectivity with the national electric grid line and (b) by assessing the availability of regular electricity. Regular electricity is considered available at a facility if 1 of the following conditions is met: (a) the facility is connected to a central power grid, and the power supply was not interrupted for more than 2 hours at a time during normal working hours in the 7 days before the survey, (b) the facility had a functioning generator with fuel available on the day of the survey, or (c) the facility has backup solar power. In this regard, only 27% of HPs have an electric power source (9% from grid power and 17% from solar), and only 18% of HPs have regular electricity.

Overall, 27% of HPs have an improved water source in the facility. The main water source is the public tap. The proportion of HPs with an improved water source varies by livelihood. HPs located in agrarian communities were less likely to have an improved water source than pastoralist HPs (25% vs. 48%). Most HPs (87%) have a functioning latrine for clients/patients. More HPs in agrarian areas have a latrine than do HPs in pastoralist areas (91% vs. 78%). A majority of HPs (81%) have consultation rooms, as defined by the fulfillment of the standard for the number of rooms available in the HP (3 or more rooms). Communication equipment, however, was absent from most HPs. Only 1.2% of HPs have all basic amenities. (Table 11)

Table 11. Availability of basic utilities in the HPs by livelihood.

Amenities	National (%)	Livelihood	
		Agrarian (%)	Pastoralist (%)
HPs with power source1	26.5	26.4	27.2
HPs with regular electricity2	17.7	17.3	21.1
HPs with improved water source3	27.1	25	47.7
HPs with sanitation facilities4	87.4	89.3	69.2
HPs with communication equipment5	5.7	6.2	0.9
HPs with consultation rooms	80.9	81.9	71
HPs with all basic amenities	1.2	1.3	0
Unweighted # of HPs	343	235	108

Abbreviations: HP, health post; SNNPR, Southern Nations, Nationalities, and Peoples Region.

[1] Power source: Facility is connected to a central power grid, facility has a functioning generator or invertor with fuel available on the day of the survey, or facility has backup solar power.

[2] Regular electricity: There has not been an interruption in power supply lasting for more than 2 hours at a time during normal working hours in the 7 days before the survey.

[3] Improved water source: Water is piped into facility or onto facility grounds; or water is from a public tap or standpipe, a tube well or borehole, a protected dug well, or protected spring, and the outlet from this source is within 500 m of the facility.

[4] Sanitation facilities: The facility has a functioning flush or pour-flush toilet, ventilated improved pit latrine, pit latrine with slab, or composting toilet.

[5] Communication equipment: The facility had a functioning land-line telephone, a functioning facility-owned cellular phone or wireless telephone, a private cellular phone supported by the facility, or a functioning short-wave radio available in the facility.

3.3. Management of drugs and medical supplies at health posts

3.3.1. Availability of tracer medical equipment

The overall availability of tracer medical equipment in HPs is very low. For example, only 39% of HPs (37% in agrarian communities and 51% in pastoralist communities) have a refrigerator, although all HPs are expected to provide EPI services. The highest availability was observed for vaccine carriers (87%), followed by child weighing scales (83%) and thermometers (72%). The lowest level of availability was observed for stretchers (18%) and dressing sets (23%). HPs in pastoralist communities have lower availability of all basic equipment than HPs in agrarian communities (Table 12).

Table 12. Availability of functional basic equipment at HPs (N=343)

Equipment	Livelihood		National (%)
	Agrarian (%)	Pastoralist (%)	
Stethoscope	54.5	41.7	53.3
BP apparatus	36.5	30	35.9
Thermometer	74.3	57	72.7
Kidney dish	57	35.6	55.4
Delivery set	43	21.5	41.1
Delivery table	49.8	27.8	47.7
Examination table	46.7	26.7	44.8
Cold box	43.9	35.2	43.1
Adult scale	53.5	42.2	52.4
Child scale	83.6	80.2	83.3
Fetoscope	73.4	42.7	70.5
Sterilization	33	14.5	31.3
Stretcher	19.2	13.1	18.6
Refrigerator	37.3	50.9	38.5
Vaccine carrier	88.7	68.1	86.8
Drug shelf	66.5	58.6	65.7
Dressing set	24.5	10.2	23.2
Artificial light source	29.4	21.8	28.4
Abbreviations: HEP, Health Extension Program; BP, blood pressure.			

The availability of basic equipment, including blood pressure apparatus, stethoscopes, thermometers, adult scales, child scales, and artificial light sources, that should always be available in the HPs were assessed. The findings show that only 5.4% of health facilities have all the basic equipment, and the mean availability of basic equipment is 3.3 from the maximum of 6. (Figure 11)

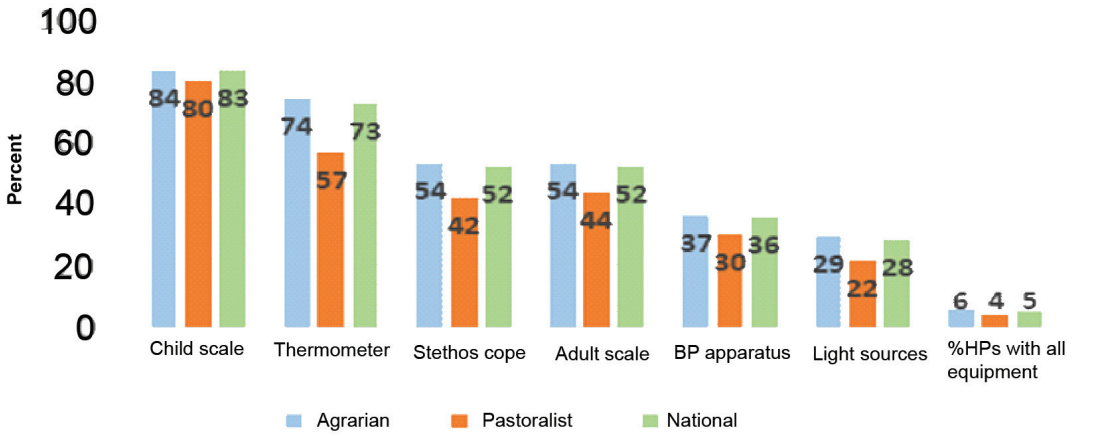


Figure 11. Proportion of HPs which have basic equipment by livelihood.

3.3.2.Equipment for infection prevention and control

Overall, the availability of equipment for infection prevention and control was very low. For instance, only 30% of HPs have sterilization equipment. The availability of sterilization equipment varies by livelihood where nearly one third of HPs in agrarian communities have sterilization equipment; in pastoralist areas, only 10% do. Nearly 90% of all HPs had disposable syringes and 89% had safety boxes at the time of the study visit. Only 46%, however, had sterile gloves and 56% had examination gloves. Meanwhile, waste receptacles were available in 56% of the HPs (Table 13).

Table 13. Availability of IP equipment, by livelihood (N=343)

Equipment	Livelihood		National (%) (N=343)
	Agrarian (%)	Pastoralist (%)	
Sterilization	33	14.5	31.3
Waste receptacles	58.3	39.2	55.5
Face Mask	8.9	13.8	9.6
Safety box	90.3	82.5	89.2
Apron	33.9	17.6	31.7
Heavy-duty glove	11.2	7.3	11.7
Sterile glove	50	26.5	46.1
Examination glove	58.7	42.7	56.5
Boots	6.7	5.2	6.5
Disposable syringe	91.6	76.5	89.6

Abbreviations: HP, health post; IP, infection prevention; HEP, Health Extension Program.

3.3.3. Availability of tracer drugs

A number of tracer drugs were absent from the majority of HPs during the day of study visit. Moreover, stockouts of drugs for long periods of time have been common. The most widely available drug during the study visit was ORS (87%), followed by Medroxyprogesterone injection (86%) and Zink acetate 20 mg dispersible tablet (84%) and the least available drug was paracetamol suspension (15%). Amoxicillin suspension/dispersible tablet was available only in 37% of health posts (Table 14). Assessment of stockouts in the past six months indicated that an average stock out duration ranges from 30 to 60 days. The reasons for stockout were poor logistic supply management system at the health posts and irregular supply from health centers.

Table 14. Percentage availability of tracer drugs in HPs during the study visit, by livelihood (n =343).

Drugs	Livelihood		National (%) (N=343)
	Agrarian (%)	Pastoralist (%)	
Pentavalent vaccine	41.5	45.8	41.9
Implanon NXT	74.5	24.5	69.9
Depo-Provera (Medroxyprogesterone) Inj	90	50.2	86.3
Vitamin A capsule any strength	81.6	66.9	80.3
Tetracycline eye ointment	30.6	41.6	31.6
Albendazole 400mg	72.5	61.4	71.5
Iron with folic acid	65.1	66.5	65.2
Oral Combined contraceptive	60.4	37.2	58.2
Artemether-Lumefantrine	34.3	28.1	33.7
Disposable Syringe of any size	91.3	68	89.2
Oral rehydration salt	88.4	67.8	86.5
Zinc acetate 20mg dispersible tablet	85.7	64.3	83.7
Amoxicillin suspension/DT	37.4	52.6	38.9
Paracetamol 500mg tablet	36.3	45.3	37.1
Paracetamol syrup/suppository	13	36.1	15.1

3.4 Financing of the Health Extension Program

National spending on the HEP was estimated using data from the National Health Accounts from 2010/11 to 2016/17, and using secondary data form EPSA for drug cost, supply and medical equipment; human resources data, health service coverage and use reports, and HSTP. The annual inflation rate from the Central Statistics Agency (CSA) and purchasing power parity (PPP) from the World Bank were also used to adjust the expenditure figures to standard units. Primary data on HP-level inputs were also used to supplement secondary sources in the estimation of the share of the HEP from the total PHCU-level expenditure. The nominal spending data were adjusted based on the PPP and exchange rates.

Total HEP spending in nominal terms increased from 2.4 billion ETB (USD 0.52 billion in terms of PPP) in 2010/11 to 5.1 billion ETB (USD 0.58 billion in terms of PPP) in 2016/17. But, the share of HEP spending in the Total Health Expenditure declined from 8.9% in 2010/11 to 7.1% in 2016/17. Similarly, the share of HEP from the total PHCU expenditure has showed a declining trend, where share of HEP has slightly declined from 25% in 2010/11 to 22% in 2016/17. (Figure 12).

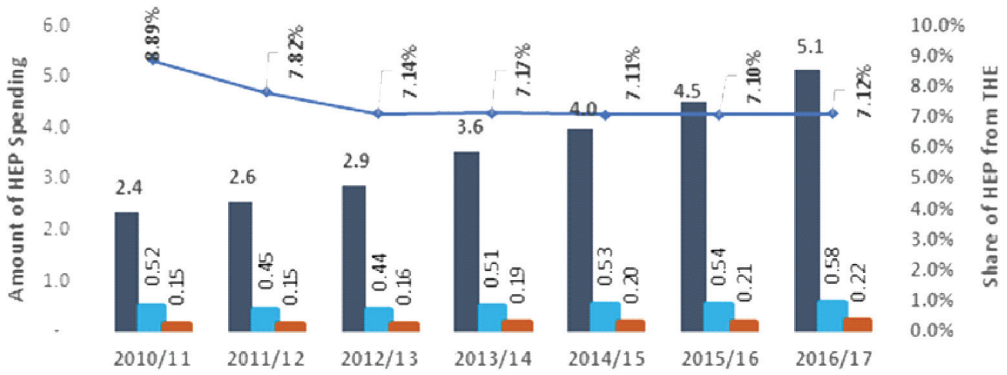


Figure 12. Among of HEP spending and share of HEP from the total health spending, 2010/11-2016/17

Abbreviations: ETB, Ethiopian birr; USD, US dollar; PPP, purchasing power parity; HEP, Health Extension Program, THE, Total Health Expenditure.

Majority (65.3%) of HEP finance for the period 2010 to 2017 has come from external sources, the remaining 34.7% was covered by the government. The share of government spending in the total HEP spending has increased from 20.8% in 2010/11 to 40.4% in 2013/14, but the government share has become steady from 2013/14 to 2016/17.

4. HEALTH SERVICE DELIVERY THROUGH THE HEALTH EXTENSION PROGRAM

In response to the low health-seeking behaviour and inadequate health service delivery across the country, the HEP was designed to deliver 16 packages of health services intended to improve the living conditions of households, boost demand for health services, and increase the use of high-impact, low-cost interventions. The HEP intends to achieve the targeted health outcomes through a number of health service delivery modalities, including home visits, community outreach, and HP-based services. These modalities will ultimately lead to the implementation of the HEP at the household level, reflecting the adoption of the desired behaviours by the household members. In addition to these modalities, HEWs provide Model Family Training (MFT) to selected women about the 18 packages assuming that trained women will change their households' behaviours and influence the adoption of the desired behaviours among their neighbours and relatives.

In this assessment, access to HEP and the level of community's exposure to HEP are assessed. In addition to assessing the community's awareness about service availability, their progress towards full implementation of HEP and adoption of desired health behaviour were assessed. Moreover, the factors that determine adoption of desired behaviour were also assessed.

4.1 Physical accessibility of HPs and availability of services

HPs are almost universally available in the study kebeles; at least 1 HP was available in 97.4% of the kebeles included in the study. The assessment of availability of services in these HPs (using 67 tracer services categorized under 4 areas) showed that most of the basic services are widely available; there have been limitations, however, in the comprehensiveness of the available services and service interruptions. (Table 15)

Table 15. Availability of selected HEP services

Service area of HEP	Reported service availability	At least 1 client received the service during the last completed month prior the study	Service availability at the time of data collection
Family health			
At least 1 FP method	94.5	93.7	94.5
Short-acting FP	92.5	91.3	92.5
Long-acting FP	79.6	63.9	79.6
ANC	97.5	94.3	69.2
PNC	95.1	80.7	60.3
Immunization	93.5	91.7	38.9
Growth monitoring & nutrition	90.2	79.6	58.2
Adolescent reproductive health service	87.9	51.8	54.1
Disease prevention and control			
TB screening and/or treatment follow-up	90.3	53.7	53.2
Malaria diagnosis and treatment	81.9	42.5	58.4
HIV counselling and testing	72.9	46.1	36.6
First aid	71.8	21	34.8
Health education on:			
Water supply and food hygiene	97.5	71.9	63.9
Personal hygiene	97.4	80.5	66.2
Latrine use	97.3	77.9	63.3
Dry and liquid waste management	95.3	74.5	61.5

The average service availability score, calculated as the proportion of specific components of a service or package that were reported as available, was low for most of the packages. The score was 57.4% for FP, indicating a limited choice, and 69.5% for ANC, indicating a lack of comprehensiveness of care. [Figure 13]

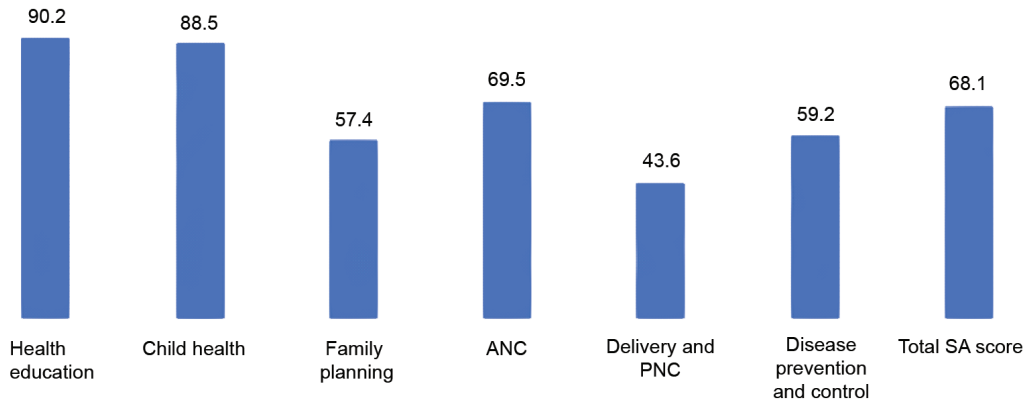


Figure 13. Service availability mean score, by service category or package

4.2 Community awareness of and familiarity with HEP services

Awareness of HEP services (recognizing a service after probing by data collector) was more than 50% for most HEP services; only a small proportion of the respondents, however, were familiar (mentioned a service without probing by data collector) with the HEP services. Health education, child vaccination, FP, tetanus-toxoid (TT) vaccination, and ANC were the most popular services across all groups of respondents. Familiarity with these services was even lower; less than half of women listed these services as being provided by HEWs in their respective communities.

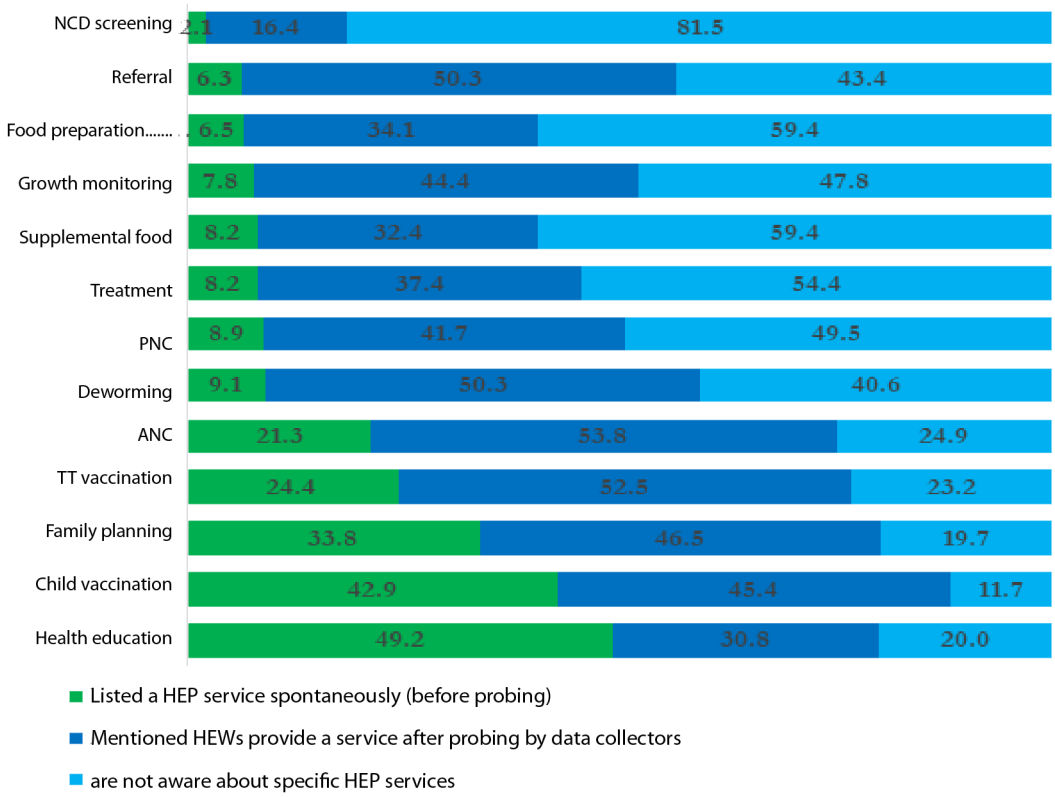


Figure 14. Familiarity and awareness of women about the HEP services

4.3 Community members' level of exposure to the HEP

4.3.1. Home visits by HEWs

The proportion of households reporting ever having had a visit by an HEW was 55.1% (22.3% in pastoralist settings and 56.6% in agrarian settings). Only 32.0% of agrarian households and 14.7% of pastoralist households reported at least 1 HEW visit to their homes during the 1-year period preceding the study. Among those who had the exposure, adult women were the most commonly contacted household members, followed by adult men and children under the age of 5 years. Adolescent and youth boys were the least targeted household members.

Health education and child vaccinations were the most commonly provided services to households with at least 1 HEW visit during the last year. The health education topics covered during home visits were largely related to hygiene and environmental sanitation. Latrine construction and use, personal hygiene, waste management, and water supply/food hygiene were reported as topics of discussion during home visits by 92.9%, 84.5%, 82.1%, and 73.4%, respectively, of households that reported receiving health education during an HEW visit in the past 1 year. The least covered topics were HIV (35.2%), TB (35.7%), and malaria (41.4%).

4.3.2. Health post visits by household members

Ever having visited an HP was reported by 58.3% of women, 23.9% of men, and 14.9% of youth girls. At least 1 visit to an HP during the 1-year period preceding the study was reported by 39.4% of women, 14.5% of men, and 10.0% of youth girls. (Figure 15)

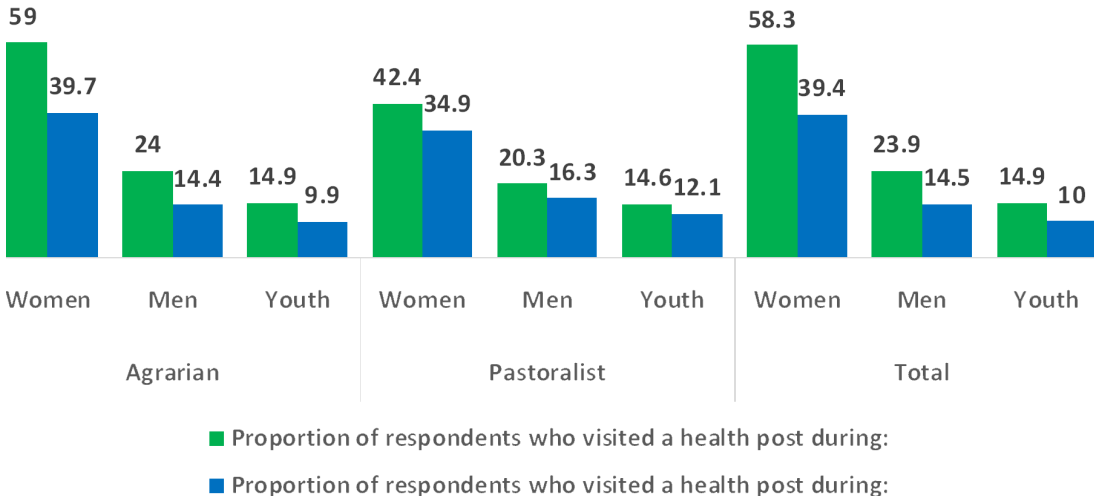


Figure 15. Exposure of respondents (women, men and youth girls) to HEP in lifetime and in the last 1 year

4.3.3. Services provided through outreach sessions

Lifetime exposure to health education or other HEP services in a setting other than the HP or home was 19.6%, 26.2%, and 19.5% among women, men, and youth girls, respectively. Exposure to such a service during the 1-year period preceding the study was 12.3%, 16.8%, and 12.2% among women, men, and youth girls, respectively. Health education was the most common service reported by all categories of respondents. Child vaccination, deworming, and TT vaccination were also among the services received by respondents in outreach settings.

