Ethiopia's Health Extension Workers and maternal healthcare improvements

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Background

Since late 1980s, maternal mortality—a key indicator of health and socioeconomic development—has been recognized as a major global health concern due to the alarming gaps in mortality rates between rich and low-middle income countries (LMICs). Yet maternal deaths are largely preventable, with over three quarters of them resulting from postpartum hemorrhage, puerperal infections, pre-eclampsia and eclampsia, complicated delivery, and unsafe abortions (1). The fifth goal set by the Millennium Development Goals (MDGs) was dedicated to improving maternal health, aimed at reducing related deaths by 75% before 2015 (2). By the end of the MDG mandate, the maternal mortality ratio (MMR) declined by approximately 43% globally, dropping from 385 to 216 deaths per 100,000 live births between 1990 and 2015 (3).

Sub-Saharan Africa, however, still struggles with an estimated regional average of 546 maternal deaths per 100,000 (3, 4). As new and more ambitious targets have been set with the Sustainable Development Goals, reinforced interventions at an accelerated pace are urgently needed to improve access to skilled pre- and post-natal care, especially in remote areas (5). Ethiopia is the second most populous country in Sub-Saharan Africa, with nearly 40% of the national population living below the extreme poverty line and approximately 83% residing in rural areas (6, 7). Yet, the country has experienced an astonishing 71% drop in maternal mortality, making it quite a unique case in the African panorama (8). Much of this progress has been achieved over the last decade as the implementation of the Health Extension Program (HEP) substantially expanded maternal healthcare coverage in the country. The HEP is a comprehensive health outreach strategy designed to provide a wide-reaching primary care platform and strengthen Ethiopia's existing health institutions (7, 9).

The pre-HEP era: barriers to maternal health in Ethiopia

Prior to HEP's implementation, the average distance to a health facility in Ethiopia was 15 kilometers, often traversed over unpaved roads by foot, making healthcare facilities physically inaccessible to a large portion of the population. Additionally, suffering a human resource crisis, Ethiopia only had one healthcare worker per 3,036 people before 2003 (7, 10, 11), with the healthcare worker-to-population ratio being as low as 1:10,000 in rural regions (12). It is well established that providing a continuum of care through the antenatal, delivery, and postnatal phase is crucial for preventing pregnancy-related deaths; however, care coverage in all three aspects was limited for Ethiopian mothers, with substantial disparities across the country due to healthcare facility inaccessibility and unavailability of adequately trained staff in rural regions (7).

According to the 2000 Ethiopia Demographic and Health Survey (EDHS), though quality antenatal care has been associated with decreased morbidity and mortality, 78% of mothers living in rural areas received no antenatal care in the seven years preceding the survey. Of the women who did receive care, only 10% made at least four antenatal visits, which is the minimum number of antenatal visits recommended by the World Health Organization (WHO), and only 27% of them were given information about pregnancy-related complications (13). Furthermore, according to EDHS, a low proportion of Ethiopian mothers delivered under the care of skilled health professionals, with approximately 95% of births taking place at home without any supervision. Of cases of supervised births, 30% were assisted by traditional

birth attendants (TBAs), compared to 6% assisted by skilled health professionals (13). TBAs are women from the community who are called upon to aid in all local births based on their previous experience. While they have little formal training and resources for handling high-mortality pregnancy complications such as hemorrhage and preeclampsia, they are knowledgeable in cultural practices and often perceived as more familiar and comforting to the women they are assisting, and thus more culturally acceptable (14). Lastly, considering that a large proportion (65-75%) of maternal deaths occurs in the first 48 hours after birth, providing quality postnatal care has been been increasingly recognized as a core intervention in reducing maternal mortality (15). Surveyed mothers, however, were found to often be unaware of potentials for postpartum complications as well the need for postnatal health checkup. In fact, in the pre-HEP period, only 8% of mothers received checkups in the crucial 48 hours after birth (13).

The Health Extension Program (HEP): an overview

The HEP is a community-based health program first piloted in 2003 in four agrarian regions of Ethiopia, expanded to all rural regions in 2004 (15). The program aims to improve primary health services in rural and pastoral regions through a community-based approach focused on preventative health interventions in addition to basic curative care via transfer of knowledge and skills to households (15, 16). The HEP strengthens the existing healthcare structure by introducing Health Extension Workers (HEWs)—referring to women trained for a year in a certificate program delivered by the Ministry of Education—to deliver essential interventions from village health posts (12, 17). The HEP was modified to better accommodate rural and pastoral regions in 2006 and expanded to urban areas in 2010 (18).

