

# Women health extension workers: Capacities, opportunities and challenges to use eHealth to strengthen equitable health systems in Southern Ethiopia

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## ABSTRACT

**OBJECTIVES:** This study assesses the feasibility of female health extension workers (HEWs) using eHealth within their core duties, supporting both the design and capacity building for an eHealth system project focussed initially on tuberculosis, maternal child health, and gender equity.

**PARTICIPANTS:** Health extension workers, Health Centre Heads, District Health Officers, Zonal Health Department and Regional Health Bureau representatives in Southern Ethiopia.

**SETTING:** The study was undertaken in Southern Ethiopia with three districts in Sidama zone (population of 3.5 million) and one district in Gedeo zone (control zone with similar health service coverage and population density).

**METHODS:** Mixed method baseline data collection was undertaken, using quantitative questionnaires ( $n=57$ ) and purposively sampled qualitative face-to-face semi-structured interviews ( $n=10$ ) and focus group discussions ( $n=3$ ).

**RESULTS:** Themes were identified relating to HEW commitment and role, supervision, and performance management. The Health Management Information System (HMIS) was seen as important by all participants, but with challenges of information quality, accuracy, reliability and timeliness. Participants' perceptions varied by group regarding the purpose and benefits of HMIS as well as the potential of an eHealth system. Mobile phones were used regularly by all participants.

**CONCLUSION:** eHealth technology presents a new opportunity for the Ethiopian health system to improve data quality and community health. Front-line female HEWs are a critical bridge between communities and health systems. Empowering HEWs, supporting them and responding to the challenges they face will be an important part of ensuring the sustainability and responsiveness of eHealth strategies. Findings have informed the subsequent eHealth technology design and implementation, capacity strengthening approach, supervision, and performance management approach.

**KEY WORDS:** eHealth; health extension workers; Health Management Information Systems; tuberculosis; maternal child health; gender

La traduction du résumé se trouve à la fin de l'article.

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Ethiopia established a Health Extension Program (HEP) in 2004, which includes the training and deployment of health extension workers (HEWs) based at local level to improve community access to primary health care services.<sup>1</sup> All HEWs are female as per the design of the Ethiopian HEP. They work within rural communities with the aim of achieving universal coverage of primary health care. HEWs are trained for one year and receive a government salary.<sup>2</sup> They are managed by health extension supervisors, the majority of whom are male. Two HEWs are assigned in each community with an average population of 5,000 people (about 1,000 households). In 2012, the Federal Ministry of Health commissioned an eHealth strategy providing a framework to support the HEP and improve the Health Management Information System (HMIS). This framework called for action and streamlined eHealth strategies to improve the effectiveness of HEWs' primary health care service provision.

In Ethiopia, only 34% of mothers have access to antenatal care and only 10% have a skilled attendant at delivery.<sup>3</sup> Maternal and

neonatal health is therefore a national priority. Ethiopia's HMIS consists of hard-copy data originating from the health posts, centres and districts, submitted to the provincial health authorities. Following minimal analysis at the provincial level, data are submitted to the Federal Ministry, where analyses are undertaken

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and overall health care decisions are made based on the national health data. HEWs are at the core of this system and play a key role in the HMIS, but their success continues to be hampered by poor infrastructure, especially in terms of communication<sup>4</sup> and human resources.<sup>5</sup>

There is increasing network coverage in the country that has great potential for “mHealth”, the use of mobile phone technologies for delivery of health services to subscribers and users of mobile telephony.<sup>6</sup> In addition, there is a growing body of global evidence that m-Health can support programs like the HEP and improve access to and delivery of health services in sub-Saharan Africa. mHealth is part of eHealth, which broadly encompasses the electronic and digital processes in health, including telephony, computing and the Internet.<sup>7</sup> The mHealth technology is used in improving awareness, responding to patient requests, sending follow-up reminders, and many other services, depending on the focus area and the need. For example in Kenya, sending text messages on malaria case management to rural clinicians improved artemisinin-combination therapy prescription and treatment outcomes among children with malaria.<sup>8</sup> In Malawi, the K4Health Project demonstrated that sharing reproductive health and HIV/AIDS information through short-message service (SMS) among remote health workers increased service delivery communications among providers.<sup>9</sup> In Tanzania, a mobile phone intervention involving SMS and mobile phone vouchers that linked women throughout their pregnancy to health facilities, increased skilled birth attendance to 60% compared to 47% in a control group.<sup>10</sup>