4.3.4. Overall exposure of households to the HEP

In this assessment, 61.8% of households were exposed to the HEP through at least 1 of their members. This rate ranged from 62.7% in agrarian settings to 27.1% in pastoralist settings. In only 26.8% of households were all respondents within a household exposed to the HEP. The major source of exposure to the HEP in both agrarian and pastoralist settings was an HP, followed by, for women, a home visit. (Figure 16 -17)

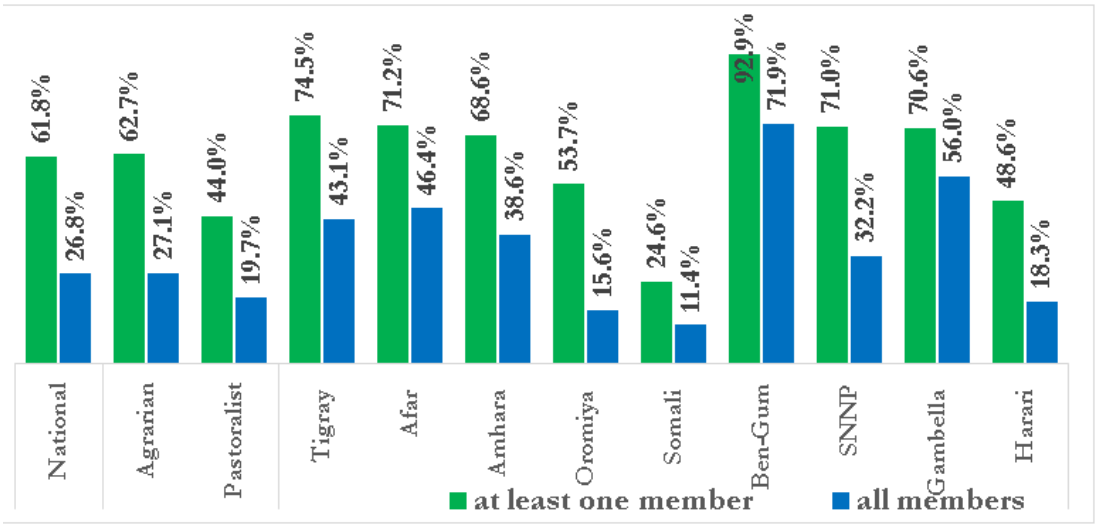


Figure 16. Exposure of household members to the HEP, by region

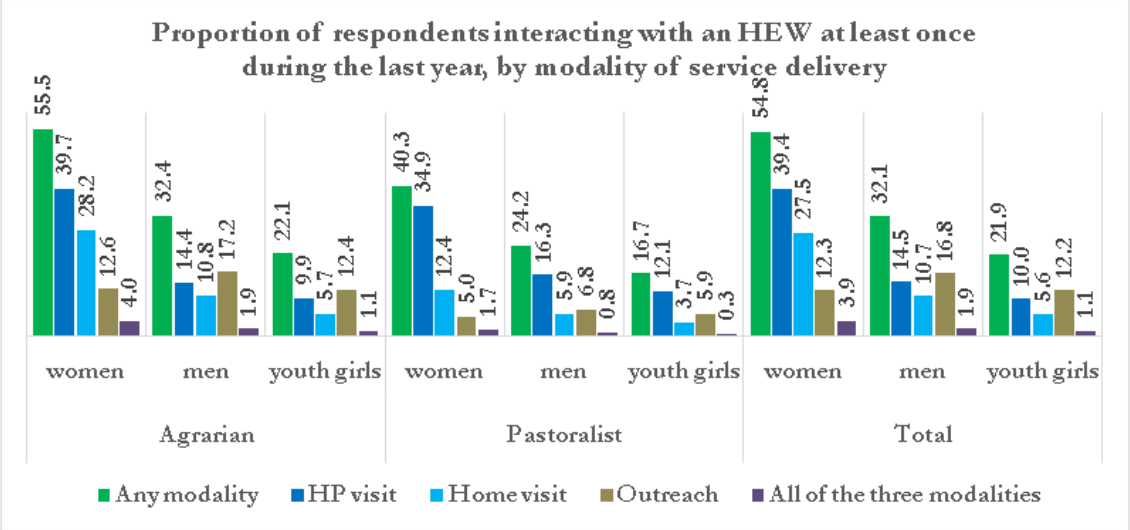


Figure 17. Exposure of household members to the HEP, by modality of service delivery

4.3.5. Household level adoption of HEP-targeted behaviour

Household-level implementation of the HEP was assessed using a set of criteria related to the desired household-level behaviours. Households were first assessed for their eligibility for each criterion and then whether they met the criteria for which they were eligible. The 17 selected indicators, which were related to measurable forms of HEP packages, were measured in two levels (less and more stringent criteria). The average level of adoption of the HEP at the household level was 50.8% when less stringent criteria were used and 40.9% when more stringent criteria were used. Households of WDA leaders were in general better at implementing the HEP; their progress, however, was much lower than was expected from a group of women selected as models and community mobilizers. Relatively better progress was observed in agrarian settings than pastoralist settings. Progress toward full implementation of the HEP at the household level was found to increase with higher educational status and wealth quintile. (Figure 18)

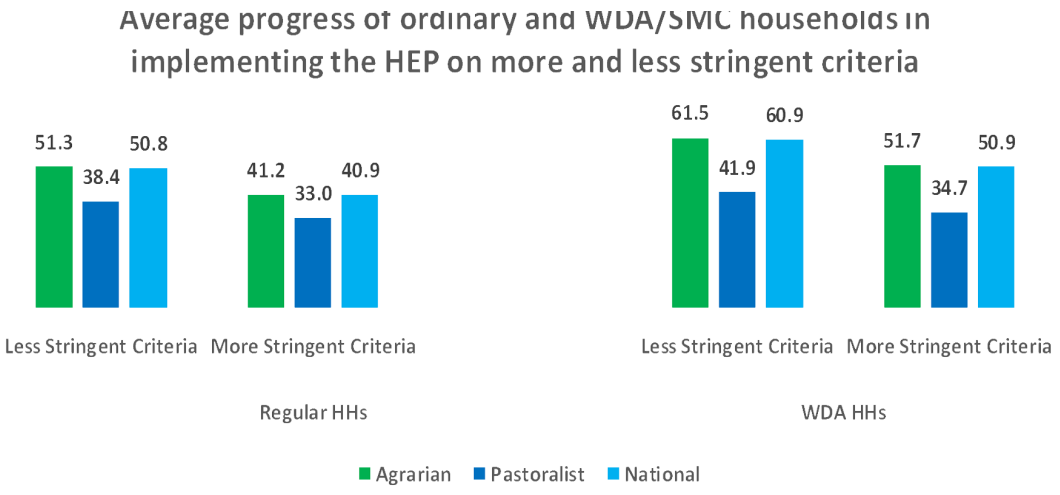


Figure 18. Household-level implementation of the HEP among regular and WDA households

4.3.6. Factors associated with implementation of the HEP

Factors associated with the implementation intensity of the HEP were identified by running separate regression models predicting the proportions of households reached by the HEP during the prior year through home visits, HP visits, and outreach sessions. Findings from the final analysis model showed that human resources-related factors are likely to be the primary drivers of the intensity of HEP implementation. The professional mix and level of education (availability of at least 1 midwife or nurse and of at least 1 level IV HEW), rather than the number of HEWs in an HP, are associated with better implementation of the HEP through home and HP visits. HPs with midwives or nurses or level IV HEWs had better implementation of the HEP in terms of both home visits and HP visits.

Population per HP is weakly and negatively associated with the coverage of home visits; the number of HEWs within an HP (i.e., on the payroll), however, has no significant association with the coverage of home visits. The limited human capacity at the HP level, both in terms of employee numbers and skill sets, is recognized as a major challenge to implementation. Attempts have been made to address these challenges by assigning HC staff to work in and support HPs but have faced the logistical challenge of the need for repeated travel from HCs to HPs.

Table 16. Factors associated with level of implementation of the HEP through home visits, HP visits, and outreach sessions

Covariates	B coefficients for proportion of households reached with HEP during the last 1 year through:		
	Home visit	HP Visit	Outreach
Population (in thousands) per HP	-1.95*	0.01	0.63
Proportion of villages/gotes within 5 km from HP	0.07	0.04	0.05
Number of infrastructure/facility standards met (maximum of 8)	2.49*	1.6	0.81
Population (in thousands) per HEW	1.32	0.44	1.05
Availability of at least 1 midwife or nurse	11.06*	22.37*	3.42
Availability of at least 1 level IV HEW	9.44*	9.50*	2.45
Number of required equipment and supplies available (out of 29 items)	**	0.44	**
Number of drugs and supplies without stockout in 6 months (out of 20 items)	**	0.44	**

Abbreviations: HEW, Health Extension Worker; HEP, Health Extension Program; HP, health post.
Potential confounders accounted for: livelihood, formal education, wealth index, median age of women
* P value <0.05
** P value >0.1 during first step

5 COMMUNITY ENGAGEMENT AND OWNERSHIP IN THE HEALTH EXTENSION PROGRAM

The HEP has evolved over time and become deeply rooted in communities as a program that encourages families to be responsible for their own health. The HEP reflects the government's strategy of community empowerment, self-reliance, responsibility, and ownership for one's own health [4,23,29].

By design, the HEP requires community ownership and engagement to achieve its purposes. In the operationalization of the HEP, community engagement and ownership is realized through participation in and contribution to the resourcing of the HEP, the selection of candidates for HEW, the M&E of the HEP services and HEWs themselves and participation in the governance of the health services [29].

The HSTP clearly stipulates 2 strategies of community engagement and ownership: training model families and mobilizing WDAs (in agrarian settings) or SMCs (in pastoralist settings). In recent years, there has been a shift toward a scaling-up strategy that requires HEWs to educate every household instead of focusing on a few model families. The National Assessment of HEP evaluated the coverage of model family training sessions and the existence and functionality of community structures, including WDAs and SMCs.

5.1 Model Family Training

5.1.1. Awareness and Enrolment

Findings reveal that MFT reached only a very small proportion of households. Only 14.9% of women in agrarian settings and 8.0% of women in pastoralist settings reported being aware of MFT. Enrolment and graduation rates were very small, with only 2.9% of agrarian and 2.1% of pastoralist households reporting having ever been enrolled in MFT. Awareness of and enrolment in MFT was relatively higher in Benishangul-Gumuz (36% & 8.1%) and Tigray (27.6% and 5.3%) and lowest in Somali (1.1% and 0.9%) regions, respectively. (Figure 19)

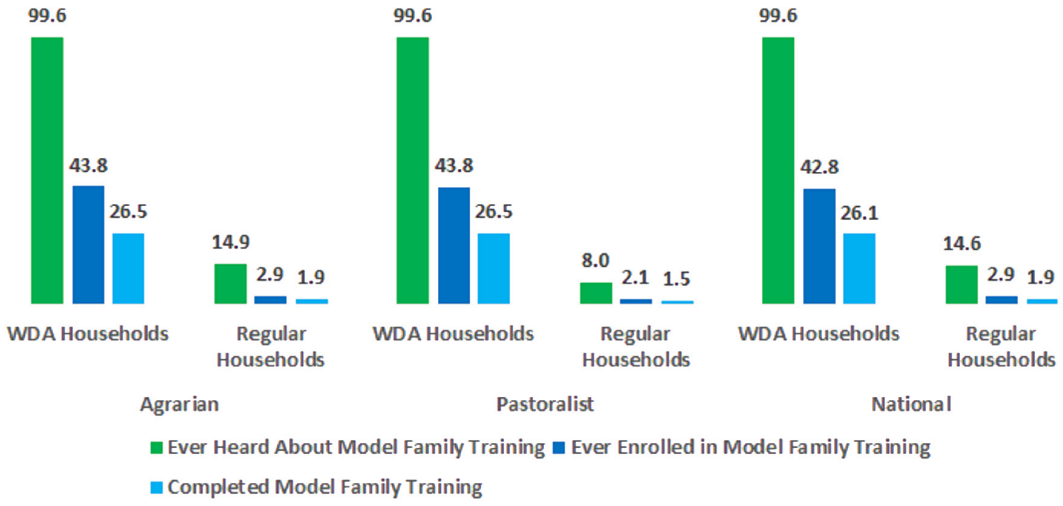


Figure 19. Awareness of, enrolment in, and completion of model family training among Regular and Women's Development Army households

5.1.2. Providers of the training and roles of model families

The training of model families was predominantly provided by HEWs (77.2%), but community leaders, including WDA leaders (12.4%), 1-to-5 network leaders (13.4%), and women from other model families (11.3%) were also reported to have participated in training model families.
More than half (52.4%) of women who completed the MFT program reported playing some role in educating other families, and about one fourth (22.8%) reported that they were engaged in sharing their experiences with other families. The most commonly reported role of women who had completed model family training was serving as 1-to-5 network leaders (41.7%) or WDA leaders (24.6%).

5.2 Participation of community structures in Health Extension Program implementation

5.2.1 Availability of community structures supporting the HEP

Some form of community structure supporting the HEP was almost universally reported by HPs in both agrarian and pastoralist settings. WDA structures were reported to be available in 97.0% of agrarian kebeles. Similarly, 92.5% of pastoralist HPs reported the availability of either a WDA or 1-to-5 network or an SMC structure that supported the HEP in their respective kebeles. In kebeles reporting having WDA structures, the median number of households per WDA was 32 (IQR: 21-85) in agrarian settings and 37 (IQR: 29-50) in pastoralist settings. The number of households per WDA is close to the recommended standard of 25 to 30 households per WDA, although there is considerable variability among kebeles. Despite the widespread availability of at least 1 WDA structure per kebele, coverage at the household level is very low: only 25.9% kebeles have a WDA density of more than 30 per 1000 households.

5.2.2 Functionality of community structures

Despite the universal availability of at least 1 WDA structure at kebele level, only 21.5% of HPs in agrarian settings had at least 1 WDA structure that met the minimum functionality criteria. Only 12% of HPs in pastoralist settings met the minimum criteria for WDA/SMC functionality (either a functional SMC or at least 1 functional WDA structure). (Figure 20)

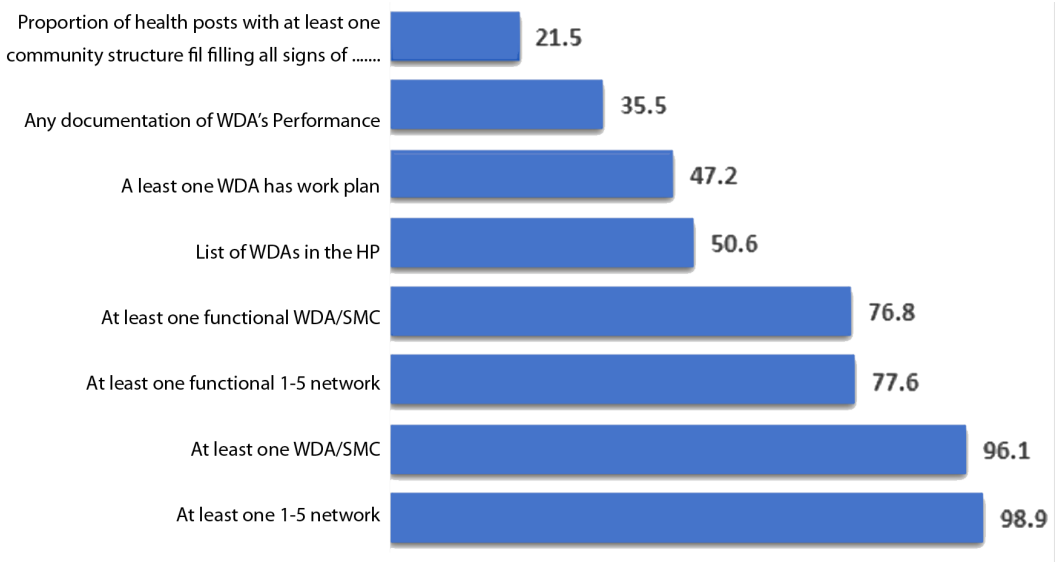


Figure 20. Proportion of agrarian HPs with at least one functional WDA

As reported by the informants in FGD and KII, the community members and active WDA structures support and engage with HEP in different mechanisms, which include contributions in cash, voluntary work and in-kind for the construction of HPs; Building communal latrines, repairing roads for ambulance services and constructing HEWs' residence; and involvement as a member of WDA/SMC and 1-to-5 networks.

As reported by the study participants, WDA/SMCs and 1-to-5 networks support the HEP through multiple activities which include: coordination of community dialogue sessions, bridging HEWs and the community, and solving social and health problems. More specifically, WDAs support HEWs through promoting environmental hygiene, preventing FGM, reminding pregnant woman to attend ANC, mobilizing communities for vaccination and other outreach and campaign-based services, and identifying, registering and reporting problems in children and pregnant women to HEWs.

5.3 Characteristics of Women's Development Army leaders

Findings from the qualitative research indicate that the selection of WDA leaders is mostly the collective responsibility of HEWs, kebele administrators, the Women's Affairs office, and the Women's Forum. The criteria most frequently mentioned for the selection of WDA leaders, however, were communication skills, education, community acceptance, a close relationship with the community, and a willingness to serve as models for others in their health behaviours.

Comparing the characteristics of WDA leaders with those of women in the general population revealed that WDA leaders are more likely to have better health behaviours, higher educational status (attendance in formal education: 40.1% vs 28%), and higher socio-economic status (Above middle wealth quintile: 57.9% Vs 42%). There remain, however, large gaps in the health behaviour of WDA leaders, given the model role they are expected to play. (Table 17)

Table 17. Comparison of health behaviour indicators between women in the general population and WDA Leaders

Indicator	Households in General Population	Households of WDA Leaders
CPR	44.60%	50.80%
ANC-4	48.30%	62.00%
Facility delivery	54.90%	52.20%
Postnatal care (at least 1 visit)	25.50%	15.50%
Full basic vaccine	35.70%	42.70%
Latrine availability	71.50%	84.20%
Abbreviations: CPR, contraceptive prevalence rate; ANC-4, 4th antenatal visit.		

The participants of the assessment identified the following challenges, related to community engagement and ownership. These include conflicts of interest among WDA leaders; acceptability and a lack of motivation; being perceived as politicians; the lack of service to the expected level; the lack of follow-up; the lack of incentives and recognition; the lack of capacity, and poor attention from the government; training large groups of WDA leaders at once has led to compromised quality of training limiting their ability to deliver their expected roles as community health agents; in pastoralist society, HPs are often located far from the community; this access is a challenge for WDA leaders; reluctance of men for their wives to serve as WDA leaders; cultural resistance to the WDA; and wrong perception of people towards WDAs as working in their own interest.

6. INFORMATION SYSTEM AND MONITORING & EVALUATION IN THE HEALTH EXTENSION PROGRAM

M&E is an integral part of the health system. It involves a review and reflection of the system inputs, processes, outputs, and outcomes of the health system's capacity and performance. M&E in the HEP includes both technical and managerial functions and purposes. The Community Health Information System (CHIS) is an information system especially designed to help manage community health programs, including the provision of care at HPs. Its purpose is to support decision-making at the grassroots level. The CHIS is organized around the family folder (FF), a family-centred tool designed to help HEWs manage and monitor their work in educating households and delivering an integrated package of promotional, preventive, and basic curative health service to families. The CHIS was first piloted by the Dire Dawa city administration in 2009. Modification of the system for the agrarian and semi-agrarian contexts was done in the Awi and Hadiya zones in Amhara and the SNNPR, respectively, from April to August 2010.

In this section, important attributes of HIS and M&E of the HEP were assessed to create a comprehensive understanding of availability of resources, implementation of major activities and utilization of information for decision making. The assessment on the design, simplicity and cost of HIS was conducted through document review, while the remaining sections are assessed at health post, WorHO and higher levels of the healthcare system.

6.1 Information system

6.1.1.HEP Health Information System Design, Simplicity and Cost

A. Adequacy of design

The CHIS captures only a small part of HEWs' routine activities, particularly those related to environmental health, sanitation, and health education even though HEWs spend a significant amount of their time on these services. Moreover, the CHIS focuses only on the activities of the HEWs and does not have tools to capture the activities of the community team or the links between the community team and the HEWs. Therefore, the CHIS is not helpful in monitoring the performance of the community development team.

B. Adequacy of Indicators

Although the current revision includes most of the key indicators needed at the HP level, a few important process indicators for the planning and evaluation of kebele health activities are missing, including: the identification of pregnant women, the identification of sick newborns, home births, births attended by attendants other than skilled attendants or HEWs, birth notification, and indicators related to obstetric and newborn complications.

The information system was inadequate for collecting all the needed indicators. Only 31 of the 51 indicators have data sources in the existing CHIS, while the remaining 20 indicators have no data source. It has been reported that HPs are using non-CHIS recording and reporting tools due to the fact that the WorHOs, HCs, and the HP itself require additional data not included in the CHIS. There are improvements in the CHIS in including more relevant and important indicators in recent times.

C. Simplicity and Cost

CHIS tools are considered as time-consuming, over-burdening and in need of additional skills and found to be costly. Although the FF follows a family-centred approach and helps monitor services at the individual and household levels, its processes, such as retrieving cards, filling in information, updating it at least yearly, and updating the cards after providing outreach services, are time-consuming.

The capacity of HEWs, their workload, and the English-language nature of the materials affect the user-friendliness of the CHIS and ultimately induced a negative perception towards CHIS among HEWs.

6.1.2. CHIS Availability and Information Use through Functional Areas

A. M&E Structure, Functions and Capability

Among the agrarian CHIS implementers, 1 in 4 HPs did not implement the standard CHIS system (FF) with variations among regions (69.9% in Amhara to 93.3% in Tigray). In this regard, among the surveyed HPs, 29.8% didn't compile kebele information (profile), 20.3% of HEWs haven't ever had a training on CHIS, and 16.5% were not able to show their annual plan. The assessment also found that community involvement is relatively higher during the HEP performance review than during HP planning (52.5% vs. 36.8%). A composite indicator of the M&E structure and functions showed that 68.1% of the components measured in the HPs were fulfilled (58.1% in SNNP and 83.3% in Harari).

B. Inputs or Resources for the CHIS

The availability and adequacy of basic CHIS inputs showed that 63% of the HPs had the required resources (54% in SNNP to 92% in Harari). Among the surveyed HPs, 56.7% had standard shelf for CHIS (73.9% of these shelves were adequate), 79.3% had ticker file box and 44.5% had adequate FF/pouch. Only 23.6% reported receiving administrative support from the kebele to strengthen CHIS.

C. Availability and use of data collection forms, tools, and guidelines

On average 3 out of 5 HPs had adequate cards for CHIS implementation and a large proportion of HPs lacked service and disease tally sheets (31.1% and 50.7%, respectively). Availability was lower for other types of tally sheets. Merely 2 in 5 (39.4%) HPs had evidence of their use during the assessment period, while the remaining (60.6%) HPs either did not use the tools or lacked evidence of their use.

At the national level, 86.7% and 70.3% of HPs had been using the standard monthly service and disease report forms, respectively. The least consistently used report (59%) was the annual report. The recently revised list of reportable diseases from HP is used by only half of the HPs. Only one third (36.2%) of HPs had the CHIS recording and reporting manual during the assessment.

A significant number (58.7%) of the HPs assessed use non-CHIS registers, and 67.3% of HPs submit non-CHIS reports. The use non-CHIS forms and tools is common due to the following reasons: WorHOs and HCs require additional data; HPs need additional data; the CHIS tools are not easy to understand or use; the CHIS does not meet all the requests; the CHIS is time-consuming; there is a shortage of registers and reporting forms; and the HEWs lack training on CHIS. The overall index for availability and use of data collection forms, tools and guidelines was 61% (52% in SNNP and 80% in Tigray regions).

D. Data Management Process

Almost all (92.7%) of the FFs were arranged by gote and household number. But, more than a fourth of HPs are not using these FFs to keep family health information as designed. However, only 38.9% of HPs were routinely updated after a service delivery event, and about one third of HPs never update the FFs once a year due to the following reasons: a shortage of time due to the HEWs' high workload; a shortage of cards or FFs; HEWs' belief that the FF is unsuitable for use and/or unimportant; a lack of knowledge of how to use the FF; and security problems, a lack of commitment, and poor supervision.

Since the implementation of CHIS, there is evidence that only about 20% of HPs have ever conducted a data consistency check using LQAS; nearly half (48.6%) of these HPs had done the LQAS within a month before the data collection. A larger majority (>80%) of HPs had copies of the last 3 months' reports, while about half kept source documents for the previous year (2011 EFY). The overall assessment of the data management processes, using 7 indicators, showed that expected activities are being conducted in 64% of the HPs (50% in SNNP to 88% in Tigray).

E. Information Use

The findings show that a large majority (93.7%) of HPs participated in review meetings at either the HC or the WorHO. While nearly 90% of HPs have conducted a performance review at some point, only about 41.7% had conducted a review within the month prior to the assessment. Among them,

slightly more than half (55.3%) of the HPs were found documenting review on minute book and documents were found for one fourth (27%) of the HPs to show follow up on the execution of decisions made on the review.

In relation to using display tables and graphs, only 46.5% of the HPs use updated infographics with variations among regions (less than 26% in SNNP and Tigray and more than 80% in Harari and Amhara). In addition, evidence was obtained for the use of community score cards in 26.3% of the HPs. The overall information use index, measured using 7 indicators, among HPs was 42% with variations among regions (from 27% in SNNP to 60% in Harari regions).