Since 2005, Ethiopia's public health system has been organized into three major tiers (12). In rural areas, where distance is a restricting factor in the size of the population that a clinic can serve, HEW health posts (one post exists for every 3,000 to 5,000 people) refer patients based on severity to health centres, which can refer people upwards to primary hospitals and from there to specialized hospitals. In urban regions, HEWs are stationed at health centres (each centre serving up to 40,000 people) and refer patients directly up to the secondary tier of care, comprised of general hospitals, which in turn provide more in-patient services. Lastly, specialized hospitals make up the tertiary level of care. The structure of this system has made healthcare much more accessible to a majority of Ethiopians, and over two thirds of the population now uses public rather than private facilities for primary and preventative care (12,

16). The HEP, as demonstrated, is an integral part of the Ethiopian health system's primary level of healthcare and forms the first point of care delivery in both urban and rural areas.

Impacts of HEP in rural areas

The HEP significantly increased the availability of healthcare services in Ethiopia: since 2004, the country's health workforce has more than doubled and the healthcare workforce-to-population halved (at 1:1394), owing mostly to the HEW additions. The number of healthcare facilities has also grown significantly, with over 15,000 new health posts added all over the country in the past decade (17, 19). Now, most rural Ethiopian mothers live within five kilometers of a health post (19). The Ethiopian government's continued investment in all HEP-related projects and coverage of all costs of services provided at the health post level has been crucial to its scalability (20).

Improvement of health-seeking behaviours

In rural areas, distance, as well as a lack of infrastructure and transportation, impose physical barriers to access to care. The HEP tackles this problem by bringing the healthcare system to the people: staffed by two to four female HEWs, a health post has been built in each village with a population of at least 3,000 people, serving as the first point of care and referral in the public health system (12, 17, 18). HEWs spend half of their time stationed at the health post providing basic curative and counselling services and the other half going door-to-door as part of public health education campaigns (18). Importantly, they provide maternal and child health services through community-based care management, newborn care, and long-term family planning (21).

As part of their public health campaigns, HEWs seek out and train the most welcoming households in specific health-seeking behaviours. After displaying pro-health behaviour regularly, these "early adopter" households are publicly recognized for their accomplishments, serve as role models for the community, and may also aid HEWs in providing guidance to their peers. Data suggests that as more model households become publicly recognized for exhibiting health-seeking behaviours over time, community stigma surrounding certain healthy behaviours—such as seeking antenatal care and pregnancy counseling—is reduced (12,17). Consequently, household decision makers in the community are more likely to adopt pro-health mindsets, ultimately reinforcing the scale-up and continuation of the intervention. As a result, the HEP grows community participation through

educating the community, creating behavioural change, and planning systematic community mobilization (12, 17).

Moreover, in 2016, Ethiopia's Ministry of Health (MoH) implemented its Health Development Army (HDA) to further extend healthcare coverage. Designed to engage communities in identifying local health challenges and potential strategies, the HDA recruits women from model households to aid HEWs in public health campaigns, reduce harmful traditional practices, and dubunk stigma over seeking care (17). The woman-centred HDA approach increases the functional density of interventions and encourages families to expand the HEP deeper into their communities to improve overall long-term community adoption of key health behaviours, including maternal and newborn health (12, 17). In areas with advanced HDA networks, coverage of key health interventions has improved (17, 22).

Improvements in maternal healthcare

HEWs also undergo specialized training in delivering maternal care services in three major areas: antenatal care, promotion of institutional delivery, and postnatal care. HEWs administer antenatal care to meet standard guidelines of care in Ethiopia, which is comprised of a thorough physical examination for every pregnant mother, blood tests, a urine test, tetanus toxoid (TT) injections, iron and folate supplements, and deworming medications (12). The rate of antenatal coverage has increased dramatically since 2004, with up to 54% of women in rural areas currently receiving antenatal care from HEWs (7). Additionally, since the MoH's main aims to promote institutionalized child births, HEWs are expected to counsel mothers on birth preparedness and refer all pregnant women to the closest health facility for delivery (12).