F. Overall CHIS Availability and Information Use Status

The combination of the 5 functional areas of HEP HIS at national level showed that the activities, standards and inputs for HEP HIS were not fulfilled or implemented with more than 25%. This gap is also seen in regions, whereby SNNP consistently showed low scores and Tigray had the better one. (Figure 21 & 22)

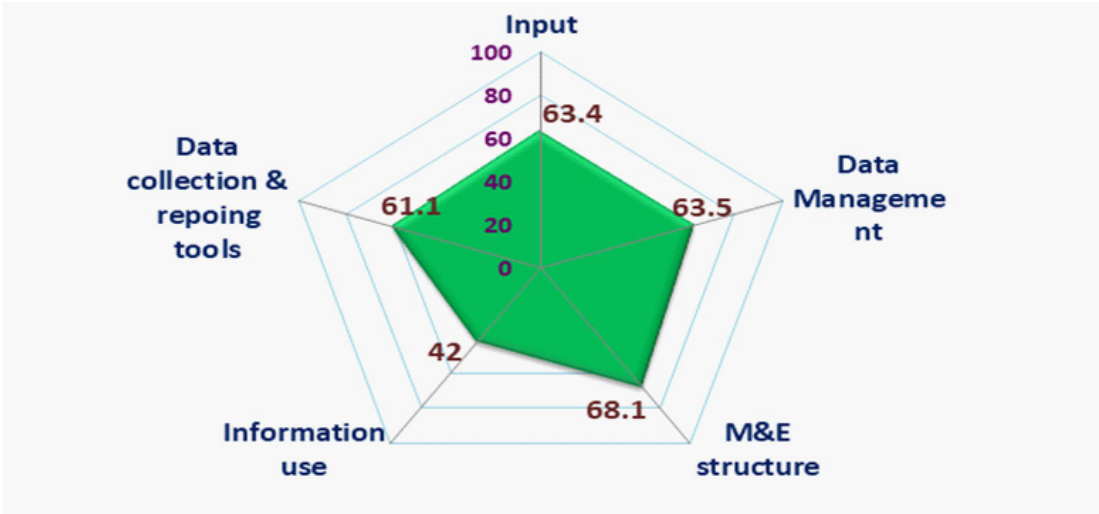


Figure 21. Spider graph, CHIS Functional Areas, National Level (Average of Implementing Regions)

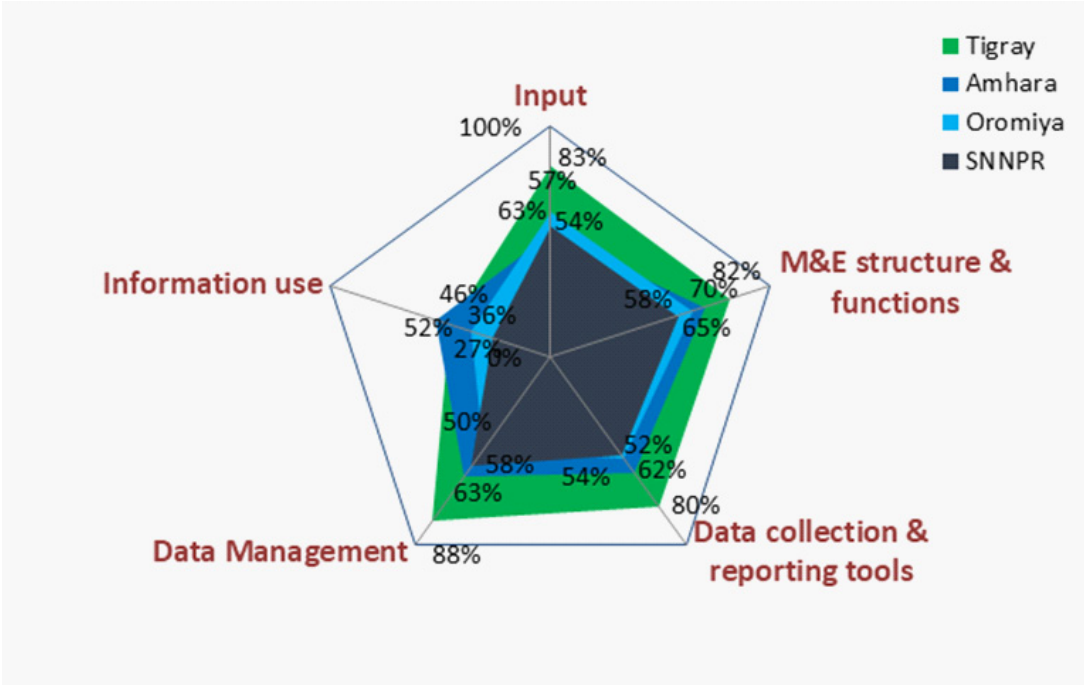


Figure 22. Spider graph, CHIS Functional Areas, Implementing Regional Level

6.2 Data Quality Check

6.2.1. Data Accuracy and Consistency

In this assessment, data consistency and data accuracy were measured using the WHO's RDQA manual, in which data accuracy is measured through computing result verification ratio (RVR) or verification factor (VF). An acceptable accuracy level is between 0.9 and 1.1. A verification factor <0.9 (90%) signifies over-reporting, while a VF>1.1 (110%) signifies under-reporting. For this purpose, 10 indicators were chosen for accuracy check in 343 HPs.

The average VF at the national and sub-national levels demonstrates that all indicators except skilled delivery were over-reported; the verification ratios ranged from 0.26 (screening for acute malnutrition) to 0.84 (model household graduation). In this regard, a significant level of variation was noted by region (VF are in the acceptable range in Afar and Somali regions). (Figure 23 & 24)

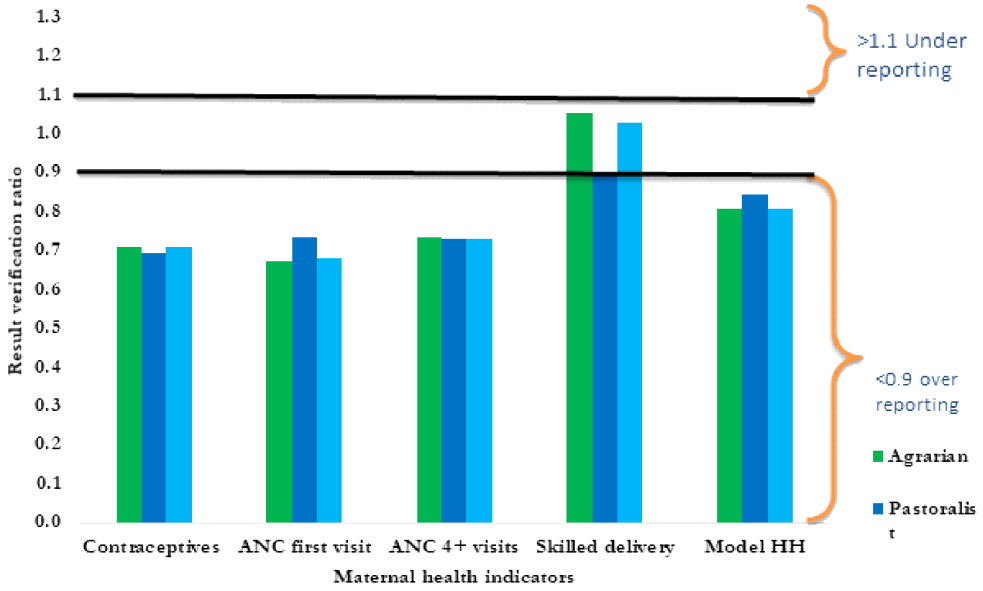


Figure 23. Result verification ratio of maternal health and model household indicators at national and sub-national levels, by indicator

The measure of the proportion of HPs that over-reported, under-reported, or reported with an acceptable verification ratio showed that the majority (52% - 63%) of the HPs are reporting in the acceptable range in selected indicators, while one third of the HPs are over-reporting. The result showed that a higher percentage of HPs (60-75%) in pastoralist areas had accurate data than did those in agrarian areas (50-60%). The proportion of HPs in agrarian areas that over-reported (30-45%) was higher than that in pastoralist areas (less than 30%).

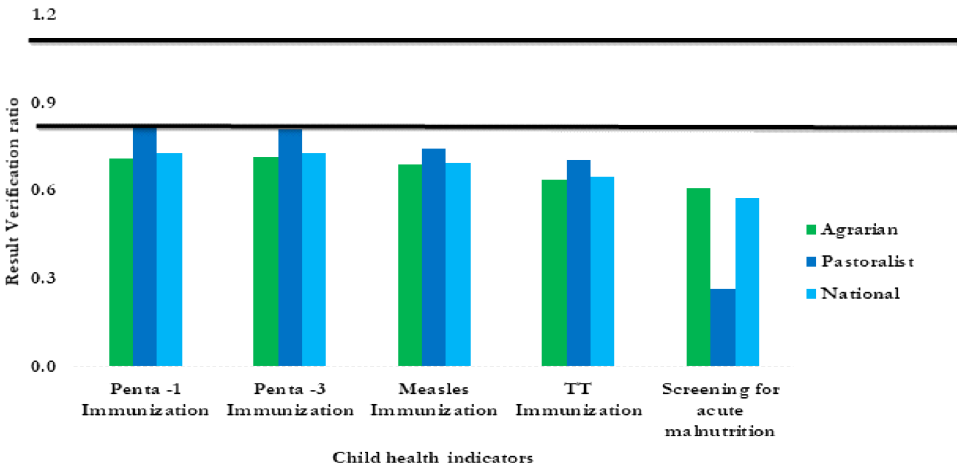


Figure 24. Result verification ratio of child health indicators at national and sub-national levels, by indicator

In the assessment, through checking the consistency of data between tally sheets and respective health cards or other available data sources (such as registers), fewer than 50% of cases had documented evidence in other sources. This means that a service was recorded on the tally sheet but not in the cards and registers, an indirect indication of over-reporting. (Figure 25)

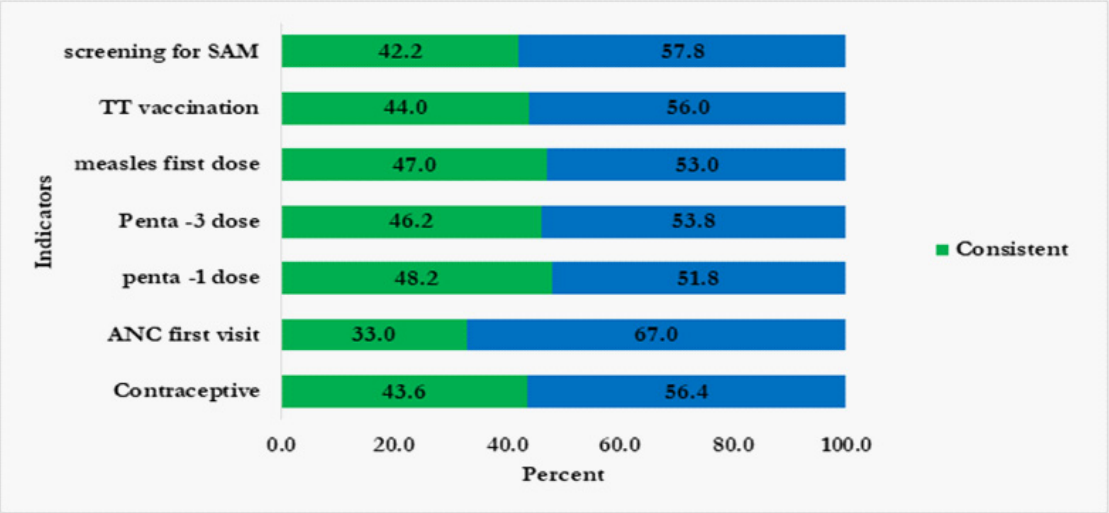


Figure 25. Record or data consistency between tally sheet and health cards or registers, by indicator

6.2.2. Reasons for Low Data Quality

The summary of qualitative findings and document reviews showed that the following are reasons for low data quality in HEP:

- HEWs believe that report preparation is time-consuming;
- HEWs believe that the report contains redundant reportable data elements or that the format asks for documentation of irrelevant activities;
- HEWs are not trained on the CHIS tools, hold a related belief that the report forms are complex, and/or have difficulty understanding the English language;
- HEWs are unable to update records due to a shortage of recording and reporting tools, including cards, and the failure of supervisory units to provide reporting formats to HPs in a timely manner;
- The reportedly high workload of HEWs affects the quality of both their record-keeping and the services they provide;
- Supervisors have an inadequate level of supervision, a lack of commitment, and/or limited knowledge of CHIS and provide irregular and untimely feedback;
- The HC and WorHOs demand additional data because CHIS is not considered sufficiently comprehensive; or
- The supervising units sometimes produce false reports, forcing HEWs to produce false reports to fill the gap.

6.3 Monitoring and evaluation

6.3.1. Planning

The assessment shows that nearly 4 in 5 (79.9%) of the assessed HPs had 2011 EFY plan, with wider variations among regions (11.8% in Somali, 38.4 in Gambela and 100% in Harari and Tigray). During the preparation of the plan, 40% of the HPs reported that the planning process was participatory (jointly planned with HCs and WorHO), while the remaining HPs reported preparing the plan alone and send it to the HC &WorHO (22.7%) and the HC &WorHO prepare the plan and send to the HPs (37.3%). The qualitative findings also suggested that they operationalize the annual plan (to a weekly and monthly plan) based on guidance and direction given by WorHO. Kebele administrators and WDA leaders commonly participate in plan development and performance review. The community members involved during planning, in the following ways: involving them in situational analysis, attending presentations, evaluating and commenting on the previous year's performance, suggesting activities to include in the plan, attending consultative meetings, preparing workshops with cabinet members, and participating in final approvals

The participants of the assessment implied the following challenges in relation to planning and its implementation: Lengthy planning time and delays in the cascading woreda plan; no separate plan for the HP; political instability; a lack of commitment; a lack of human resources, logistics, stationery, and other resources; a lack of incentives for WDA leaders; language barriers with the community; a high workload; planning for irrelevant indicators; having unrealistic targets; and lack of correct denominators for planned activities (Amhara &Gambella regions).

Community representatives' involvement during kebele planning at the PHCU is recommended, although the guidelines do not clearly state how or who will be involved in this process. Community engagement in HEP performance reviews was reported in nearly half (49.7%) of the HPs with wider differences in livelihood (52.7% in agrarian and 20% in pastoralist settings) and regions (5% and in Somali and Harari and 88% and 67% in Tigray and Amhara, respectively).

6.3.2. Supportive Supervision

Among the expected supportive supervisions from catchment HC and WorHO, more than three fourths (77.8%) of HPs received supervision from their catchment HC, but less than half (46.9%) received it from their WorHOs in 6 months prior to the assessment. Only 1 in 5 (22%) HPs, however, were being supervised on a monthly basis by HCs (even though the guideline recommends the visit to happen weekly). Monthly supervision by the WorHO appears negligible.

It was reported that nearly four fifths (79.6%) of supervisors from HCs and 72.1% from WorHOs used a checklist during supervision. The contents of major HEP packages were addressed in at least 80% of the supervision events; on the other hand, only two thirds (65.8%) of supervisors included the CHIS in their supervision support. The findings also reveal that a relatively higher percentage of supervisors (70.5%) from the HC provided feedback compared to supervisors from WorHOs (59.7%). A large majority (84.5%) of HC supervisors provided either written or both written and oral feedback, while a significant percentage (36.2%) of WorHO supervisors provided only oral feedback. Oral feedback is common in pastoralist settings. Majority of the HEWs positively acknowledged the knowledge and helpfulness of the supervisors (more than 92%). The qualitative findings suggested that the supervisions are weak, lack uniformity (in frequency and quality) from place to place, lack adaptation to context (mobility in pastoralist settings) and guided by proximity to the HC and WorHO.

6.3.3. Reporting and PHCU Review

The findings reveal that a majority (92.1%) of HPs send a written report to the supervisory institution; in addition, more than 50% communicate their performance review to the HC and WorHOs by phone and/or during review meetings. The supervising institutions send feedback to the HP through written feedback (62.7%), telephone communications (36.6%), physical visits to the HP (51.9%), and review meetings (67.9%). In relation to the feedback being provided to the HPs, the HEWs reported that feedbacks are not timely and regular (>60%), focus on faults (35.1%) and unclear (30%), and repeated across time and supervisee.

Moreover, in the HPs, the bilateral communications through report and feedback were hampered by the time needed for report preparation (60.2%); the complexity (51.0%) and bulkiness of the report forms; parallel reporting requirements (47.3%); a lack of a system for sending reports (46.9%); a lack of training on how to report (41.4%); a shortage (30.4%) and timely arrival of forms; most forms are in English and difficult to understand; redundancy of reportable data elements; irrelevant (activities that not done in HPs) and unnecessary sections in the forms; frequent changes of the report forms; huge workload of HEWs; and lack of technology, infrastructure and resources for reporting; and HCs and WorHOs force HEWs to produce inaccurate reports.

The assessment shows that 89.5% of HPs had attended at least 1 review meeting in the last 2 years. Less than half (48.1%) of HPs, however, had participated in a review meeting, conducted at either the HC or the WorHO, in one month from the assessment. The remaining 45.3% and 7.6% of the review meetings were conducted 2 to 6 months and 2 years, respectively.

7. COVERAGE OF HEALTH EXTENSION PROGRAM-RELATED SERVICES

Over the years, the Ethiopian Health System has made tremendous strides in improving access to and coverage of health services. This is witnessed in terms of reduced maternal, neonatal, and infant mortality, reduced incidence of major infectious diseases, and improved coverage of immunization, improved water, sanitation, and hygiene (WaSH) practices. The HEP has been the principal vehicle for expanding access to essential health service packages to all Ethiopians, with a focus on women and children. It has also been the primary vehicle driving improvements in hygiene and sanitation practices.

Because the HEP is the main mechanism for reaching most vulnerable people across the country, it is important to track the progress of the main performance indicators of the health sector and measure the coverage of essential services contributing to the achievement of these targets. This section presents findings of the National Assessment of the HEP on the levels of coverage of essential health services, the role of the HEP as source of information and service, and the implications of providing services through the HEP for the quality of care. This section is divided into subsections on WaSH, disease prevention and control, family health services, maternal and neonatal health, child health, vaccinations, and infant and child feeding. Table 18&19 (below) summarize the major indicators in HEP service delivery.

Table 18. Coverage of HEP related services

Indicators	National	Livelihood	
		Agrarian	Pastoralist
Reproductive Health			
Unmet need for moden contraceptive methods among all women	22.5	22.2	29.1
Contraceptive prevalence rate (CPR) among all women	44.6	45.9	13.8
Pregnant women in the reproductive age (15-49) who had at least one ANC for their recent pregnancy in the last 5 years	85.7	87.4	48.9
Pregnant women in the reproductive age (15-49) who had at least four ANC (ANC4+) for their recent pregnancy in the last 5 years	48.3	49.6	20.3
Pregnant mothers who delivered in health facility for their recent pregnancy in the last 5 years	54.9	56.1	29.2
Pregnant mothers who delivered in health post for their recent pregnancy in the last 5 years	4	4.1	1.9
Women with a postnatal check during the first 2 days after birth	25.9	25.9	17.7
Child Health			
Children age 12-23 who received BCG vaccine	79.3	81.7	43
Children age 12-23 who received at least 3 doses of Pentavalent vaccine	50.4	52.6	15.8
Children age 12-23 who received measles vaccine	47.8	50.3	10.7
Full basic vaccination coverage	35.7	37.6	8.2
Children age 12-23 who received Rota 2	54.4	56.7	19.4
Coverage of age appropriate breast feeding for 6 - 23 months	83.6	84.3	70.4
Mothers who initiated complementary feeding at the appropriate time	66.6	66.4	70.4
Children age 6 - 23 who got appropriate minimum acceptable diet	14.4	14.6	8.2
Water supply and Sanitation			

Households with access to improved drinking water sources	71.4	72.6	46.1
Households which used appropriate solid waste disposal sites	10.7	10.5	13.4
Households which used liquid waste disposal pits	10.8	10.6	14.9
Women washing their hands at critical times of handwashing	11.6	11.1	23.1
Households with improved sanitation facilities	20	20.7	5.2
Households with handwashing facilities	6.7	6.9	1.3
Communicable disease control			
Households in malarous districts with at least one mosquito net for every two person who stayed in the household the last night	84.2	84.6	78.8
Children in malarous districts age < 5 years who slept under any mosquito nets in the last night	31.8	31.3	35.7
Pregnant mothers in malarous districts who slept under any mosquito nets in the last night	19.2	16.8	27.7
Women who had comprehensive knowledge about HIV/AIDS	13	13.2	7.1
Pregnant women who received counseling on HIV during ANC and were offered a test	61	61.5	40.1
Pregnant women who were offered an HIV test and got tested during ANC	89.6	89.6	86.1
Women who had adequate knowledge on prevention methods of TB	8.8	8.7	11.4
Non-communicable diseases and mental health			
Households who had at least one member diagnosed from one major NCD	9.2	9.3	7.8
Prevalence of suicidal thoughts among women in the last 12 months	2.7	6.4	3.4

Table 19. Coverage of Health services directly delivered by HEWs

Indicators	National	Livelihood	
		Agrarian	Pastoralist
Women whose primary sources for information about family planning were HEWs	61.8	62.3	34.1
Women who received contraceptives from HEWs/HP	56.7	56.5	67.7
Women who attended their ANC-I at Health posts	49.1	48.6	68.6
Women who attended their ANC-IV at Health posts	32.2	31.8	56.2
Pregnant mothers who were attended by HEWs for their recent pregnancy in the last 5 years	3.7	3.2	1.7
Women who received PNC from HEWs for their recent delivery in the last 2 years	43.2	43.1	46.1
Households which were visited by HEWs for IYCF	28.8	29.6	13.1
Women whose information sources were HEWs about TB	34.3	34.5	30.6
TB patients receiving treatments follow up from HP/HEW	27.2	27.6	4
Women who reported that they received information about major NCDs from HEWs in the last one year	3.1	3	4.3
Sick individuals who sought treatment from HP/HEW	10.8	10.3	29.2

7.1 Coverage of hygiene and sanitation services

The HEP includes 7 specific hygiene and environmental health packages: Water Supply Safety Measures, Latrine Construction, Usage, and Maintenance, Solid and Liquid Waste Management, Personal Hygiene and Building and Maintaining a Healthy House, Food Hygiene, Control of Insects, Rodents, and Other Biting Species, and Healthy Home Environment. The coverage of hygiene and sanitation facilities and practices is very low and involves substantial variability across livelihood, geographic, and socio- economic categories

7.1.1 Water Supply Safety Measures

Majority of the households in rural Ethiopia (71.4%: 72.6% in agrarian and 46.1% in pastoralist areas) have access to improved water sources. Public tap or standpipe (25.5%), tube well or borehole (19.9%), and protected spring (16.3%) are the main sources of improved drinking water, whereas, unprotected springs (18.1%) households and unprotected dug wells (24.7%) serve as major sources of unimproved drinking water for agrarian and pastoralist households, respectively.

Close to 45% of households (45.8% in agrarian and 23.4% in pastoralist areas) have access to basic drinking water service, while 26.6% of the households (26.8% in agrarian and 22.7% in pastoralist areas) had access to limited drinking water sources. There is regional variability in the levels of access to basic and limited drinking water services. Somali (12.8%), the SNNPR (31%), and Tigray (38.5%) had percentages of basic drinking water service lower than the national average (44.8%), while Benishangul-Gumuz (73.5%) had the highest. Somali (18.6%) and Gambela (11.7%) had the lowest access to limited drinking water service. Majority of the households (89.4%: 89.6% in agrarian and 85.0% in pastoralist areas) were not using any method to treat their drinking water. Among the households that treated their drinking water, only 8.6% used an appropriate treatment method (8.3% in agrarian and 4.1% in pastoralist areas). Bleaching was the most commonly used method of water treatment (7.2% nationally: 6.9% in agrarian and 13.2% in pastoralist households).

7.1.2 Construction, Use, and Maintenance of Sanitary Latrine

Availability of improved latrine facilities was 20.0% (20.7% in agrarian and 5.2% in pastoralist communities): only 3.9% of households owned a ventilated improved pit (VIP) latrine, and 16.0% owned a pit latrine with a slab. 51.6% households had unimproved sanitation facilities, and unimproved pit latrines without a slab or open pits (51.4%) were more common.

Availability of sanitation facilities varies among regions: Harari had relatively the highest proportion of improved sanitation facilities (27.2%) while Somali had the lowest (4.7%). SNNPR and Somali had the highest (73.0%) and lowest proportion (4.7%) of households with unimproved sanitation facilities, respectively. About 29% of households (26.1% in agrarian and 80.4% in pastoralist areas) had no latrine facility whatsoever indicating a high prevalence of open defecation. Most of these households were in Somali region (91.2%), while the least were from SNNPR (11.6%).

Overall, 17.8% of households (18.5% in agrarian and 2.5% in pastoralist communities) had access to basic sanitation services and only 3.3% had access to limited sanitation services. The percentage of households with a basic hand washing service was 2.7% (2.8% in agrarian areas and 0.8% in pastoralist areas) and those with a limited hand washing service were 4% (4.1% in agrarian areas and 0.9% in pastoralist areas.

7.1.3 Personal Hygiene

Three fourth of households (75.2% in agrarian and 68.5% in pastoralist communities) reported that their members washed their hands, faces, and clothes and wore shoes or sandals. The practice was variable across regions, with the lowest rate being in the SNNPR (56.8%) and the highest in Amhara (86.6%).

Overall, 11.6% of women (11.1% in agrarian and 23.1% in pastoralist households) reported appropriate hand washing practice at critical times. Most of them reported to have washed their hands before feeding (93.3%), after feeding (80.3%), before food preparation (69.6%), and after using the toilet (59.8%). The least commonly mentioned critical time of hand washing was before breastfeeding (15.8%).

7.1.4 Solid and Liquid Waste Management

Only 10.7% of households (10.5% in agrarian and 13.4% in pastoralist communities) reported using appropriate sites for domestic solid-waste disposal. Open areas were the most commonly used domestic waste disposal sites (79.7%: 67.5% undesignated and 12.2% designated open areas). Communal and household pits (6.3%) and composting (6%) were other commonly used domestic waste disposal methods.

Similarly, only 10.8% of households (10.6% in agrarian and 14.9% in pastoralist communities) used liquid waste disposal pits. There was marked regional variation with the proportion of households using liquid waste disposal pits: Somali (25.7%) had the highest while SNNPR (2.5%) the lowest proportion.

7.1.5 Healthy Home Environment

Overall, 58.6% households had only 1 sleeping room for all the members to share. Only 17.7% of the members of pastoralist households had more than 1 sleeping room. About 62.0% of households (53.1% in agrarian and 62.3% in pastoralist communities) had their animals separated from their living rooms; Oromia (72.1%) and Gambela (37.6%) the highest and the lowest proportion of such households, respectively.

Majority (63.8%) of the households reported having a separate kitchen for cooking, and 8.6% cooked their food outdoors. The remaining respondents (27.5% overall: 27.1% in agrarian and 38.2% in pastoralist communities) reported that they cook their food inside their living room. Afar reported the highest proportion (48.8%) of indoor cooking while Gambela reported the lowest (1.7%). About 72% of households had low indoor air pollution (i.e., those cooking their food outside of their living rooms or using fuel with a lower risk of pollution), but Afar had the highest proportion (49.4%) of households with higher level of indoor pollution than the other regions.

7.1.6 Food Hygiene and Control of Insects, Rodents and Other Biting Species

About 75% of households (76.5% in agrarian and 51.6% in pastoralist communities) covered or protected their food items from flies at the time of data collection. Among the regions, this practice was very common in Tigray (94.3%) while it was least common in Somali region.

Most households (63.7%) reported the abnormal presence of flying species (mosquitoes, fleas, and cockroaches); other species (insects, stinging species, and rodents) were reported as rare (0.7%). Nearly two thirds of households (63.3%) in agrarian areas and 79.8% of households in pastoralist areas had at least 1 type of insect, rodents, or flying/stinging species.

7.1.7 Health education on Hygiene and Environmental Health

HEP is the main mechanism for improving hygiene and sanitation within households in rural Ethiopia. In the current study, 52.7% of women, 45.2% of men, and 23.6% of youth girls had ever received health education from HEWs on hand washing, with significant variability among regions (Figure 26).

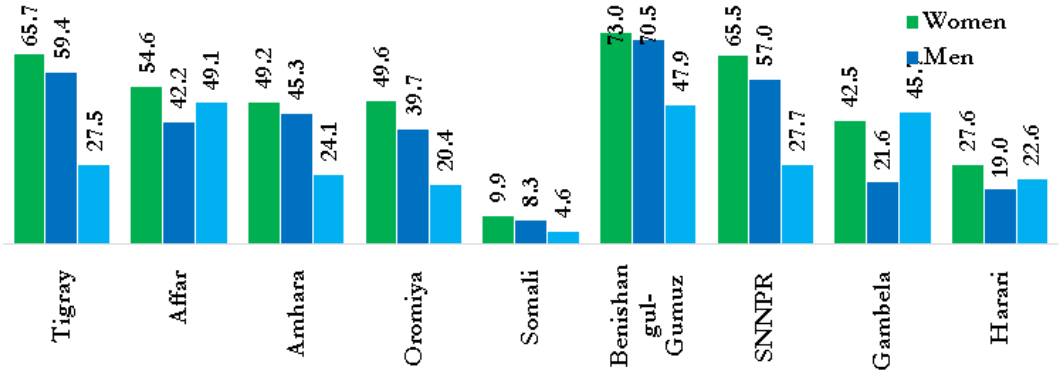


Figure 26. Households receiving health education on hand washing by HEWs, by region

7.2 Coverage of disease prevention and control interventions

The Disease Prevention and Control package of the HEP includes 3 specific sub-packages: malaria prevention and control, HIV/AIDS and tuberculosis prevention and control, and first aid. The HEP is expected to create community awareness, improve knowledge, and increase the use of services related to these programs. This section presents findings related to disease prevention and control interventions regarding these 3 diseases— malaria, HIV, and TB, with a focus on the coverage of interventions, disease occurrence, and the role of the HEP in the prevention and control of these diseases.

7.2.1. Malaria Prevention and Control

Overall,half of the households in malarious areas (50.2% in agrarian and 63.1% in pastoralist communities) own at least 1 ITN. Households with at least 1 ITN mostly have adequate numbers of ITNs:

84% of the households meet the criteria of having at least 1 ITN for every 2 persons in a household.

About 27% of the household members in malarious areas (26.6% in agrarian and 34.1% in pastoralist communities) and 47% of those who own at least 1 ITN sleep under an ITN. Only 43% of the ITNs owned are used by household members. Only half of children and one third of pregnant women slept under an ITN the night before data collection. The use of ITNs was relatively higher in pastoralist than in agrarian communities.

Close to 49% of households had ever seen a demonstration on how to use ITNs. Most of these households (86.7% overall: 87.3% in agrarian and 66.7% in pastoralist communities) had received education from HEWs. SNNPR (91.2%) reported the highest contribution of HEWs in ITN use demonstrations while Afar (25.8%) had the lowest corresponding figures.

7.2.2. HIV/AIDS Prevention and Control

More than 84% of women, men, and youth girls have awareness about HIV/AIDs, with significant variation between pastoralist (as low as 61%) and agrarian communities. Only 41.6% of women, 46.5% of men, and 57.0% of youth girls knew all 3 ways of mother-to-child transmission of HIV.However, only 13% of women and 21% of men and youth girls have comprehensive knowledge about HIV/AIDS.

About 53% of women in the reproductive age group received counselling on HIV during ANC for their latest pregnancy. 39.7% of the women who had received ANC in their latest pregnancy during the 5 years prior to the survey (39.8% in agrarian and 34.9% in pastoralist communities) had received counselling services from HEWs.

7.2.3. Tuberculosis Prevention and Control

Majority of household members (91% of women and 95% of men and youth girls) are aware of TB, but only 9% of women, 15% of men, and 19% of youth girls have comprehensive knowledge of all 3 methods for preventing the disease. Generally, people living in agrarian regions seem to be more knowledgeable about TB prevention than those residing in pastoralist areas.

HEWs were the primary sources of information about TB for 34.3% of women, 33.9% of men, and 12.3% of youth girls. A few additional respondents also mentioned other HEP staff (e.g., WDA leaders) as sources of information about TB.

About 5% of households had at least 1 member with a cough of >2 weeks, and about half of those (51%) reported that their symptomatic member had sought medical care. HCs were reported to be the most commonly (60%) used level of care as first contact for symptomatic members of the households, while HPs were the least commonly (10%) used facilities. The use of HPs as first contact for symptomatic TB patients was far higher in pastoralist areas (34.9%) than in agrarian areas.

In the last 3 years, about 3% of households reported to have had at least 1 member diagnosed with TB, and HEWs provided assistance to those households in different ways, ranging from referring patients for diagnosis (24.7%) to providing isoniazid preventive therapy (IPT) for children under 5 (1.1%). HEWs provided TB screening and treatment follow-up services for only 18% and 13% of households, respectively, from HEWs. The majority of those diagnosed with TB were being treated in either a HC (49.6%) or a hospital (38.5%); HPs (2.9%) were the least common source of treatment for TB patients.

7.2.4 . Non-communicable diseases: prevention and control

A. Common NCDs

Overall, about 5% of women (5% in agrarian vs. 10% in pastoralist areas) and 3% of men (3% in agrarian vs. 4% in pastoralist areas) reported having received information about all major NCDs from HEWs in the last 1 year. More people residing in pastoralist areas had heard about these NCDs from HEWs than had those in agrarian areas.

Among the NCDs, hypertension is the disease most commonly discussed by HEWs (as identified by 16% of women and 19% of men), while mental illness is the least commonly mentioned disease across all population groups, livelihoods, and regional classifications while the HEWs encounter the communities.

HEWs are responsible for referring women for cervical cancer screening. Less than 1% of women had been screened for cervical cancer in the last 1 year, of whom 27% were referred by an HP. Only 5.5% of women aged 30 to 49 had been screened for the disease in the last 1 year.

About 9% of households had at least 1 member diagnosed with an NCD. Hypertension (4.5%) was the most frequently diagnosed disease, while breast cancer (0.6%) was the least commonly diagnosed. The proportion of households with at least 1 member diagnosed with an NCD was higher in agrarian than in pastoralist regions (9.3% vs. 7.8%, respectively). Afar had the highest proportion among all regions of households (17%) with at least 1 NCD-diagnosed member, while Tigray had the lowest proportion (3%).

Overall, the largest group of patients (45%) with an NCD were diagnosed at HCs. Government hospitals, however, were the most common places for NCD diagnosis in regions like Tigray (63%), Oromia (49%), Somalia (35%), and Harari (49%). The main reasons for bypassing an HP for an NCD diagnosis were service unavailability (44%) and a lack of confidence in the capacity of HEWs (29%).

B. Suicide among Women

The overall prevalence of suicidal thoughts among women in the last 12 months prior to the survey was 6.2% (3.4% in agrarian and 6.4% in pastoralist communities). Two out of 100 women (2.1% in agrarian and 1.3% in pastoralist communities) had attempted suicide in the previous year, indicating its significance as a public health issue. The 1-year prevalence of a suicidal attempt was highest in the age range of 35 to 49 (3.2%), with at least a 9th grade education (2.7%), in agrarian areas, in the SNNPR (6.0%), and in the lowest wealth quintile (4.7%). The prevalence of seeking help for suicidal thoughts, plans, or attempts was low (15.3%), and those who sought help had it from health institutions (58.2%), family members (8.1%), or HEWs (33.8%).

7.2.5. HEWS' Role in the Management of Illnesses and Injuries

A. Occurrence of Illnesses and Injuries

Overall, 18.8% of the households (19.0% in agrarian and 12.8% in pastoralist communities) had at least one sick member. The occurrence of self-reported illness in the households was relatively the lowest in Afar (10.7%) while Gambella had the highest corresponding figure (32.4%). The most common perceived causes of illness was chronic illnesses (26.4%), followed by common cold (23.8%), diarrhea (10.2%), and other acute illnesses (6.7%).

An injury or accident had occurred to at least 1 household member in 3.2% of the households in the 1 year prior to the survey. The highest percentage of injuries and accidents occurred in Benishangul-Gumuz (8.0%), and the most common accident or injury was physical violence 31.7%).

B. Health-seeking Behaviour of Household Members and Referrals from HPs

Of the family members who reported to have been sick, about 69% (69.6% in agrarian and 62.1% in pastoralist communities) sought treatment. Only half of the sick people in Somali (50.6%) sought treatment from health facilities. On the other hand, the vast majority of sick people in Benishangul-Gumuz (89.5%) and Gambela (81.0%) sought treatment.

HPs were not the first choice of treatment: only 10.8% (10.3% in agrarian and 29.2% in pastoralist communities) sick individuals received services from the HP. Among those who sought treatment from health facilities, nearly half (48.3%) received treatment from HCs, while 22.4% received care from government hospitals. Afar (78.7%) and Harari (8.7%) reported the highest and lowest proportion of patients seeking treatment in HPs, respectively.

Among the individuals who received services from health facilities, only 6.5% (6.5% in agrarian and 9.5% in pastoralist communities) reported that they were referred to the higher-level facility from the HP or by an HEW. A relatively higher percentage of sick individuals from Gambela (23.1%) and Benishangul- Gumuz (24.6%) received referral services from HPs. The most commonly mentioned reasons for bypassing the HP include service unavailability (34.0%) and perceived lack of HEWs capacity to provide the specific service needed (33.4%).

7.3 Coverage of Family Health Services

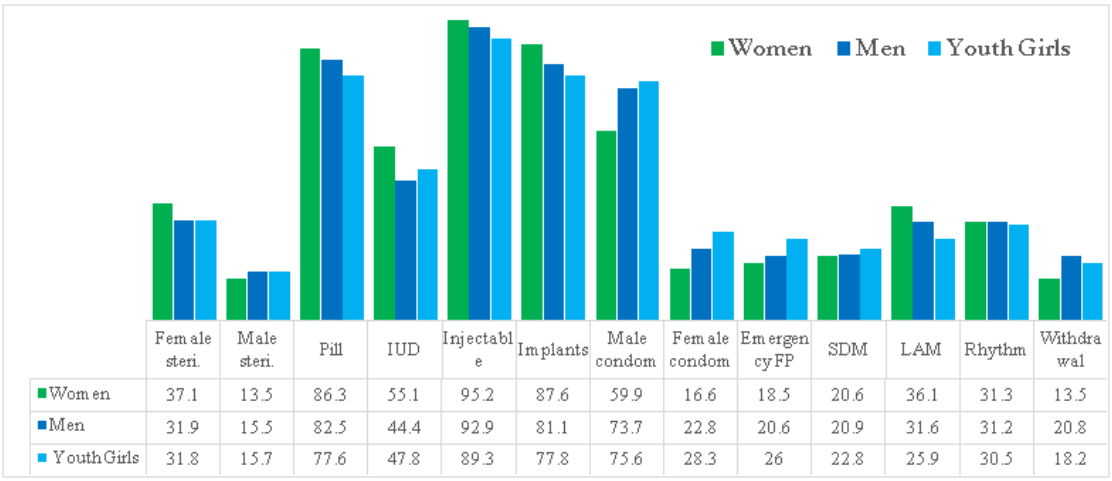
One of the principal components of the HEP packages is the family health service. This section discusses the coverage of FP, ANC, delivery, PNC, vaccination, child health, and child nutrition services and the role of HEP in delivering the services.

Overall, maternal and child health services are improving compared with the 2016 EDHS. This can be described by key indicators, including the contraceptive prevalence rate (44.6%), percentage of pregnant mothers having at least 4 antenatal visits (ANC 4+; 48.3%), institutional delivery (54.9%), and PNC (25.5%) among women. Child health services, like the full basic vaccination coverage 35.7%, children under 5 who received treatment for acute respiratory infection (ARI; 40.2%), diarrhea (53.3%), or fever (46.8%), were exclusively breastfed (58.7%), and got a minimum acceptable diet (14.4%).

7.3.1 Family Planning

At least 1 FP method is commonly known by the majority of women (96.5%), men (96.6%), and youth girls (92.8%). The most commonly known methods across all respondents are injectable contraceptives, implants, and pills (Figure 27).

The total demand for contraceptive methods for women in the reproductive age group was 61%; 60.5% of married and 62.8% of unmarried women. Sixty-three percent of women in the reproductive age group had a satisfied FP demand which varies across regions, ranging from 0% in Somali to 75.5% in the SNNPR. The unmet need for FP is very high (overall 22.5%: 22% in agrarian and 29.1% in pastoralist areas) in comparison with the national target for 2020 (10%).



	Female steri.	Male steri.	Pill	IUD	Injectable	Implants	Male condom	Female condom	Emergency FP	SDM	LAM	Rhythm	Withdrawal
Women	37.1	13.5	86.3	55.1	95.2	87.6	59.9	16.6	18.5	20.6	36.1	31.3	13.5
Men	31.9	15.5	82.5	44.4	92.9	81.1	73.7	22.8	20.6	20.9	31.6	31.2	20.8
Youth Girls	31.8	15.7	77.6	47.8	89.3	77.8	75.6	28.3	26	22.8	25.9	30.5	18.2

Figure 27. Figure __. Method-based FP knowledge of women, men and youth girls
Abbreviations: steri., sterilization; IUD, intrauterine device; FP, family planning; SDM, Standard Days Method; LAM, Lactational Amenorrhea Method.

The CPR is 44.6% for all women in the reproductive age group. Modern contraceptive use is the most common method of FP; it accounts for 43.3% of women and 35.7% of youth girls who had initiated sexual intercourse. Women in agrarian settings use 3 times more contraception than those in pastoralist settings. Women aged 45 to 49 are the highest non-users of FP methods.

Among the women in the reproductive age group, the most commonly used modern contraceptive method was short-acting (31.4%), while permanent methods (0.7%) were the least commonly used ones (Figure 28)

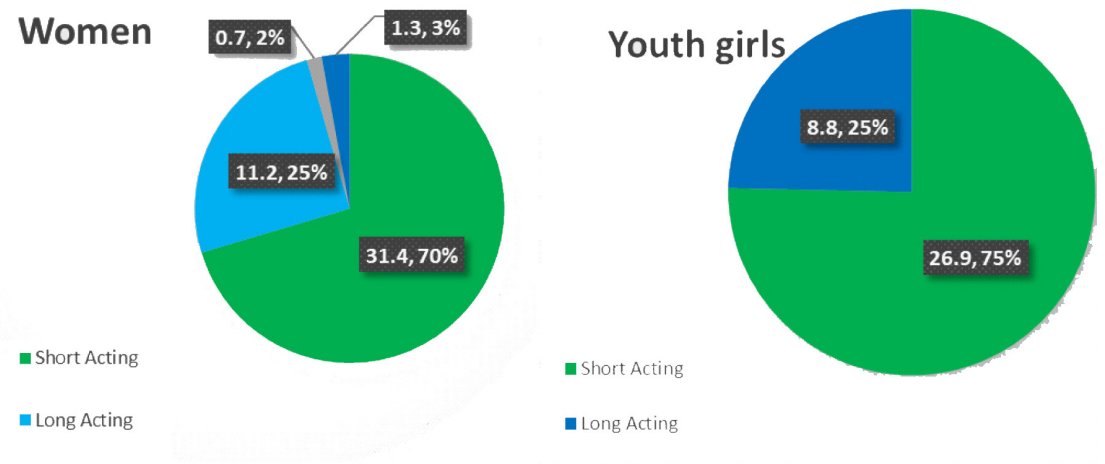


Figure 28. Share of long-acting and short-acting contraceptive methods among current contraceptive users

Among married women who did not want to get pregnant but were not using any contraceptives during the survey, breastfeeding (20.6%), perceived cultural/religious ban (16.4%), and negative partner/husband influence (15.7%) were mentioned as main reasons for not using contraceptives.

Majority of women (56.6%) who currently use a contraceptive method received the service from their catchment HP. The second most common source of service provision for contraception for women was the HC (33.7%). For youth girls, however, HCs (42.3%) served as the main place for FP, followed by HPs (40.7%) and private clinics (13.4%). The HEP has also been the most common source of FP information for 61.8% of women and 37.7% of men.

7.3.2 Antenatal care services

About 86% of women had at least 1 ANC follow- up during their most recent pregnancy. Forty-eight percent had 4 or more ANC visits. There is huge variation in the use of ANC by livelihood. ANC-1 was used by 87.4% of women in agrarian settings, compared to 48.9% in pastoralist settings. ANC-4 was used by 49.6% of women in agrarian settings, compared to 20.3% in pastoralist settings.

Among women who had had at least 1 ANC visit, 49% of them (49% in agrarian and 69% in pastoralist areas) had their first visit at the HP. The percentage of women who attended their first ANC visit at the HP ranged from 26% in Amhara to 90% in Somali. Among women who had at least 4 visits of ANC, the HC was the main (59.4%) place for ANC-4. Only 32% (56.2% in pastoralist and 31.8% in agrarian areas) of women had at least 4 ANC visits attended (ANC-4) at the HP.
The most common reason for the low uptake of ANC services was the long distance to the HP (overall 33.2%: 24% of women in agrarian and 32.1% in pastoralist settings). Lack of knowledge about ANC, closed HPs and the absence of HEWs during the women's visits for ANC service were the other reasons mentioned.

7.3.3 Delivery service

In the last 5 years, 54.9% of women delivered their last child at a health facility (HPs, HCs, hospitals, or clinics), while 43.3% others delivered at home. Somali region reported the highest rate of home delivery (92%), while Tigray had the lowest rate (16.9%) (Figure 29). Health professionals attended 51.8% deliveries, while HEWs attended only 3.7%.

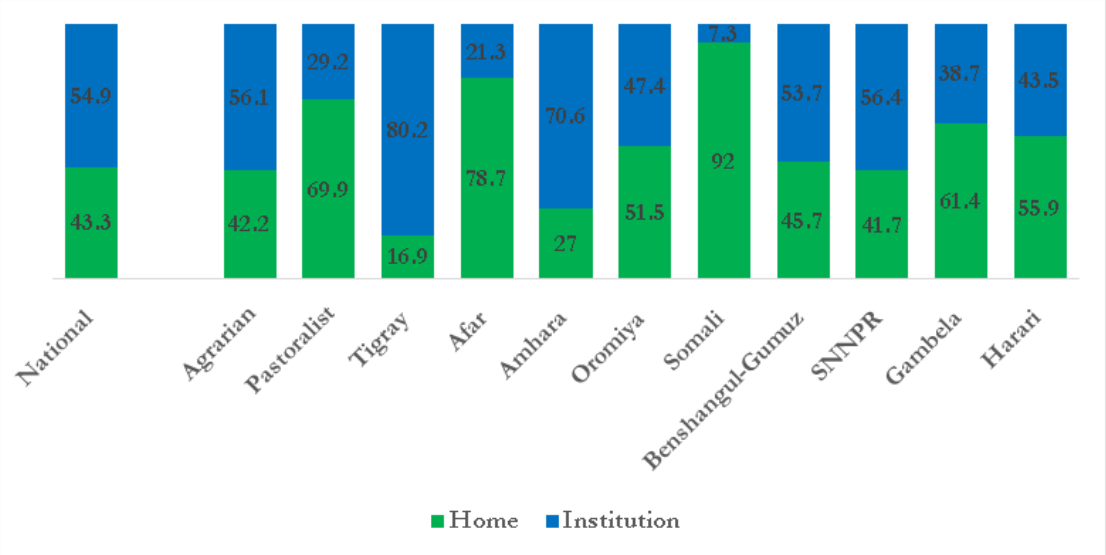


Figure 29. Place of delivery for most recent birth during the last 5 years

7.3.4 Postnatal care services

A quarter of women (25.9% in agrarian and 17.7% in pastoralist areas) who delivered during the 2 years prior to the study had at least 1 PNC visit. Somali region had the lowest proportion of women (0.4%) receiving PNC service, while Gambela had the highest (60.1%).