Moreover, HEWs are trained in assessing general health indicators in the 24 hours after birth—such as vaginal bleeding, uterine contraction, and temperature—as well as follow-ups on on general physical and mental wellbeing postpartum (23). They can make home visits to women after birth to provide home-based postnatal care, especially in rural regions where healthcare facilities may be more inaccessible to women recovering from labour. Ideally, one HEW provides continuous care to a mother throughout the course of her pregnancy. In fact, the implementation of the HEP strategy marked the Ethiopian healthcare sector's first attempt to provide a continuum of care to a mother from the moment of conception to early childhood of her infant (26).

Lastly, there are indications that HEWs have increased postnatal care awareness and coverage among women: in a survey conducted in the Tigray region of Ethiopia, the

number of mothers who were informed about postnatal care services increased from 30% to 84%, with 85% of the cohort indicating that their HEWs had informed them of the services. As well, 66% of the new mothers surveyed utilized postnatal care services, with half of them using those services provided by HEWs (24). Cross-country data reflects this trend, with significant improvements seen in antenatal care coverage and postnatal care coverage since the implementation of the HEP (7, 25-27).

Limitations of HEP

Despite its many successes, evidence shows that the HEP has had no significant effect on improving skilled birth attendance, a phenomenon due to a real or perceived lack of knowledge in the abilities of HEWs. For example, in their midterm evaluation, almost half of the HEWs surveyed were not able to identify or respond to severe complications during and after labour, often lacking appropriate knowledge and skills to conduct clean and safe deliveries (12, 28). In fact, qualitative analysis of HEW care delivery reveals that many HEWs still call on TBAs to assist in deliveries where the mother cannot reach a hospital or health centre. Further intervention into this challenge is pertinent as most maternal mortalities occur as a result of birth-related complications and skilled labour attendants can prevent up to 33% of maternal deaths (1, 14, 29).

Additionally, while the scale-up of the HEP has been impressive, quality of care varies between regions, with rural and pastoral areas bearing the largest burden of negligence. In some places, this shortcoming is due in part to poor oversight and coordination of HEWs with the rest of the healthcare system, improper HEW training, as well as general lack of infrastructure and resources (28). Considering that the program relies heavily on community uptake and trust, it is surprising that some neighbourhoods have reported that their HEWs were not originally from the community (30). Last but not least, lack of public infrastructure and transportation in large swaths of the country continues to render care past the level of health posts inaccessible to many. In fact, in a 2011 government survey, 71.1% of women named lack of transportation to a health facility as a major barrier to giving birth in a supervised and institutionalized setting (31).

Future Directions of the HEP

MoH's 2010/2011 Health Sector Development Plan includes furthering health infrastructure development, developing HEW capacity and knowledge, and prioritizing engaging with women as key parts of improving the HEP (17). Since 2012, the MoH has tackled transportation and infrastructure barriers by

implementing a free, 24/7, ambulance service, with at least one ambulance available per district. Today, almost 70% of ambulance users are women undergoing labour (17). Additionally, based on feedback from HEWs, the MoH has now committed to providing government-sponsored bicycles to facilitate home visits for HEWs (32). Due to the low midterm evaluation scores of HEWs, the MoH has also prioritized further training for all HEWs: between 2012 and 2013, there were 2,240 HEWs in the process of taking additional training to be upgraded from Level III to Level IV Health Extension Practitioners (12). As well, since 2010, one of the most popular HEW in-service training programs has been centered on providing clean and safe deliveries (17). As such, HEWs could also provide a talent pipeline for future midwives and nurses, with Level IV Health Extension Practitioners needing only one level of upgrading to progress to Level V Nurse Anesthetists (17). This mechanism would promote the capacity of HEWs to provide safe deliveries and thus dramatically increase the density of skilled birth attendants. Moreover, the HDA program may benefit from continuing to build the capacity of local women to advocate and educate the populace about women's health. To truly empower women to participate in major healthcare decisions, Ethiopia could allow HEWs and HDA leaders to participate in local political meetings or solicit increased funding to allow currently unpaid HDA leaders to continue their work (28, 33).

In conclusion, the HEP serves to enhance many aspects of the healthcare system, particularly as they pertain to improving maternal health care. Strong financial and government investment in this program and its offshoots ought to continue for Ethiopia to maintain its momentum in improving maternal healthcare and decreasing maternal mortality. Overall, while the impact of the more recent innovations discussed in this section will remain to be seen in the coming few years, Ethiopia is certainly moving in the right direction.

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