Half of women received a physical examination during PNC visits after their most recent delivery within the past 2 years, and more than 40% were checked for heavy bleeding (Figure 30). Only 42.4% of women had their babies examined during their PNC visits.

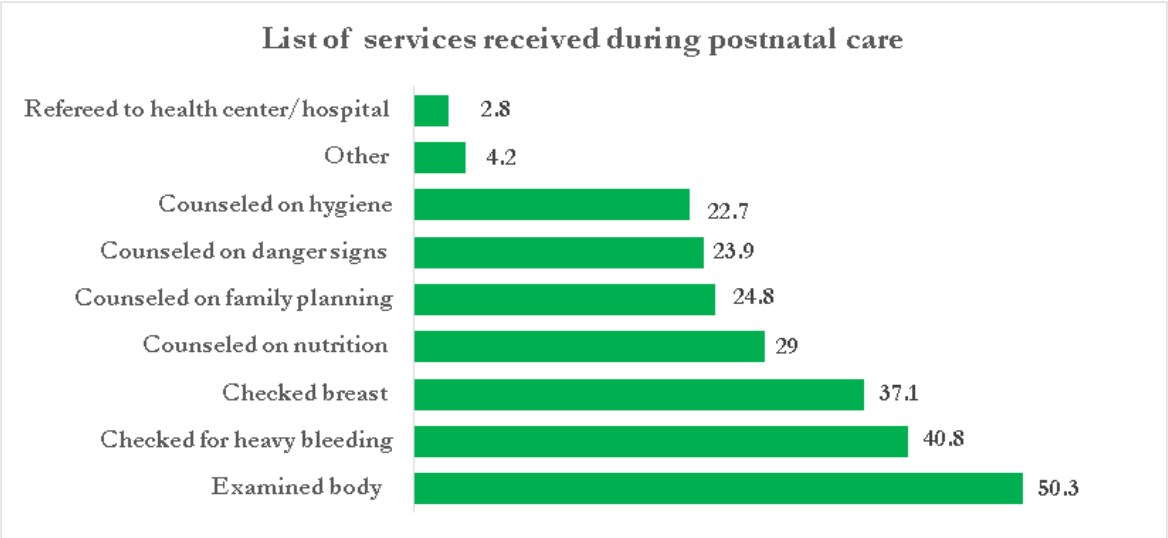


Figure 30. Content of postnatal care for the mother

Among women who received PNC for their most recent delivery during the last 2 years, the HC was the most common place of service provision (44.3%). HEWs provided 43.2% of PNC follow-up visits.

7.3.5 Childhood illness and treatment

The 2-week prevalence of ARI among under-5 children was 17.9%. Children whose families used fuel for cooking that caused indoor pollution had an increased risk of showing symptoms. Across the regions, the prevalence of ARI ranged from 8.3% in Afar to 23.9% in Tigray. Among children with ARI symptoms, 40.2% received treatment, and the prevalence of seeking help with a maximum delay of 1 day was 16.8%.

The prevalence of fever among the population of youngest children under 5 was 19.6% and was higher in the agrarian population than the pastoralist population. Across the regions, it ranged from 10.6% in Afar to 39.7% in Gambela. Among children who had fever, 46.8% received medical help, and the timeliness of help-seeking (either the same day or delayed for a maximum of 1 day) was 17.6%.

About 10.6% of children had had diarrhea within the 2 weeks prior to the survey; Benishangul- Gumuz had the highest prevalence (25.4%). Among the children with diarrhea, 53.3% received treatment, with significant regional variability. Help-seeking was lower in pastoralist areas than agrarian areas. Among children with diarrhea, 45.3% were given ORS fluids, 13.3% were given recommended homemade fluids (RHFs), and 51% were given either ORS fluids or RHFs.

Zinc was given to 26.5% of the children with diarrhea, and zinc with ORS to 22.5%.

Medical help was primarily received at HCs (48.3%), followed by HPs or HEWs, which were the source of services 24.4% of the time.

7.3.6 Child vaccination

The overall percentage of children aged 12-23 months who had received the Bacilli Calmette Guerin vaccine (BCG) was 79.3%, and that of measles was 47.8%. Coverage of basic vaccines was in general higher in agrarian areas than in pastoralist areas.

About 14% of children were not vaccinated for any of the 14 vaccinations, 50.4% of children started vaccinations but did not complete them, and 35.7% of children had received all full basic vaccinations. Coverage of full basic vaccines was highest in Tigray (68.8%), while Somali had the lowest proportion (0.1%) of fully vaccinated children. Mothers mentioned many possible reasons for not vaccinating their children (Figure 31).
HPs are the primary sources of vaccination services for rural communities.

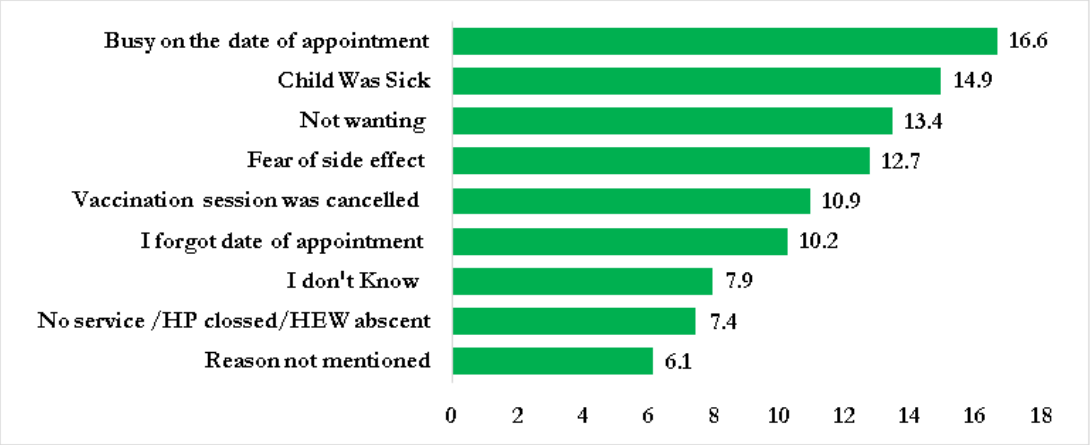


Figure 31. Mothers' reasons for not getting their children vaccinated

7.3.7 Infant and young child feeding

About 59% of children aged 0-23 months (60% in agrarian areas and 31% in pastoralist areas) were exclusively breastfed until the age of 6 months. Somali had the lowest percentage of exclusive breastfeeding (3%), while Tigray had the highest (84%).

Twenty percent of children aged 0-5 months were breastfed fewer than 7 times per day, while 55% were breastfed 8 -12 times per day. Twenty-three percent of children less than 2 years old were fed using a bottle.

The proportion of breastfed children aged 6-23 months fed with minimum meal frequency (MMF) was 77.6%. MMF varies across regions, ranging from 49.5% in Gambela to 85% in Afar.

Majority (70.6%) of children aged 6-23 months received food from grains, roots, and fibers group. Only 15% of children were fed according to the minimum standards with respect to food diversity (4 or more food groups). Children in agrarian areas were more likely to be fed according to IYCF-recommended feeding practices than were pastoralist children.
Overall, 14.4% of children received a minimum acceptable diet (MAD). Gambela and Harari had the highest achievement of MAD (29% and 25%, respectively), compared to the national average of 14%.

Of all children aged 6-23 months, 45% consumed iron-rich or iron-fortified food. Iron consumption is high in Afar and Benishangul- Gumuz (45% each) and lower in Tigray (16%).

Close to 89% of women believe that complementary feeding should be started between 6 and 8 months. Nineteen percent of mothers in pastoralist areas did not know the exact time to start complementary feeding for their children.

7.3.8 Quality of HEP services: evidence from family health quality of care indicators

In general, important components of ANC were provided to a sub-optimal proportion of women who had ANC visits during their most recent pregnancy. The provision of the essential components of ANC ranged from 15.3% for deworming to 77.2% for iron tablet supplementation.

The national guidelines on ANC recommend that the first and fourth visits of ANC be handled at an HC, while the second and third visits can be handled at the HP level. Compliance with this recommendation was suboptimal. Some women had all their ANC visits at the HP, others had all visits at the HC, and some had a mixture of visits at both the HP and HC. Having all ANC visits at the HP or some mixed with visits at the HC results in a relatively lower quality of service than having all ANC visits at the HC.

The first ANC visit is considered an entry point to a continuum of care involving multiple visits of antenatal care, health facility delivery, PNC, and child vaccination. This study found that, in general, there is a high dropout across the continuum of care. Overall,

coverage of ANC-1 is 85.7%, while that of ANC-4 is only 48.3%, and only some women who attended ANC-4 delivered in a health facility.

A comparison of the continuum of care between mothers who received ANC from the 3 categories of service providers (only HP, only HC, or mixed) was performed using a subset of the data for which both ANC and data related to place of delivery were available. Findings showed that the quality of service delivery at HPs is more compromised than that received at HCs. Health facility delivery was lowest among women with no ANC at all. Mothers who attended all their ANC visits at an HP were less likely to deliver in a health facility compared to those who attended all their ANC visits at HCs.

There is also room for improvement in the quality of vaccination services as indicated by the significant discrepancies among the rate of Penta 3 vs Penta 1 vaccination (24.3%), BCG vs measles (31.5%) is higher than the acceptable level of 10%. Moreover, 11.6% of the children who received BCG had no scar.

7.4 Role of HEP in PHEM

Despite the involvement of the HEP in the PHEM system, the HEP's contribution and actual role in PHEM-related activities have not yet been clearly outlined or recognized. In this section highlights results of current assessment of the role of the HEP in addressing the basic processes of the PHEM System in Ethiopia.

Most (70.9%) HEWs scored above the expected mean knowledge score. However, 29.1% scored below 55, and only 7.8% scored above 85%. This indicates that a significant proportion of HEWs working at the community level lack basic knowledge of the mandatory level and list of public health problems, as well as their case definitions, reporting timelines, alert and action thresholds for response and other basic PHEM- related concepts.
About 78.7% HEWs working at HPs, 94% of catchment HC-level respondents and 90% of woreda-level experts knew the mandatory notifiable disease conditions in their locality. This may indicate that there are some public health problems that are not being detected in their totality or are detected but not reported since all the responsible persons are not aware of their existence or reportability status in their context.

Only 73.2% HPs had guidelines, protocols or packages to guide surveillance activities at the community level. In addition, case definitions of reportable diseases and event conditions were available at only 36.6% of the visited HPs. On the other hand, only 42.0% HCs had a case definition for the surveillance of targeted diseases. In addition, educational materials for community members on nationally notifiable disease conditions were available only in 70% of woredas. The knowledge problems seen with HEWs may also be related to the availability of supporting documents and guidelines they can use as a reference. HEWs' levels of knowledge of community surveillance and response also shows variability at different levels of the health system. HEWs working at different woreda health system levels have different levels of knowledge.

About 62.4% of HEWs do not have any prior information or knowledge regarding emergency preparedness planning in their woreda. Furthermore, only 78.7% of HEWs claimed that they participated in the social mobilization, prevention, emergency preparedness, response and control activities that took place in their locality. The finding shows that the level of awareness and engagement of HEWs on ongoing PHEM related activities is not sufficient as much as it is needed to ensure community ownership and sustainability.

Risk assessment was being carried out with the involvement of HEWs and community volunteers in only 72% of woredas. In addition, 86% of woreda structures engaged community members, social groups or associations, community networks and other governmental and non-governmental stakeholders in public health surveillance and response-related activities.

Majority (84.3%) of HPs had functional community-based networks that were engaged and are supportive of local surveillance activities. However, absence of community engagement in the remaining 16% of kebele structures leaves them

without a functional community structure and with no chance to include community-level reports of public health problems.

Uniformity in the type of community-level network structures used for surveillance is found to be poor. WDA networks were found to be a prominent functional community structure; they were mentioned by 73.3% of HP respondents. Other community structures mentioned by HC respondents as the functional structures used as public health surveillance agents at their catchment HPs include clan leaders, Agricultural Development Agents, kebele cabinet members in the community and community key informants like religious leaders, teachers, traditional healers, traditional birth attendants, militia and police.

There is a significant emergency coordination gap at the lower levels of the health system, which can be attributed to the absence of guidance material, clear guidance, and regular feedback and support from higher-levels of the health system. Only 50.3% HPs, 72% HCs and 80% woredas had an emergency coordination task force or RRT. More than half of HPs in all regions—except for Tigray, Somali, the SNNPR and Gambela—had no emergency coordination platform for an emergency response at the kebele level. Among available facility-level RRTs, only half of them conducted regular meetings, and only 74% engaged health extension supervisors as members of the facility-level RRT.

Around three fourths of health facilities and 88% of woreda structures monitored the activities of HEWs in their catchment either by on-site supervision or by other means. Among them, 72% health facilities provided regular feedback based on their supervision findings. During the assessment, 37 (52.11%) HPs claimed to have received supportive supervision and feedback by officials from the woreda and HC levels, but feedback was seen and verified at only 21.1% of the HPs that claimed to have received supportive supervision and feedback during the last fiscal year.
Locally-translated versions of reporting forms were available only at 21.1% HPs. In addition, 73.2% HPs had the guidelines translated into the local language, and locally-translated case definitions of the reportable diseases and event conditions were available at only 21.1%of the HPs and 68% visited woredas. This may contribute to the lower engagement and functioning status of community-level surveillance performance.

There is a significant gap regarding budget allocation for community-level surveillance activities. It was found that only 18% of the woreda structures and 11% health facilities had allocated a budget to support surveillance activities at the community level. Majority (80%) of the institutions that allocated the budget did so for per diem and transportation allowance.

Close to 71% HPs had a means of verifying reported cases from the community. A majority of HEW respondents working at the HP level in Tigray and Amhara said that they verified the reported cases with house visits with health development leaders. In addition, 82.9% HPs and 70.42% health facilities kept a copy of reports. Only 31% catchment health facilities had a rumour logbook for capturing any disease-surveillance-related rumours from various information sources. Among them, 88% of the facilities had registered rumours in the registration book within the past 12 months, and 79% health facilities monitored the quality of the surveillance data by measuring both its timeliness and completeness.

In general, the findings of the assessment at different levels of the health system clearly indicate variability in the mean score of both the structure of the system and its supporting functions at all levels. This variability suggests a significant difference in support for primary-level surveillance activities, but the core function of the system shows no significant difference among health system levels.

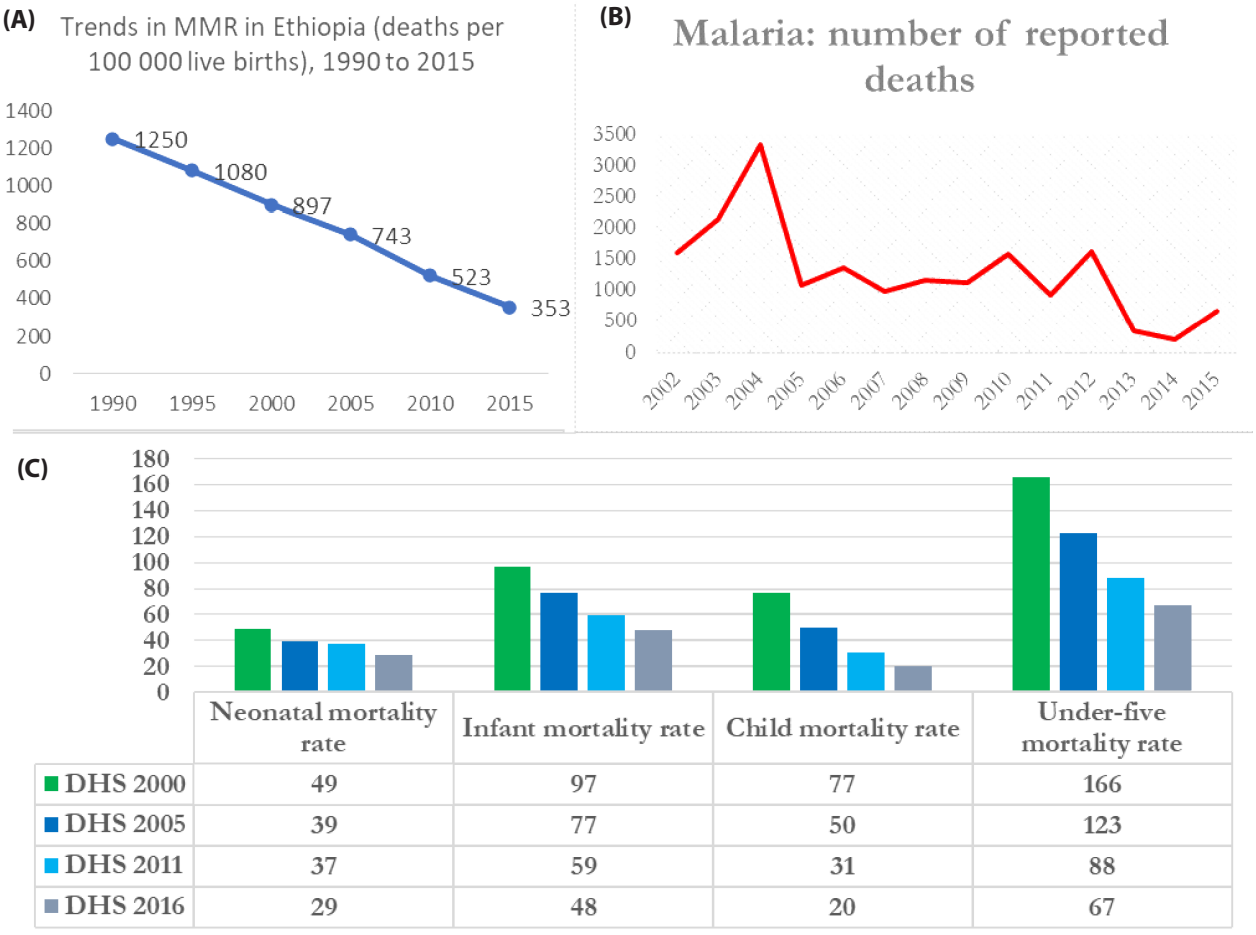
8 HEALTH EXTENSION PROGRAM SERVICE DELIVERY OUTCOMES

The HEP has been a major component of the Ethiopian health system and is commonly claimed to be a major contributor to gains in health outcomes in the country. This section includes an assessment of trends in morbidity, mortality, and health behaviour indicators, followed by a systematic review with meta-analyses on the effectiveness of the HEP in improving health outcomes. Finally, an association is presented between the intensity of implementation of the HEP and household-level outcomes, based on data from the household survey of the National HEP assessment.

8.1 Trends of health indicators in Ethiopia

8.1.1. Trends in diseases and health conditions

There is significant reduction in the maternal, child, and malaria-related mortalities between 2000 and 2015, the time including the period of the roll- out of the national HEP. *(Figure 32)*



	Neonatal mortality rate	Infant mortality rate	Child mortality rate	Under-five mortality rate
DHS 2000	49	97	77	166
DHS 2005	39	77	50	123
DHS 2011	37	59	31	88
DHS 2016	29	48	20	67

Figure 32. Trends of maternal mortality (A), child mortality (C) and malaria-related deaths (B), 2000-2015, Ethiopia

One proxy indicator of maternal morbidity is maternal nutritional status. Nearly one third of mothers were underweight in 2000. This declined to 27% by 2005 and 2011. Later it declined again to 22% by 2016. Although the differences could be due to sampling variation, the 5-percentage point decline between 2011 and 2016 may reflect the contribution of the HEP.

There has been a remarkable decline in the prevalence of childhood malnutrition during the study period. As seen in Figure 33, there was a 20-percentage point decline in the prevalence of stunting and underweight. This decline likely reflects a significant contribution from the HEP.

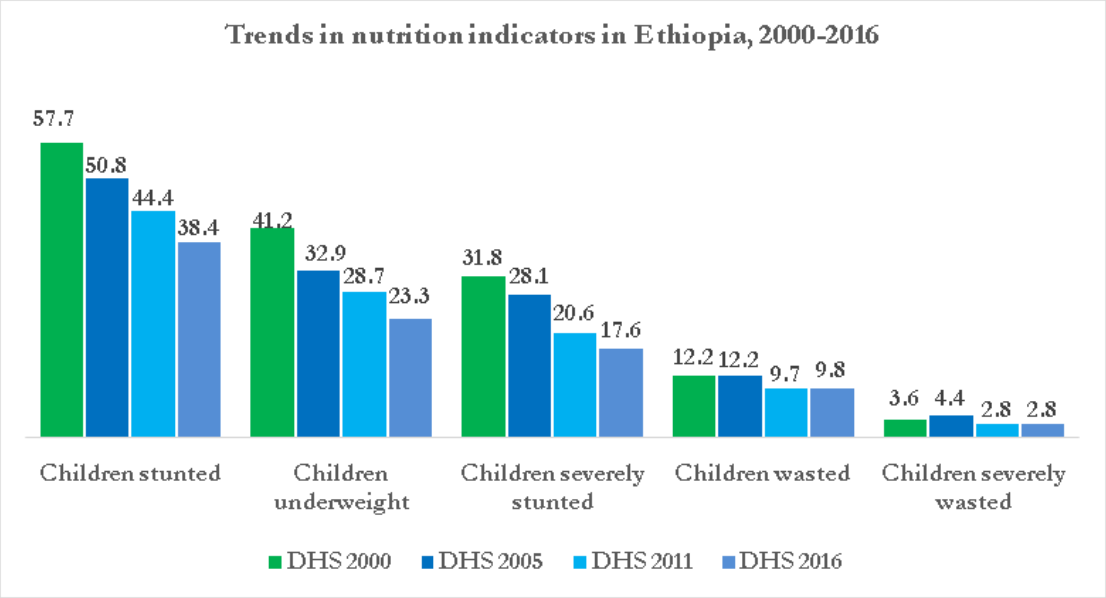


Figure 33. Nutritional status, children under 5, 2000-2016

As shown in Figure 34, the number of confirmed malaria cases increased from 2008 to 2013. This likely reflects improvements in the availability and accessibility of diagnostic services and improvements in the HIS instead of a true increase in risk of malaria. After 2013, the number of confirmed cases began to decline, most likely reflecting a true decrease in the number of malaria cases.

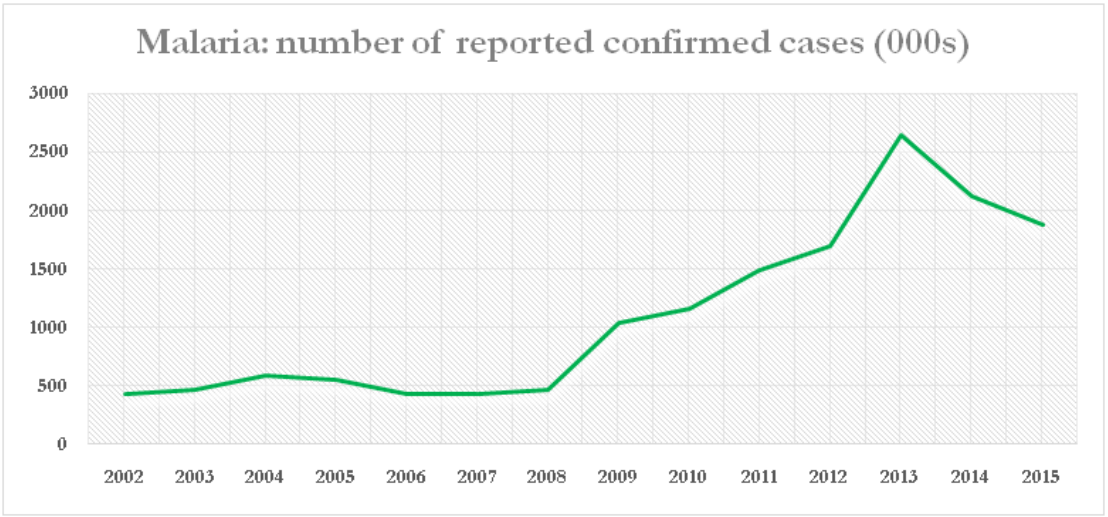


Figure 34. Trends in number of confirmed malaria cases, 2002-2015

8.1.2 Trends in Health Service Use

It can also be clearly observed that there is increasing trend in the coverage of health services included in the HEP packages like maternal health, hygiene and sanitation and TB prevention and control. (Figure 35)

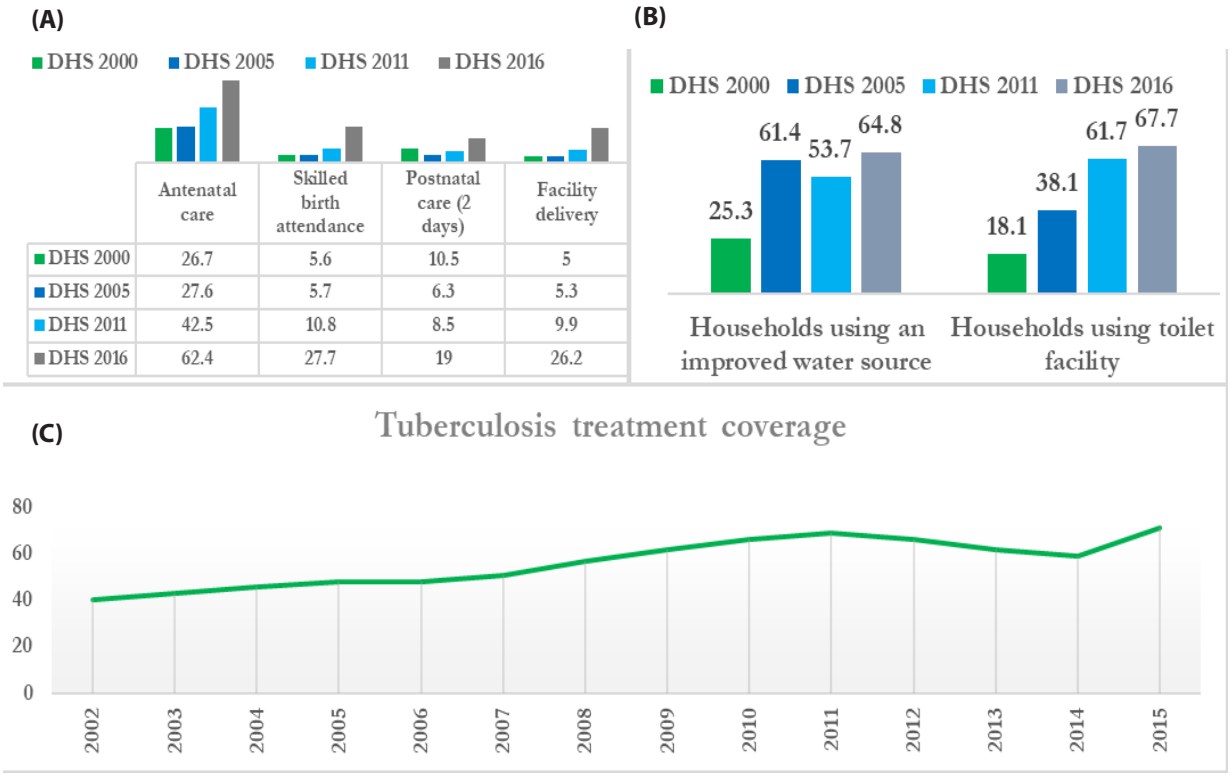


Figure 35. Coverage of key maternal health services (A), WaSH facility (B), and trends in TB treatment coverage (C), Ethiopia

8.2 Effectiveness of the Health Extension Program: Evidence from a systematic review of previous studies

A meta-analysis was conducted on studies that have reported multiple exposures and outcomes (hence, heterogeneous), and assuming these outcomes are correlated and defined as "maternal health services use behaviours (Figure 36). A random effects model predicts that exposure to the HEP improves the odds of using maternal healthcare services (2.46, 95% CI [1.93, 3.14]), although significantly larger heterogeneity was observed among the studies. There was no significant evidence for publication bias.

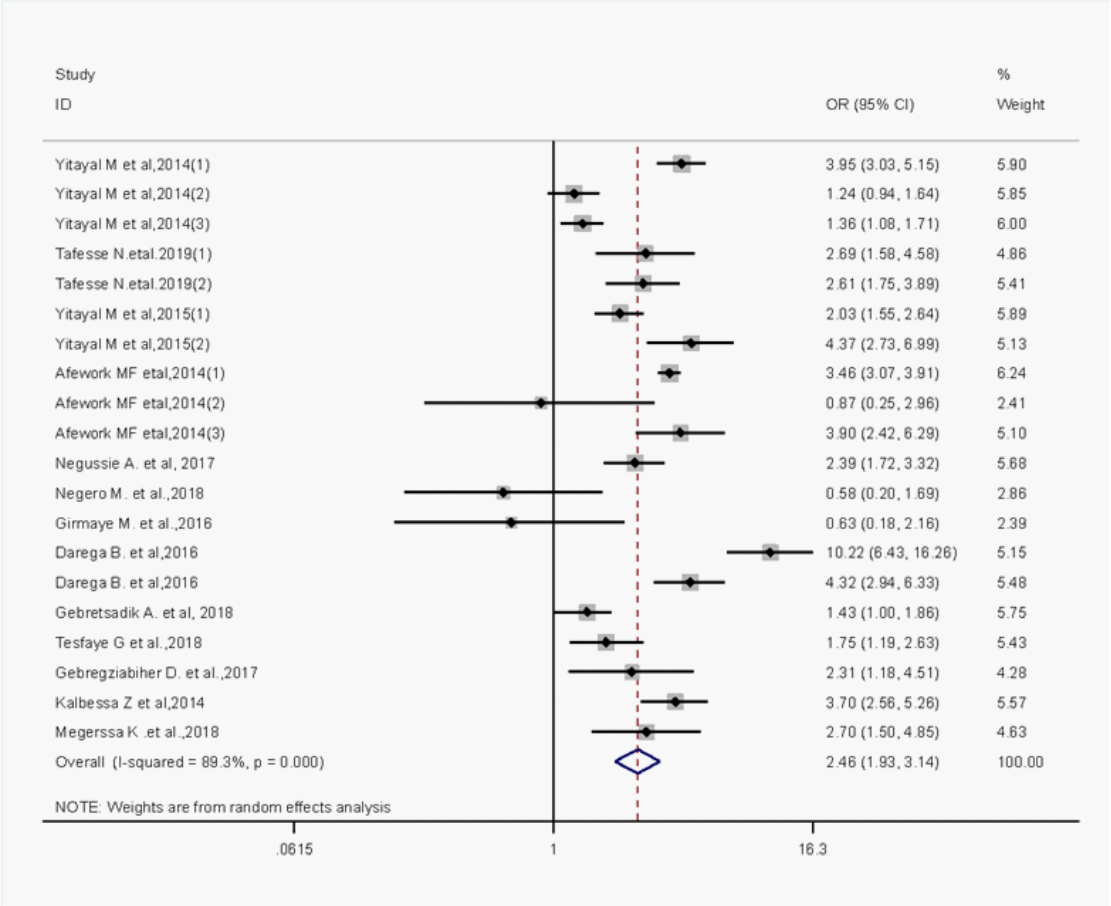


Figure 36. A random effect model-analysis of the effects of the HEP on maternal healthcare service use

8.3 Association between intensity of Health Extension Program implementation and household-level adoption of health behaviours

The progress in the household-level implementation of the HEP was found to be significantly associated with home visits in agrarian settings and HP visits in pastoralist settings. A 10% increase in the proportion of households reached through home visits was associated with a 19% increase in household progress toward full implementation of the HEP at the household level. Similarly, a 10% increase in the proportion of pastoralist households who had interactions with HEWs through HP visits was associated with a 16% increase in household progress toward full implementation of the HEP at the household level.

Table 20. Association between intensity of HEP implementation and household-level behavior

	Agrarian Settings				Pastoralist Settings			
	B	95% CI of B		P	B	95% CI of B		P
		LL	UL			LL	UL	
Proportion of households reached through home visit	0.186	0.109	0.263	0	0.017	-0.19	0.223	0.872
Proportion of households reached through HP visit	-0.056	-0.146	0.033	0.215	0.156	0.001	0.311	0.048
Proportion of households reached through outreach	0.018	-0.088	0.123	0.738	-0.042	-0.304	0.221	0.751
Median age of women	0.131	-0.139	0.4	0.34	-0.066	-0.887	0.756	0.873
Proportion of households with a woman having some formal education	-0.067	-0.174	0.041	0.222	0.361	0.096	0.625	0.008
Proportion of households in the medium, higher, or highest wealth quintiles	0.134	0.069	0.199	0	-0.106	-0.205	-0.006	0.038
Constant	37	25.2	48.8	0	35.9	7.4	64.4	0.015

Abbreviations: HP, health post; LL, Lower Limit; UL, Upper Limit

Bivariate analyses examining the association between receiving supervision from different sources and the average progress of households toward the adoption of HEP-related behaviours showed that receiving supervision from any source was associated with higher progress in household-level behavioural change. Variability in progress varied, albeit only to a limited extent, by the type of supervisor (Figure 37).

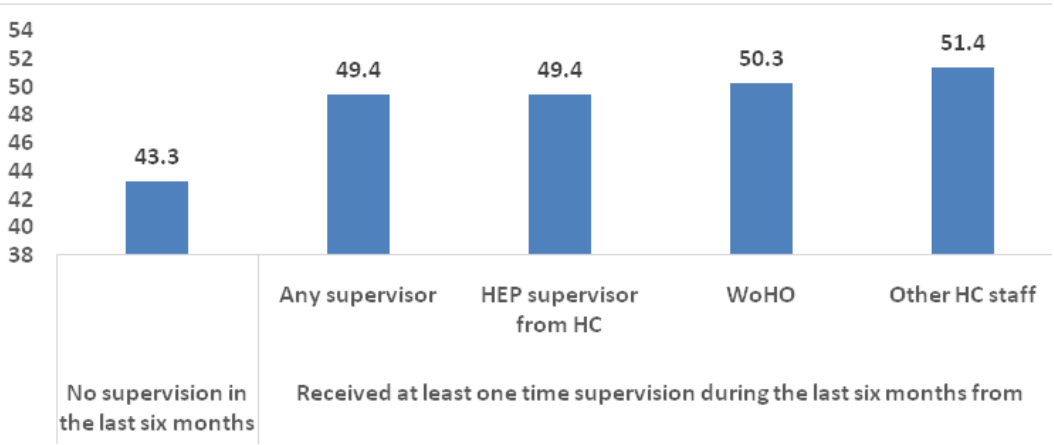


Figure 37. Mean progress toward full implementation of the HEP at the household level

9. GOVERNANCE, LEADERSHIP, AND MANAGEMENT OF THE HEALTH EXTENSION PROGRAM

Leadership and governance is the most complex but most critical building block of any health system. Good governance is imperative for the effective planning, implementation, monitoring, and evaluation of the HEP. The details of evidence from the literature and the results of the quantitative and qualitative assessments are described in this section.

9.1. Overall governance and evolution of the health sector

Ethiopia's healthcare system has had an established and well-structured governance system since 1998 for effective coordination of activities in the health sector. The governance structures are stretched from a kebele level HIV and Health Committee, woreda level Joint Steering Committee (WJSC), Regional Joint Steering Committee (RJSC) and Federal level Central Joint Steering Committee (CJSC, later called Joint Consultative Forum). Later, the MOH-RHB Joint Steering Committee was added to these governing bodies. As part of the MoH's process of continuous system development, huge steps were taken in transferring some responsibilities, authority, power, and resources to the local level, which has created opportunities for effective governance there.

9.2 Existence of an enabling policy environment

The HEP has enjoyed strong policy support throughout its evolution, as stipulated in the National Health Policy and subsequent health strategies. Since 2003, enabling policy options were in place to advance the overall health and wellbeing of Ethiopians. As a continuation of these efforts, within the broader national goal of advancing to a middle-income country, achieving universal PHC is a priority agenda item of the country between 2016 and 2035.

HEP in Ethiopia, primarily owned by the government, has become the foundation of the PHC system, and PHC in turn is the foundation of Ethiopia's health system. For the effective implementation of HEP, the following broader policy directions and commitments were taken:

- The rapid construction of HPs (around 17000) and expansion of the Health Centers (around 3764) to access health services to the community;
- The massive training and deployment of salaried Health Extension Workers (around 40000) which phased the voluntary-based CHA and TBA system.
- The government was able to successfully mobilize resources from both within and outside national borders through its well-intended motto of "all roads lead to the Health Extension Program!". In addition, the mobilized resources are allocated to HP-based HEP (HSTP financing plan directed allocation of 32% budget allocated for PHC – which covers 55% of total budget – towards HEP).
- Enhancing the participation of the community in planning, implementation, monitoring and evaluation of HEP through the HEP's well-structured 4-level governance.
- The development and endorsement of sets of comprehensive HEP implementation guidelines and strategic documents.

Despite the continuous adaptation of the program to different contexts and expansion of services, the development of the program was not guided by its own long-term strategic plan or roadmap.

In this assessment, the availability of specific guidelines at health posts varied from 27.2% (CHIS guideline) to 75.3% (iCCM guideline). In relation to the usefulness and clarity of the guidelines, qualitative respondents confirmed that they are helpful, easily understandable, and user-friendly even though adherence to them is seldom practiced. However, the respondents suggested timely revision of the guidelines and manuals, sufficient distribution to ensure availability at service delivery point, provision of adequate training on their contents and use and translation to local languages for better understanding.

9.3 Decentralization of the Health Extension Program

The technical and administrative oversight of HPs was decentralized to the WorHO and HC. Among the surveyed HCs, 92% reported playing their roles in both administrative and technical oversight with their catchment HPs (96% in agrarian and 80% in pastoralist). The most commonly practiced roles include providing reporting formats (97%), providing supportive supervision (96%), supplying program drugs (96%), supplying drugs and supplies from the revolving fund (92%), reviewing the performance of HPs and HEWs (92%), and providing consumables and supplies (91%). These activities are reported to be conducted through a dedicated HEP coordinator (78%), and other technical staff (16%). But, only 29% of HCs reported providing training to HEWs in their catchment.

The assessment showed that over half of the WorHOs (57.3%) assigned dedicated expert while 40.9% had established a team to support the HEP. Through these structures, WorHOs reported providing technical support (43.8%), assigning HEWs to HPs (44.1%), and provide resources. There were some WorHOs (21%) which had HPs receiving direct support from them. Even though the HEWs are members of the kebele administration cabinet, the respondents in this assessment described that HEWs have autonomy in planning, implementation and monitoring of their activities after the plan gets approval. At the kebele level, HEWs are engaged in non-health activities (Example: tax collection, the social mobilization of communities for political purposes, and community health insurance) which negatively affected the community's perception about HEWs as health agents. Regardless to the observed improvement over time, the HEWs perceived that support from the kebele, HC, and WorHO was as low as 63%, 51%, and 44%, respectively.

In relation to the leadership and governance component of HEP, experts argued that the problems that resulted in decline of HEP which need system-wide intervention include frequent changes in leadership and political dynamics; lack of commitment from the leadership and governance bodies; HEWs' low motivation; HEWs' workload (i.e., in implementing multiple packages); HEWs' engagement in non-health activities; HEWs' poor working conditions (i.e., denial of transfer, lack of annual leave, lack of promotion or career development opportunities, unfavourable living conditions compared to their income level); and the structural shifting of HEP's supervisory body from the woreda to HCs without proper coaching or an adequate budget.

9.4. Coordination of Health Extension Program activities

In order to coordinate PHC activities, the links between communities, HPs/HEWs and HCs were properly designed and the structures have regular meetings. Respondents in this assessment described, however, that there is a lack of uniformity in assigning a responsible body at HC (some have HEP coordinators while in others the vice manager of HC holds the responsibility).

9.5. Collaboration with other sectors

Through the FGDs and KIIs, the respondents identified agriculture, education, water and energy, and women, children and youth sectors as the important sectors with which the HEWs work closely. They support in conveying health messages to the different sections of the community, mobilize communities and support implementation of packages in line with their mandated activities. Moreover, apart from the involvement of other government sectors, different NGOs and the private sector are collaborating with the HEP, depending on their program focus and/or objectives.

Regardless of the fact that the supports are limited by time and scope, implementing partners support the HEP in diverse areas. Although most respondents stated that Ethiopia has been receiving huge support (both technical and financial) from international and local collaborators (mostly NGOs), the support has been declining over time. In this regard, a concerted effort is needed in sustaining initiatives of partners after projects phaseout and alignment of interventions to avoid loopholes and redundancies. In addition, efforts are needed to ensure consistency and predictability of the support from external sources.

At kebele level, there are activities which are in need of the commitment of other sectors which include construction of HPs, selection, mobilization, training and use of WDAs, organizing 1-to-5 networks, supporting HEWs in provision of HEP services in different modalities, and review of performances of HEP. Kebele administrators reported their unwavering support in these areas. Most respondents for this assessment, however, described the level of the HEP managers' commitment at the kebele, woreda, regional, and federal levels as having declined over time. Moreover, some participants reported that kebele leaders were not responsive to the HEWs' concerns and HEP is not a priority. Assigning HEWs to non-health activities, allocation of an inadequate budget for HPs' and HEWs' activities, the non-participation in the HEP's M&E activities, and the lack of attention paid to the construction and maintenance of HPs were among the other complaints from community members and partner organizations.

SECTION 3.2: CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations are presented in 10 building blocks of the health system. Under each building block, the recommendations are further organized indicating what should be maintained, modified, added and dropped in the health extension program.

1. CONCLUSIONS

Health Extension Program service packages

- Despite substantial improvement in health indicators since the beginning of the HEP, communicable, maternal, neonatal, and nutritional disorders (CMNNDs) still constitute 60% of the total DALYs lost in Ethiopia.
- All packages of the HEP are relevant in addressing the major causes of morbidity and mortality among rural communities. The recent addition of non-communicable diseases and mental health packages also create opportunities to address the increasing burden of non-communicable diseases.
- Exposure to HEWs is positively associated with improved maternal and child health outcomes. It has also played a role in improving access to basic sanitation and personal hygiene and contributed to the prevention and control of communicable diseases.
- The availability of more comprehensive services at HPs has a positive influence on the acceptance of HEWs and the links of community-based health-promotion activities with service uptake. Communities have high demand for more comprehensive services at the HP level.
- None of the health-promotion or disease-prevention activities are adequately implemented to a level where the community can sustain the adopted behaviours.

Service delivery modalities

- The health-seeking behaviour of rural communities is sub-optimal. Static services alone won't allow the health system to adequately expand its coverage of essential health services.
- There is high community acceptance and approval of HEP service delivery through home visits, HP visits, and outreach sessions.
- Involving males as HEWs has been approved as appropriate by large portions of the community.
- Campaign-based approaches and strategies involving coercion or punishment to increase implementation of the HEP at the household level did not achieve sustainable behaviour change in the construction and use of latrines or use of maternal health services.
- Implementation of the HEP has a high level of deviation from theories that are thought to have informed its design (i.e., diffusion of innovation).
- In pastoralist communities, the HEP requires a different arrangement of service delivery that addresses challenges related to the sparse population settlement and mobile lifestyle.

Implementation of the Health Extension Program

- HPs are almost universally available at the kebele level and physically accessible for the vast majority of the community.
- Exposure to the HEP among the agrarian and pastoralist communities is low. Exposure to the HEP is shifting toward HP-basedservices over household and community-based health-promotion and disease-prevention activities.
- Implementation of the HEP has been very slow in pastoralist communities compared to agrarian communities.
- Human-resource-related factors are likely to be the primary drivers of the intensity of HEP implementation. The professional mix and levels of education, rather than the number of HEWs, in an HP, are associated with better implementation of the HEP through home and HP visits. HPs with midwives/nurses or level IV HEWs had better implementation of the HEP in terms of both home visits and HP visits.
- Progress toward full implementation of the HEP at the household level is sub-optimal. HEP-related factors explained only a small amount of the

variation in the household-level implementation of the HEP, signifying a lack of effectiveness of current behavioural-change strategies to achieve household-level behavioural changes.

Human resources for the Health Extension Program

- Most HPs are staffed with at least 2 HEWs, but the current workforce has challenges related to competence and motivation.
- Gaps in the competence of HEWs are primarily linked to sub-optimal pre-service training in the 1) recruitment of trainees, 2) medium of instruction in colleges, 3) training capacity of institutions as opposed to large class sizes, and 4) limited compliance of trainings with training curricula.
- The availability of at least 1 level IV HEW, midwife, or nurse is associated with better implementation of the HEP, but an increase in the number of HEWs within an HP was not associated with better performance.
- HCs are attempting to fill the skill gap at the HP level by assigning their staff to rotate at HPs. This approach has been criticized for its logistical challenges and the inefficiency associated with travel time.
- The introduction of additional interventions over time markedly increased the workload of already strained HEWs. Full implementation of the current HEP packages requires more health workers in each HP.
- The attrition rate is fairly low despite the high intention to leave found among HEWs, implying that there is a high level of work dissatisfaction, the retention of only less competent staff over time, and the high risk of losing a large number of HEWs if alternative job opportunities emerge.

Physical facilities, infrastructure, and basic utilities

- HPs are almost universally available.
- Most available HPs do not meet the standards for infrastructure, physical facilities, or basic utilities.

Equipment, drugs, and other medical supplies

- The essential equipment required for the provision of services under the current packages is very often unavailable or non-functional at HPs.
- The availability of tracer drugs varied by item. Both the shortage of supplies and the inadequacy of the supply management system were related to stockouts of tracer drugs and other medical supplies.
- The lack of availability of functional medical equipment possibly explains the compromised quality of HP-based services, including the low effective coverage of ANC.

Financing the Health Extension Program

- Investment in the HEP has been increasing in nominal terms. The share of spending on the HEP in relation to total expenditure at the HC and HP levels, however, has been continuously declining since 2010.
- In addition to voluntary community contribution of time and labor, government and donors are the major financing sources of HEP.
- The government's share in financing the HEP has been increasing over the years, but the HEP is still a highly donor-dependent program, with 77% of its spending coming from external sources.

Community engagement and ownership

- Community participation and ownership has been an important component of the HEP throughout the life of the program.
- Model family training is an effective strategy for increasing the household level implementation of the HEP. Only a very small portion of the population, however, are aware of, have enrolled in, or have completed the training.
- WDA and/or SMC structures are widely available. Their functionality in supporting the HEP is, however, very limited.
- The use of WDAs alone has resulted in the underuse of community potential, including that of men, religious leaders, and traditional leaders.

Information system and monitoring & evaluation

- The current health information/M&E system that captures data for measuring indicators reportable up to the federal level focuses only on the outputs of the specific programs implemented through the HEP, with very limited attention paid to monitoring the process of the HEP at lower levels.
- The kebele-level indicators that are directly linked to the performance of the HEP involve definitions with unrealistic targets (e.g., HDF, ODF, 100% CBHI enrolment), resulting in a lack of sensitivity to the intermediate progress of HPs.
- The data recorded and reported by HPs are largely inconsistent with source documents, mostly resulting in the over-reporting of performance.
- The use of information is limited at the HP and higher levels.

Governance and leadership

- There has been limited guidance on how the HEP should evolve over time.
- The major decisions made about the HEP have not taken advantage of the opportunities created to generate and use evidence on the effectiveness of the HEP.
- The dual accountability of HEWs and parallel reporting are common among HPs.
- A single standard for HPs didn't fit the realities of populations at the kebele level. The services provided, staffing patterns, supplies and equipment, and infrastructure needs of the HEP in kebeles with an HC are different from those located far from an HC. The current standard of HPs did not acknowledge this difference, leading to the inefficient use of available resources.
- Supervisory support from HCs has been inadequate. Whenever provided, the team-based supervision of HPs has been more supportive of the HEP's implementation than individual HEP supervisors.
- Restrictions in the rights of HEWs as civil servants have frequently been reported. This has been a major source of dissatisfaction among HEWs.
- Accountability is limited at the HP level, leading to high rate of absenteeism and the closure of HPs.

2. RECOMMENDATIONS

Health Extension Program service packages

Maintain	The current packages should be continued by addressing their implementation challenges.
Modify	HEP packages should evolve with clear milestones to graduate (bring to an end) packages or specific components of packages upon achievement of sustainable behavioural change at household level.
	Health and health system literacy has to get adequate attention either as part of each package or as a separate package.
	Provide clear standard operating procedures for health post operations (health post-based activities, home visits, outreach sessions) in different contexts to guide implementation, monitoring and evaluation, and controlling of health posts.
Add	Packages should incrementally expand with the goal of meeting communities' expectations for more comprehensive services at health posts.
	Conduct an in-depth study on birth outcomes among deliveries attended by HEWs to generate additional evidence on capacity of HEWs in handling labour and delivery.
Review	Avoid delivery attendance by HEWs until adequate evidence is generated regarding the skill levels of HEWs in managing normal delivery and detecting complications.

Service delivery modalities

Maintain	Static, home visit, and outreach service delivery modalities
	Female HEWs responsible for contacting women during home visits
Modify	Enhance the use of health post visits as an entry point for provision of comprehensive health promotion and disease prevention services.
	Revise behaviour change theories and strategies based on variations in the needs of specific behavioural outcomes and cultural contexts.
	Increase involvement of men and youth as targets of HEP
	The strategy for outreach modality should be designed in a way that includes social capital or indigenous social institutions like theidir, equband others.
Add	Include male health workers in the cadre of HEWs.
	Redesign pastoralist HEP by conducting more detailed analyses of experiences in addressing health and other social needs of pastoralist communities.
	Strengthen inter-sectoral collaboration to ensure that strategies to implement HEP in pastoralist communities are integrated/coordinated with other community-based services including villagization and animal health services.
Review	Avoid the use of campaign-based approaches to influence behaviours that need continuous communication with household members.
	Avoid punishment or coercion measures for not having facilities or using services

Implementation of the Health Extension Program

Maintain	Universal availability of HPs at the kebele level.
	Model family training as a strategy for HEP implementation.
Modify	Behaviour change strategies should be adapted to behavioural outcome and context specific approaches/models.
	Strengthen linkage between demand creation and service provision activities by increasing availability of services at health post level and further enhancing health centre – health post linkage.
	Home visits and most of the outreach sessions of HEWs should focus on demand creation through health and health system literacy instead of attempting to take facility-based services to the home of potential users.
	Intensify focused outreach services to selected areas where men and youth can be targeted (markets, schools, periodic community gatherings, religious institutions, and community-based organizations) depending on local context.
Add	Expand workforce at health posts by number and professional mix to ensure that HEWs have adequate time for home visits and outreach sessions while maintaining full time operation of health posts.
	Arrange flexible but regulated working days and working hours to allow HEWs to plan and reach target populations including women, men, and youth in different public gatherings such as market days, religious gatherings, and other social events.
	Consider a phased approach to implementation of HEP packages through which each package that requires behaviour change at community level will be a focus area of intervention.
Review	Forcing households to adopt desired behaviours.
	Coercion/punishment as a strategy to influence household behaviour.
	Campaign based approaches for behaviours that require time to change.

Human resources for the Health Extension Program

Maintain	Upgrade level III HEWs to level IV
Modify	Revise entrance criteria for HEW training to consider opportunities created by large numbers of students completing high school and university preparatory schools. Introduce entrance exams for HEW training institutions.
	Build the capacity of HEW training institutions in the areas of involvement in student recruitment, instructors' capacity, management of practical attachment programs, and skill labs.
	Strengthen regulation of HEW training institutions.
	Review and balance duration of training for HEWs with content of curriculum
	Match practical attachment sites with learning outcomes. Consistently assign trainees at health post level as part of practical attachment.
	Strengthen the provision of IRT on a regular basis using training materials translated into local languages whenever possible.
	Respect the rights of HEWs as civil servants in the areas of transfers, leave, and career structure.
	Transform workflow and information system of health posts in a way that guarantees continuum of care that is resilient to staff turnover.
	Revise human resource standards of health post to allow assignment of more health workers in each health post.
Add	Address the language barrier in training HEWs by introducing English-language competency tests for entrance.
	Open career development for HEWs to allow them to grow in more diversified areas of specialties allowing competent HEWs to compete and occupy positions in other levels of health institutions.
	Consider staffing health posts with a team of health workers composed of HEWs and other health professionals with expertise allowing the provision of more comprehensive services at health post level.
	Initiating virtual learning modalities for HEWs as a continuous professional development strategy.
	Provide simple technology applications serving as job aid and decision support tools.
	Consider performance-based incentives to health posts and HEWs based on auditable performance data.

Physical facilities, infrastructure, and basic utilities

Maintain	Health centre to health post linkage to overcome challenges related to lack of electric power at health posts.
Modify	Responses to the increasing population size within a kebele should focus on expanding capacity within a health post instead of constructing additional health posts.
	A phased approach to renovation/reconstruction of health posts should be introduced with due consideration to: 1) the need to expand services 2) the importance of avoiding any more substandard construction, 3) the limited capacity of the country, and 4) the availability and accessibility of infrastructure and utilities within the kebele
	Coordinate efforts to renovate or reconstruct health posts in line with plans for expansion of services within each PHCU.
	Initiate an innovative approach to mobilize resources for renovation of health posts from government, community, and other funding sources.
	Negotiate at a higher level to ensure that health posts are prioritized in infrastructure development projects (road, electricity, water, and telecommunication) targeting rural communities.
	Consider long term plans to solve lack of residential houses for health post staff.
Add	Introduce enforcement of regulatory standards on future health post construction and/or renovation activities to prevent investment on sub-standard constructions.

Equipment, drugs, and other medical supplies

Maintain	The supply of program-specific drugs and other medical supplies, like family planning commodities and vaccine supplies.
Modify	Strengthen IPLS implementation through regular supportive supervision and introduction of simple electronic technologies.
	Revise drug list of health posts to match revision in scope of services provided at health posts including possible expansion of clinical services.
	Build the capacity of health post staff on supply chain management systems for drugs and other medical supplies.
	Ensure appropriate storage and usage of drugs and other medical supplies.
	Strengthen quality assurance of imported medical equipment including BP apparatus.
	Avail durable and quality assured equipment at health posts and strengthen continuous maintenance
Add	Explore and introduce alternative sources of funding the supply of drugs and other medical supplies for consumption at health post level.
	Assess the feasibility and effectiveness of alternatives for financing HP based services through mechanisms including community-based health insurance and incentivizing private sector involvement at the village level.
	Explore options for expansion of investigations involving dip-stick technologies to address the gap in laboratory facilities as services expand at health posts.

Financing the Health Extension Program

Maintain	Expanding government share in financing for HEP
Modify	Increase the rate at which domestic financing schemes substitute donors with the ambition of ensuring financial sustainability of HEP.
Add	Consider alternative sources of financing HEP packages including CBHI.

Community engagement and ownership

Maintain	Keep community engagement central to the HEP
Modify	Strengthen model family training by providing clear guidelines, increasing HEWs' time spent for training of families and arranging experience sharing sessions between model families and others.
	All community volunteers working with HEWs should be selected only among model families.
Add	Introduce a system that allows HEWs to track enrolment, progress, completion, and recognition of model families.
	Redesign community structure for HEP with renewed branding, capacity, and responsibilities. Consider the following features to address challenges faced by the WDA approach.
	Incentivize volunteerism and limit duration of service to a predefined period of performance.
	Make maximal use of opportunities created by: 1) relatively better availability of literate community members, 2) high level of school enrolment among adolescents and youth, and 3) increasing use of communication technologies including cell phone and the internet.
Review	Reliance on single approach to community participation
	Avoid creating expectations of becoming salaried workers among community volunteers

Information system and monitoring & evaluation

Maintain	Data disaggregation by level of service provision (HP, HC)
Modify	Revise definitions of indicators with unrealistic targets.
	Expand electronic CHIS with dashboard features facilitating information use in situations with limited data processing capacity.
	Enforce the use of family folders to record encounters between HEWs and household members as per the guideline.
Add	Include process indicators of HEP for monitoring implementation of HEP service delivery modalities at least at health post, health center, and woreda levels.
	Establish data verification systems including community level verification on a random sample of service users as well as introduction of innovative technologies in order to minimize deliberate over reporting.
	Introduce a performance management system that relies on objective auditing of coverage and quality of services.
	Initiating incentive mechanisms to encourage improved data quality and use.
	Transform information system of health posts in a way that guarantees a continuum of care that is resilient to staff turnover.
Review	Eliminate formal and informal incentives to over reporting

Governance and leadership

Maintain	Health centre to health post linkage for technical support and administrative oversight.
Modify	Clarify lines of accountability of HEWs/HPs to avoid dual accountability and overlapping responsibilities.
	Ensure alignment of priorities and targets of different health programs with those of HEP.
	Strengthen intersectoral collaboration at all levels guided by collaborative frameworks enforced at higher levels by the leadership and management.
	Ensure that HEP plays a vital role in facilitating Kebele level intersectoral collaboration with the intention of addressing social determinants of health.
Add	Introduce service and input standards for multiple categories of HEP implementers.
	Develop a roadmap of evolution of HEP over the next10 to 20 years.
	Rebrand health posts along with changes in their function and structure.
	Consider establishing and testing administrative boards for health posts involving community members to enhance the oversight role of the community.
	Provide clear guidelines on involvement of HEWs in "non-health" activities with the purpose of keeping their involvement in activities
	Introduce a standard decision-making procedure that requires generation and use of adequate evidence before making decisions on major investments in HEP.

Part 4

RESULTS OF THE URBAN HEALTH EXTENSION PROGRAM ASSESSMENT

SECTION 4.1: RESULTS OF THE URBAN HEALTH EXTENSION PROGRAM ASSESSMENT

1. RELEVANCE OF THE URBAN HEP

According to the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD/DAC), relevance is the extent to which a program is suited to the priorities and policies of the stakeholders.

The study assessed the relevance of the UHEP to solving the common health problems and the risk factors of the urban community, the relevance of the service delivery modalities, and the community perceptions and acceptability of the UHEP. This section of the report will describe the epidemiological, social, and structural relevance of the program from community and program staff perspectives.

1.1 Relevance of specific UHEP packages

The UHEP was underscored as particularly relevant in solving the health problems related to overcrowding and migration to the cities. Family planning (FP), immunization, and TB prevention and control activities were among the UHEP activities reported to be relevant in urban settings. The participants described some packages, including the WaSH package, as being inadequate to address the multifaceted problems of the urban community. The overall judgement of the relevance of the 3 specific packages as per the respondents is summarized in the table below.

Table 21. Summary of attributes of UHEP packages

UHEP Package	Positive attributes	Identified Gaps
Water, Hygiene and Sanitation Packages	• Important in addressing health problems, mainly diarrheal diseases, typhus, and other CDs and even a reduction in indoor air pollution and its health effects.	• Less than optimal collaboration among different government sectors.
	• Improved personal & environmental hygiene via health education.	• Resource scarcity to implement package recommendations in urban areas (space, finance….).
Family Health Package	• Played a significant role in the observed improvements in maternal and child health service use, including FP, ANC, PNC, facility delivery, and immunization.	• Poor implementation and the absence of clinical services, however, limited the relevance of the package in addressing the urban communities' health needs.
	• Contribute to decrease in home delivery.	• Disparity in equitable access to different segments of the population.
Disease prevention and control Packages	• Awareness creation and the screening of cases have resulted in a reduction in new cases of TB.	• Program relatively neglects HIV prevention among commercial sex workers and youths.
	• Contributed to a reduction in the malaria epidemic in Dire Dawa.	• Paid little attention to emerging chronic disease burdens (cancer, DM, MH…).
	• Preference for the UHEPrs for HIV testing due to their fear of stigma	

Respondents broadly questioned the relevance of the program in addressing NCDs. They voiced their concerns that the UHEP has paid little attention to emerging chronic disease burdens.

"The UHEPr came with agendas that did not meet the expectation of the residents. Hypertension and diabetic cases are higher in towns, and they expect their level of blood pressure or blood sugar to be measured."

Health Center Staff, Dire Dawa

1.2 UHEP Implementation Arrangements and Modalities

The UHEP uses a combination of implementation modalities and approaches to deliver the packages to their intended target beneficiaries. This study assessed the strategies and approaches being used by UHEPrs to implement the program at the household level.

1.3 Relevance of Model Family/HH

The UHEP implementation manual notes several times that the ultimate aim of the program is to produce model households with a higher level of health literacy, as demonstrated by better health-seeking behaviour and healthy living conditions. UHEPrs reported that they had used model families to reach as many people as possible. Similarly, program staff also reported that model families not only served to create other model households but also were used as a basis for the creation of model development groups, model kebeles or villages, model youth centers, and model schools.

In this study, receiving a model family training was found to have a significant association with households` participation in sanitation campaigns, the availability of a separate kitchen, the availability of a handwashing facility with soap or a substitute, liquid waste disposal practices, enrolment in community-based health insurance (CBHI), ANC follow-up, and exclusive breast-feeding practices. Model households were more likely to participate in sanitation campaigns, have a separate kitchen, and be enrolled in CBHI.

1.4 Relevance of Women's Development Army (WDA)

The UHEP implementation guidelines also indicate that the WDAs are the primary collaborators of UHEPrs that can serve as anchors and facilitate the implementation of the program at the household level. The UHEPrs collaborate with WDAs in identifying the health needs or problems of households and work together as a team.

The findings of this study indicated that WDAs, as the UHEP's implementation collaborator, were relevant to awareness creation and communication and community mobilization activities at the community level. Participants had reservations, however, about the relevance of WDAs due to their limited technical capacity to educate the community about the packages. In addition, some participants were concerned about the negative consequence of WDAs' involvement in politics and administrative activities.

1.5 Relevance of Home Visits

In the case of the UHEP, most of its packages and services are designed to be rendered by providing health education and information, counselling, screening for CDs and NCDs, and providing follow-up (with pregnant mothers, under-5 children, chronic patients, and model households) through home-to-home visits. As per the UHEP implementation guidelines, the UHEPrs are expected to reach every household assigned under their catchment at least once a year, regardless of their health needs or economic status.

The quantitative analysis showed that home visits have a significant association with household participation in the sanitation campaign, the availability of a handwashing facility with soap or a substitute, liquid waste disposal practices, the wanted status of the most recent pregnancy, ANC follow-up, and awareness of exclusive breastfeeding. Households visited within one-year of the survey were more likely to report that they had participated in the sanitation campaign, had a separate kitchen, and had a hand-washing facility with soap or a substitute. Moreover, households visited by UHEPrs within 1 year of the survey were more likely to report that they had received ANC for the most recent pregnancy, got TT vaccination, and were aware of danger signs during pregnancy.

1.6 Relevance of Family Health Team (FHT) Approach

The Family Health Team (FHT) was reported to offer many advantages to the community, to service provider teams, and to the success of HEP. First, it benefited poor people, as they could now receive services in their home. It was reported that the service given by the FHT is of better quality since it is delivered by a team of experts. As part of the FHT, UHEPrs identify families in need of home-based treatment and participate in the provision of treatment along with other professionals. As a result, community acceptance for UHEPrs increased. Furthermore, as part of the FHT, UHEPrs have started to work at HCs and be seen at OPD by the community, helping the community to see them as health professionals.

Even though it is difficult to say that the FHT approach has disadvantages, key informants reported that there is a huge burden in its management. Its demands on human resources, transportation, and new health care delivery systems (in relation to home-based diagnosis, drug supply and data sharing) were some of the challenges observed during its application. In addition to the shortage of labor for working at health facilities and in the community, non-health extension health professional's tolerance for working under difficult conditions (e.g., traveling on foot, exposure to the sun) was observed as a challenge.

1.7 Social Relevance and Acceptability of the UHEP

Acceptability of UHEPrs and UHEP: Most FGD participants said that the program and UHEPrs were acceptable to the community. There were also participants who said the community found the HEP and UHEPrs unacceptable. Some of the reasons frequently mentioned for this unacceptability were identified as the economic status of the households, relatively better access to media as a source of similar information, and the perception that the HEP was used as a political tool. Most participants raised the idea that 1-to-5 networks and the HDA were considered political among the community. UHEPrs were also asked to rate their perception of the UHEP's acceptance by the community, based on their day-to-day observations and contact with the community. The finding showed that 69% of UHEPrs perceived the program as acceptable by the community; the result is highest for other towns (88%) and lowest in Dire Dawa (26%) (Figure).

Perception of UHEPrs as professionals: Participants had a mixed perception of UHEPrs as professionals. Some participants believed that UHEPrs failed to follow professional ethics and are hard to find during an appointment. On the other hand, some participants believed that UHEPrs were committed and had a work plan that they followed. These participants believed that the UHEPrs' commitment was improving.

Gender preference of UHEPrs by community: In this study, communities' preference for UHEPrs' gender was assessed. Overall, the respondents said that it would be good for the UHEPrs to serve clients of the same sex. Religion and culture were mentioned as important factors in determining UHEPrs' sex preference. Some participants argued strongly that UHEPrs should be female, as it is much easier for women to share private information with female health service providers.

Trust of UHEPrs: Most participants stated that the UHEPrs were trusted in the community. Respondents explained that community members, including those infected with HIV, trust the UHEPrs and share their private information with them. Lack of community awareness of the UHEPrs' duties and responsibilities was mentioned as one source of distrust of the UHEPrs. Repeatedly mentioned was that many communities had residents more knowledgeable than the UHEPrs. UHEPrs' absenteeism from work was also mentioned as one possible source of distrust for the UHEPrs among the communit

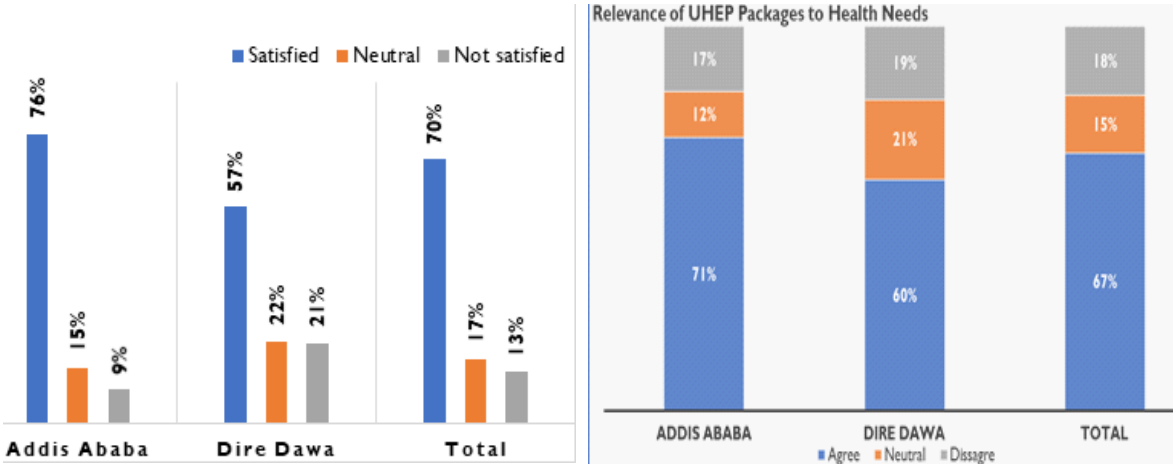


Figure 38. Satisfaction of community members on HEP and perceived relevance of HEP

Overall, participants in the qualitative study reported that the UHEP was an appropriate vehicle for addressing the existent health problems in urban settings and was aligned with the country's national health policy. Participants stated that the UHEP is relevant to promoting basic health services in urban settings and solving the health problems of the urban community. Similarly, the quantitative findings from Addis Ababa and Dire Dawa show that on average, 67% of households perceived UHEP as relevant in addressing the health needs of the urban community. The perceived relevance of the program was found to be higher among respondents in Addis Ababa than in Dire Dawa.

2. AVAILABILITY AND ADEQUACY OF RESOURCES FOR UHEP

According to the newly revised UHEP implementation manual, UHEPrs are directly accountable to the catchment HC, while HC management is responsible for both technical and administrative issues related to the program. HCs deliver all required pharmaceuticals, supplies, and equipment important for UHEPrs as per the implementation manual. HCs are also expected to assign experts to coordinate the implementation of the UHEP.

2.1 Administrative linkage and support from HC

According to the findings of the HC assessment, only 64.7% of HCs reported that they were responsible for both administrative and technical issues in the implementation of the UHEP. Staff responsible for the coordination of the UHEP was available in 85% of HCs. Only 53.1% of the HCs provided a separate office space and furniture for the HEP/HEPrs.

2.2 Capacity building and Career Development for the UHEP

Short-term training is organized to build the capacity of the UHEPrs, motivate UHEPrs, and create an experience-sharing platform. Moreover, whenever there is new development, training is arranged to familiarize UHEPrs with it. The increasing demands of the community also necessitates additional training to satisfy the health service needs of the community.

About 60% of HCs reported that the UHEP coordinators had attended training on the UHEP packages, and in nearly three quarters of HCs, short-term training for UHEPr was provided in the last 2 years. This study also assessed the availability of opportunities for UHEWs to upgrade their education. More than half (58.1%) of respondents reported that the HC, along with other concerned bodies, provides an opportunity for UHEPrs to upgrade their education: i.e., from level IV (diploma) to level V (degree). Regarding the provision of career structure, 78.3% of respondents reported that HCs periodically provide career structure for UHEWs, based on Ethiopian civil-servant rules and proclamations.

The UHEPrs were reported to have educational and career development opportunities. UHEWs are provided the opportunity to join health offices. A committee uses a predetermined set of criteria to select and offer UHEPrs educational opportunities. UHEWs' performance was reported to be among the criteria used to provide educational opportunities and career development. Some UHEPrs, however, complained that the selection process lacked clarity and believed that there was partiality. More importantly, UHEPrs often lack the freedom to ask for the benefits to which they are entitled to.

The proportion of UHEPrs who did IRT was low for most packages; only 59.7% of UHEPrs have received refresher training on the social behavioral change communication (SBCC) module, and the proportion for the first aid, maternal and child health, and WaSH modules was 67.4%, 71.9%, and 72.3%, respectively. Furthermore, there was a measurable disparity between different urban sites assessed.

2.3 Adequacy of UHEWs (UHEPr-to-Household Ratio)

As described in the revised UHEP implementation manual, a UHEPr is expected to serve 400-500 households. According to the qualitative findings, the high workload due to the inadequate number of UHEWs was the major reason mentioned for UHEPrs' demotivation and dissatisfaction. The shortage of UHEPrs was also mentioned as a major reason for the insufficient implementation of the program, mainly with respect to the low proportion of households visited.

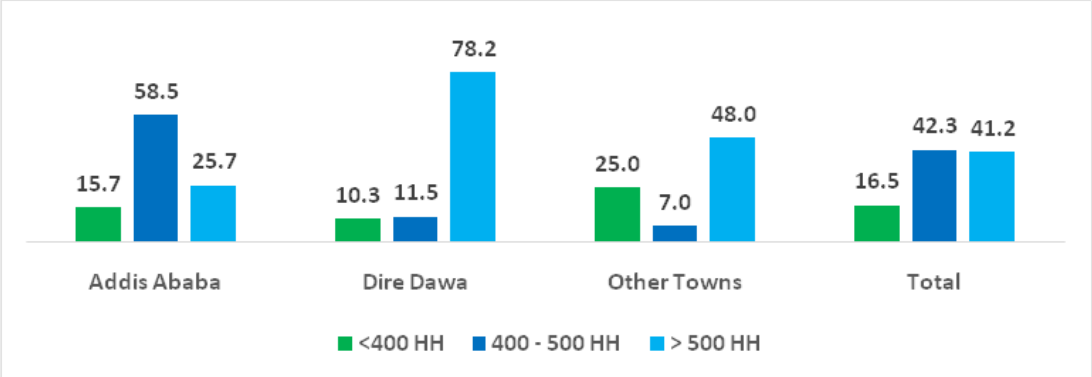


Figure 39. Urban Health Extension Professional-to-Household Ratio

2.4 Availability and Adequacy of medical supplies and equipment

The availability of medical equipment and their use during home visits was reported to be vital to increasing the satisfaction of the community. Medical equipment, however, was not adequately available so that UHEPrs could implement the packages during their home visits. For instance, only a few UHEWs had BP apparatus for screening hypertension during home visits, although UHEPrs are expected to do screening of NCDs during home visits and refer patients to health facilities as needed.

Moreover, shortages of drugs and medical equipment were also reported, which resulted in unnecessary referrals of some clients and patients. Some patients were forced to buy drugs from expensive private health facilities because of a shortage of such drugs in public health facilities. The unavailability of drugs and other supplies was also reported to be contributing to community dissatisfaction. HIV test kit (29 %), Weighing scale (37%) and height scale (38%) were the least available while MUAC tape (95%), Vitamin A (91%) and Glove (89%) were the most available.

2.5 Availability of UHEP Service Standards, Manuals, and Guidelines

Guidelines and strategies are the key factors for effective implementation of the health care policy. Participants reported that those HEP standards and strategies considered the context, such as population dynamics, during recruitment of UHEPrs.

Key informants mentioned the unavailability of manuals and guidelines on the different packages of the UHEP. Quantitatively, the availability of the UHEP guidelines was assessed during the HC survey, and the result showed that about 85% of HCs had UHEP implementation guidelines. Participants also stated that manuals like the FHT manual were updated in 2009 EFY (2017) and also updated every 3 years. Concerning intervention at schools, participants indicated that the guideline had been developed recently to facilitate implementation.

3. URBAN HEP WORKFORCE ANALYSIS

Competent, motivated, and satisfied workforce can provide effective and quality service that meets expectations of the community and service standards. On the other hand, Demotivation, dissatisfaction, and burnout are usually linked with turnover, low morale, poor quality of care, low productivity, absenteeism, and compromised social interactions due to poor interpersonal relationships. This section highlights the level of UHEPrs competency (knowledge and skills) to implement the packages; their satisfaction and motivation with various aspects of the program; degree of burnout and prevalence of depression among the UHEPrs; and the level of intention to leave and attrition.

3.1 Knowledge and skills of UHEPrs

The study assessed the knowledge and skills of UHEPrs using a self-reported competency tool with different questions to assess the skills of UHEPrs at implementing UHEP packages. UHEPrs were asked to rate their own competency using a 4-point scale ranging from 0 (not able to try it at all) to 4 (can train others to do it). Later, responses of "I am not able to do it" and "I can do it with some guidance" were recorded as "not competent," and "I can do it by myself" and "I can train others on how to do it" were categorized as "competent."

This study revealed that only 69% of UHEPrs reported having the knowledge and skill to manage common childhood illnesses, and only 60% could perform ANC examination and consultation. The percentage of UHEPrs who could provide FP was lower than in other areas of competency, only 29.5% of UHEPrs reported ability to insert IUD and those having a skill to provide injectable FP methods were 45.7%. The proportion of UHEPrs who reported competency in providing child immunization (BCG or Heptavalent) was also among the lowest (60.7%).

The quantitative findings are widely supplemented by the qualitative result as participants were repeatedly mentioning knowledge and skill gaps among UHEPrs in providing counselling and health education on emerging health problems like NCDs. Mainly program people, suggested provision of extensive technical support and refresher training to enhance competency of UHEPrs, so as to enable them to be responsive to the changing health service needs of urban communities.

"There are people in the community who have a better knowledge than the UHEPrs. *They might be challenged by those people whenever they conduct health education. So, there is a need to provide academic support [capacity building] to the UHEPrs"*

Health Center Head, Addis Ababa

3.2 The UHEPrs Satisfaction and Motivation

The UHEPrs' job satisfaction was assessed using a Likert-type scale instrument consisting of 27 items, with a 5-point scale ranging from 1 (strongly dissatisfied) to 5 (strongly satisfied). The items were categorized into 8 dimensions of satisfaction: leadership, promotion, autonomy, work environment, professional training opportunities, job security and salary, recognition at work, and perceived other job opportunities. The overall satisfaction was calculated by using the mean value of the scale as a cut-off point to categorize respondents as either satisfied or dissatisfied.

The assessment showed that the overall satisfaction of HEPrs was 59.4%. The highest satisfaction was observed in Dire Dawa (79.3%), followed by Addis Ababa (58.3%). Only 11.6% of UHEPrs were satisfied with their salaries; and only one third of UHEPrs were satisfied with their opportunities for promotion and career development. About half of HEPrs were not satisfied with the level of administrative support and recognition they received from the leadership.

On the other hand, the vast majority (83.4%) of UHEPrs reported satisfaction with the work environment and the relationship among staff members (the extent to which the working environment encouraged them to adjust their practice to suit community needs, provided a stimulating intellectual environment, and expanded their scope of practice). UHEPrs were also asked whether their level of job satisfaction was increasing or decreasing over time, and the majority (66.5%) said that it has been decreasing.

The findings from the qualitative study were largely supportive of the quantitative results. Serving the community and solving their health problems were largely mentioned as main sources of satisfaction for UHEPrs. However, inadequacy of their salary and lack of performance-based incentives and recognition mechanism were major sources of dissatisfaction. High workload and the hardship of working in the community are also mentioned as a major source of dissatisfaction and demotivation for the UHEPrs. The quantitative finding also indicated that a higher proportion of UHEPrs (41.2%) are serving more than 500 households. This indicates a high workload due to inadequate number of UHEPrs to cover the existing households.

3.3 Level of burnout and mental health status among UHEPrs

This study assessed the level of burnout among UHEPrs using a standard tool containing 15 items with a scale ranging from 1 "Rarely", 2 "Sometimes", 3 "Often" and 4 "Very often". Risk of burnout was analysed by categorizing the scores:15 to 18 "no risk of burnout"; 19 to 22 "little sign of burnout"; 33 to 49 "risk of burnout"; and 50 to 79 "severe risk of burnout". The finding revealed the presence of burnout among 81% UHEPrs with varying degrees. About 4% of UHEPrs had a severe risk of burnout that requires immediate intervention. The UHEPrs from other towns had relatively higher risk of burnout than Addis Ababa and Dire Dawa.

The study also assessed mental health status of UHEPrs using a standard tool called patient health questionnaire (PHQ-9), which contains 9 questions with 3-point scales, ranging from 0 (not at all) to 3 (nearly every day). Individuals who scored 10 and above points, out of 27 total scores for the nine questions, were categorized under probable symptoms of depression. The prevalence of depression among the UHEPrs was 8.9%, which is higher, with slight variation across the study areas. Highest level of depression (13.5%) was scored among UHEPrs from other towns, followed by Addis Ababa (8.1%) and Dire Dawa (6.9%). The UHEPrs with educational status of level V (degree) had higher risk of depression (12.8%), compared to those with level IV (diploma) (8.0%). Various studies indicated that burnout could lead to insomnia, perceptions of physical exhaustion, increased substance abuse, and ultimately mental health problems. The effects of having staff with a high level of burnout and dissatisfaction goes beyond the personal; they may affect the reputation and acceptability of the program and the health system in general.

3.4 Intention to leave and attrition among UHEPrs

The finding of this study showed a high level of intention to leave among the UHEPrs. Considerable proportion of UHEPrs (29%) are currently looking for another job; and the main reasons to look for alternative job opportunities were low salary pay (82%), absence of career development (64.4%), and absence motivation scheme (60.7%). The UHEPrs were asked "if they recommend other nurses to work as UHEPrs or not"; and 60% of respondents do not recommend other nurses, with similar qualifications, to be hired and to work as UHEPrs.

On the other hand, the attrition rate of UHEPrs was 21.1% with highest rate (38.5%) in Addis Ababa and lowest (6.1%) in Harari. The median time of attrition was 4 years with IQR [1.5 to 6.6 years], indicating 50% of UHEPrs served four years before they leave their work. The qualitative finding broadly explained low salary, absence of career development opportunity, absence of incentive and recognition and high workload as major cause of attrition.

4. IMPLEMENTATION OF THE UHEP

The UHEP program has 4 major packages and 15 sub-packages. These packages are intended to improve access to health services, mainly by improving the hygiene and sanitation conditions of urban residents, maternal and child health, and youth and adolescent reproductive health through health promotion, disease prevention, accident prevention, first aid, referral, and linkage. These packages and services are delivered in households, schools, youth centers and workplaces. The UHEP packages are implemented using different strategies including home-to-home visits, community mobilization during the sanitation and immunization campaign; training of model households, teachers, students, and youth, and collaboration with formal and informal community structures (WDAs, religious leaders, and civic associations).

In this study, both qualitative and quantitative approaches were used to assess the implementation of the UHEP. This section describes the perceived and actual levels of UHEP implementation from providers and beneficiaries' (i.e., households') perspectives. The results of the study highlight the extent to which the UHEP packages and services have reached the urban households, households' and UHEPrs' perception about the implementation of the packages in the area, and the judgement of the UHEPrs regarding the level of UHEP implementation among the service delivery modalities. Moreover, the challenges of the program are described in detail. The level of community access to the UHEP was assessed using the knowledge, attitudes, and practices of households related to program packages, services, behavioural changes, and health and health-related outcomes that were expected to be improved due to the UHEP implementation.

4.1 Home-to-Home Visits by UHEPrs

Home visit is one of the major strategies for the implementation of the UHEP packages. Most of the UHEP packages and services are designed to be rendered by providing health education or information, counselling, screening for CDs and NCDs, and follow-ups (pregnant mothers, under-5 children, chronic patients, and model households) through home-to-home visits.

Households with lower economic status having health service needs for either maternal, child, communicable and/or non-communicable disease are priority targets of UHEP that require more frequent visit and close follow-up by UHEPrs and FHT. According to the UHEP implementation guideline, the UHEPrs are expected to spend significant working time (3 days per week) to implement the UHEP through home-to-home visit. Economically poor households and households with under 5-year children, pregnant and lactating mothers, and individuals with NCD & CD are targeted for home-to-

home visits. The UHEPrs are also expected to reach every household assigned under their catchment, at least once a year, regardless of their health need and economic status. In this study, though source populations were households with lower economic status that are priority targets of UHEP interventions, significantly large numbers of households were not visited. UHEPrs never visited about 36% of households included in the survey and more than 18% of the households were not visited within the past one year. Furthermore, more than half of the households included in this study were not contacted or visited by UHEPrs on the recommended annual basis.

Among 1110 respondents who were asked about the most recent time their house was visited by UHEPrs, about 71% reported that they had received at least one visit from UHEPrs within six months prior to the survey. Among households visited in the past year, 15.8% and 22.7% were visited only once or twice per year, respectively. The findings from the qualitative interviews also indicated less frequent household visits by UHEPrs, below the minimum standard set in the implementation manual. However, some program staff explained how frequent that the UHEPrs make home visits and that they are even accessible through phone calls. These respondents indicated that specific households identified for a follow-up visit would be visited once or twice a week, but under-5 children and mothers were visited daily.

The services that are provided during home visits were also explored in the qualitative interviews. The findings indicated that UHEPrs provide a wide range of services for community members during home visits. Nutritional assessment, and screening for hypertension and diabetes mellitus were among the services reported that the UHEPrs provide during home-to-home visits. UHEPrs weigh children and chart their growth when they make home-to-home visits. If children are identified as malnourished, they provide them with supplementary foods or refer them to HCs. Similarly, UHEPrs provide nutritional support for pregnant mothers after their home visit inspections. They advise pregnant women to visit HPs for ANC services, including iron supplementation and vaccinations, when they make home visits.

The quantitative analysis showed that home visits have a significant association with household participation in sanitation campaigns, the availability of a handwashing facility with soap or a substitute, liquid waste disposal practices, the wanted status of the most recent pregnancy, ANC follow-up, and awareness of exclusive breastfeeding. Households visited within 1 year of the survey were more likely to report that they had participated in sanitation campaigns, had a separate kitchen, and had a hand-washing facility with soap or a substitute. Moreover, households visited by UHEPrs within 1 year of the survey were more likely to report that they had received ANC for the most recent pregnancy, got TT vaccination, and were aware of danger signs during pregnancy.

4.2 Model Family and Women's/Health Development Army

Model families and WDAs are the major support networks through which the UHEP is implemented at the community level. Model family training is designed to create role models who can educate other non-model households and influence them through positive attitudes and skills toward healthy behaviours. To be considered a model, a member of the household should receive theoretical and practical training on the 15 UHEP sub-packages and should implement at least 75% of the packages that apply to their household. In this study, model families were considered one of the efficient strategies for implementing UHEP packages through the transfer of knowledge and skills from model to non-model households in the HEP. Households need properly performing all the HEP packages, like building separate kitchens, properly disposing of wastes,

maintaining environmental hygiene, learning and teaching others, and preparing food and using latrines properly to be considered and certified as a model household.

The UHEPrs organize an event wherein model families can share their experiences with the community. Model households also share their experience with the community through home-to-home visits and demonstrate how to maintain cleaning, prepare hand washing materials, and clean their surroundings. They are involved in awareness-creation activities and teach other members of the community.

> *"She brings models as an example for us, to learn from them how they keep their environment clean, how they use their toilets properly, how they maintain their personal hygiene, and how to handle waste."*
>
> **WDA leader, Hawassa, SNNP Region**

In this study, receiving a model family training was found to have a significant association with households` participation in sanitation campaigns, the availability of a separate kitchen, the availability of a handwashing facility with soap or a substitute, liquid waste disposal practices, enrolment in community-based health insurance (CBHI), ANC follow-up, and exclusive breast-feeding practices. Moreover, model households were likely to report that they were aware of the danger signs during pregnancy and the benefits of exclusive breastfeeding and participate in sanitation campaigns. The qualitative respondents, however, reported that some model families do not practice healthy behaviours sustainably. Once they graduated as models, they began to dispose of their wastes in an open field.

This study assessed the extent of model family implementation among the participants in the survey. Model family training was provided for only 18.5% of households included in the survey. More than 25% of respondents were unaware of the model family program. Participants were also asked their reason for not doing the training. Among the 967 households who had no model family training, a majority (58%) were not asked to do the training, 15% had no access to the training, and 13% had busy schedules.

4.3 Family health team approach

Family health team (FHT) is one of UHEP implementation approaches designed to improve access and equity of primary health care through a multidisciplinary team. The FHT is implemented with the aim of reaching the neediest segment of the population, the urban poor, with high impact interventions alongside health promotion and disease prevention efforts to the public. Out of 579 UHEPrs included in the quantitative survey, 80% of them reported that they are currently working with assigned FHT members. Almost all UHEPrs who are working with the team reported that FHT provides health services through home visits, and 80.8% and 55.4% reported FHT service provision at school and workplaces, respectively.

The UHEPrs included in the quantitative survey were asked about their impressions of the implementation of the FHT approach. Overall, most agreed with the constructs used to assess their impressions. In this study, most UHEPrs stated that they felt motivated working with the FHT (83.5%) and believed that they were more confident providing community-based health services or UHEP packages through the FHT approach (81.9%). Similarly, 81.1% of the UHEPrs believed that the FHT approach had better community acceptance compared to the previous UHEP approach; 77.2% felt that they had the opportunity to learn from their day-to-day activity when working with the FHT (Figure).

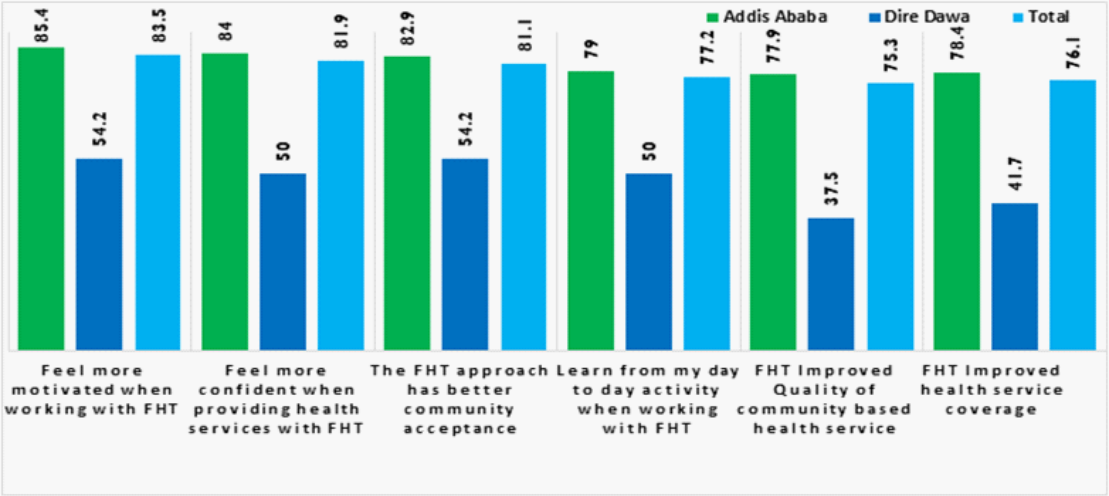


Figure 40. UHEPrs Feeling about the FHT (n=463)

Findings from the qualitative study also indicated that the FHT approach had improved integration among HC staff and UHEPrs and created a suitable working environment which resulted in improved motivation and performance of UHEPrs. The approach was also reported to contribute to improved accessibility of health services to the poorest segment of the population including individuals with mental illness, elders, and bed-ridden patients.

4.4 Major challenges in the implementation of the UHEP

The positive effects of the implementation of the FHT were said to be challenged by numerous factors. In the qualitative study, the participants explained that the inadequacy of the budget and of logistics were common obstacles in the implementation of the FHT approach. Staff attrition was also reported to be a challenge to establish FHTs, as per the PHC reform guideline. It also increases the workload for health workers. The limited integration and coordination of activities were identified as barriers to the implementation of the FHT approach, as were the limited commitment among some FHT members.

The other challenges to the implementation of the FHT approach included the lack of a clear annual implementation plan, community mobility, less established CBHI, and the long walking distance needed to provide services. Absence of follow-up training on the FHT and transportation issues, the lack of or inadequacy of guidelines for the school health service, the lack of regular evaluation, and the imbalance between the community's expectations and the service packages were also among the barriers to the effective implementation of the FHT approach.

SECTION 4.2: CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

The relevance of the Urban Program varies among its packages, despite all UHEP packages' having contributed to reducing the burden of CDs, maternal and child morbidity, and mortality. The health education provided at the household and community levels was found to be relevant in improving health literacy, which in turn was reported to influence the health-seeking behaviour and health service use by the urban poor.

The interventions of the WaSH package were not adequate at addressing the underlying causes of the water-, hygiene-, and sanitation-related problems of the urban community. A lack of latrines, shortage of water treatment supplies, shortage of a clean water supply, and poor waste-disposal systems were the major bottlenecks and problems of the urban community. Those bottlenecks, which hindered the implementation of WaSH through the UHEP, were beyond the scope of the MoH or UHEP.

There is inadequate multi-sectoral collaboration among the governmental organizations working on WaSH. As a result, although the UHEP was relevant in creating awareness through the health education model families and home visits, WaSH-related problems remained challenges to the urban community. Moreover, UHEPrs lack the capacity and skills to handle sectoral collaboration, particularly for the implementation of WaSH interventions.

Though the family health packages were found to be relevant to tackling the priority health problems of the urban community, the interventions could not meet the needs and expectations of the community. To meet the existing needs, the family health packages should include some clinical services in addition to the health education and referral services. Similarly, the disease prevention and control packages, particularly NCD screening and follow-up services, were found to be relevant, but poorly implemented, packages of the UHEP.

Inadequate implementation of the packages at the community level, shortage of resources (both human and material) and the multifaceted nature of health problems in urban settings greatly limited the relevance of UHEP to addressing the health needs of the urban community. More importantly, the absence of strong integration, harmonization, and alignment among the various sectors working on urban health-related activities greatly affected the implementation of the program, particularly WaSH interventions.

The UHEP workforce analysis results showed a higher level of job dissatisfaction, demotivation, and intention to leave among the UHEPrs. High workload, low salary pays, absence of recognition, motivation scheme, absence of career development, and inadequate opportunity to advance their education were major causes of dissatisfaction and demotivation for the UHEPrs.

The UHEP is being implemented through a combination of modalities and approaches mainly model family, women development army, home to home visit and family health team approach. Implementation of the program using the above modalities greatly varies across study areas, where Dire Dawa and Addis Ababa were predominantly using the family health team approach.

Health information or education disseminated by UHEPrs through home to home visit was inefficient and less relevant for urban employed communities (self-employed, working on small business, and government employees), due to working hour overlapping. Moreover, the current study revealed that about half of study participants, who are urban poor and primary targets of UHEP, were not visited in the past one year or never visited at all. Findings of this study also indicated that frequency and coverage of home to home visit, by UHEPrs, has been declining from time to time mainly due to reduced acceptance by the community.

The model family training is still one of the effective strategies to implement the UHEP packages and bring the desired healthy behaviours and outcomes on households. However, very few proportions (less than quarter) of study participants in Addis Ababa and Dire Dawa reported that at least one of their household members received and completed the model family training.

Collaboration of UHEPrs with HDA leaders was one of the major facilitators for the implementation of the UHEP. In most cases, the HDAs play a significant role by serving as a bridge between the UHE-ps and households. Nevertheless, non-functionality of HDAs in most urban areas, and lack of community acceptance due to their perceived political affiliation limited their contribution to the implementation of UHEP packages at household level.

The FHT approach was the most effective UHEP implementation modality in which clinicals service needs of the urban poor are being addressed, which was the major challenge to the acceptance of UHEP by the community. The approach improved integration between the UHEPrs and health professionals working at HC level, and resulted in improved motivation and confidence among UHEPrs. Implementation of the approach is suffering with challenges related to inadequate health workforce to organize the FHT as per the guideline, and shortage of drugs, medical supplies and equipment.

2. RECOMMENDATIONS

As all UHEP packages are found to be relevant, it is important to strengthen and continue the existing packages. Additional clinical (screening, examination, diagnosis, and follow-up) services, however, should be added to the maternal and child health and NCD packages. The packages should be revised to meet the dynamic needs and expectations of the urban community. Above all, the health services in urban settings need to be governed by a comprehensive urban health strategy that ensure "health in all policies" and the dynamics and complexity of urban context and the difference in health risk,need and behaviour of different segments of urban dwellers.

Moreover, designing contextualized and tailored interventions through disaggregating urban areas into different categories (i.e., city administrations and regional capitals, zonal towns, and small towns) is critical.

Introducing new cadre of health professionals (eg. community midwifery) to advance and enhance the maternal health service package would be an important intervention to address clinical services that require a different skill.

The ministry of health, regional or city health bureaus need to consider incentive packages to ensure UHEPrs are compensated and recognized based on their effort and performance. Enhance motivation of UHEPrs by designing and implementing performance-based motivation schemes with financial and non-financial incentive mechanisms.

Developing appropriate career structure for UHEPrs to keep them motivated and reduce attrition and an automated system to establish accurate and valid performance monitoring of UHEPrs through selected key performance indicators would be essential. In addition, strengthening the implementation of the FHT approach by addressing challenges related to availability of supplies (drugs, medical supplies, and equipment), commitment and motivation of team members. Other actions would include strengthening the supply chain management system, designing and implementing performance based motivational schemes for FHTs and strengthening FHT monitoring and evaluation systems to ensure accountability would be critical.

Moreover, strengthening the multisectoral collaboration for successful implementation of UHEP through integrated planning, implementation, monitoring and evaluation of WASH interventions at all levels of the system will be important for further improvement of the UHEP.

Furthermore, fulfilling human resource need (i.e. UHEPrs and FHT members) as per the standard specified in the UHEP implementation manual and FHT implementation guide is critical. The number of UHEPrs should be increased based on the existing number of households in the catchment areas; and all households should be covered by the program. Finally, designing and implementing proper human resource planning at all levels and retention mechanisms to reduce turnover of UHEPrs would be essential.

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