In Ethiopia, as in many African contexts, mHealth has great potential as an empowerment tool for HEWs that could facilitate access to accurate data, thus improving service delivery.<sup>11</sup> As in other sub-Saharan settings, Ethiopian HEWs are motivated to use mHealth platforms; however in reality, infrastructural and technological barriers such as limited availability of airtime and limited technical skills on how to use phone features present challenges to progress.<sup>12</sup> Nevertheless, reports consistently show that these barriers can be addressed through network variability and training of users on phone features.<sup>4,13</sup>

mHealth has the potential to address gendered norms that lead to health inequities, such as sex, age, and other socio-economic characteristics that impede service access by vulnerable groups (adolescents, for example).<sup>14</sup> As many service points are personalized and access is arranged as convenient for the client, mHealth tools could potentially increase services in Ethiopian communities and assist in overcoming scenarios where gendered norms mean that women have to seek permission from others to access services or seek care,<sup>15</sup> although the ways in which gender norms shape the impact of eHealth is poorly understood and the need to ensure confidentiality is key.

This paper reports on empirical research conducted with HEWs and other key players in the Ethiopian Health Extension Program on the capacities, opportunities and challenges in using eHealth to strengthen equitable health systems in Southern Ethiopia, with an initial focus on tuberculosis (TB), maternal and child health (MCH), and gender. The research took place as part of the baseline situation analysis of an intervention research process to develop an eHealth system that is consistent with Ethiopia's eHealth Strategy.

## METHODS

### Setting

This study is conducted in Sidama and Gedeo zones in Southern Ethiopia. Sidama zone (intervention zone) has a population of about 3.5 million, living in 19 rural districts and 2 town administrations. There are more than 100 health facilities providing health services. Gedeo zone (control zone) shares a border with the Sidama zone and has similar health service coverage and population density. The study sites were selected in order to capture diversity in geography (distance from zonal headquarters, topography, health service coverage and utilization, population density, and general socio-economic conditions). Three districts from the intervention zone and one district from the control zone were selected.

### Data collection

Data collection was undertaken using a mixed methods approach. The application of both quantitative and qualitative methods is useful in understanding complex research issues. The main methodological focus, however, was qualitative in order to capture the perceptions and experiences of different purposively sampled participants and how they are shaped by context.<sup>16</sup>

Data were collected from policy-makers and health service providers in the health facilities: HEWs from health posts (HPs) in the community; Health Centre Heads (HCH) for TB, MCH and HMIS; District Health Officer (DHO) TB, MCH and HMIS leads; Zonal Health Department (ZHD) representatives; and Regional Health Bureau (RHB) HMIS Officers.

Quantitative data were collected through a face-to-face questionnaire; one generic questionnaire was developed for all participants ( $n=57$ ) with three supplementary questionnaires for HC (health centre) leads in antenatal care (ANC), TB and HMIS. Quantitative research involved collecting demographic data, knowledge of eHealth, technological skills, use and capacity (mobile phones and computers), skills of reporting and HMIS.

Qualitative methods included face-to-face semi-structured interviews ( $n=10$ ) and focus group discussions (FGD) ( $n=3$ ). Two qualitative interview topic guides were developed by the Sidama Zonal Health Department (SZHD) in collaboration with the Liverpool School of Tropical Medicine (LSTM). One topic guide was for individual interviews and focus groups with HEWs. The second topic guide was for individual interviews with HC, DHO, ZHD and RHB representatives. Questions concerned background and role of the HEWs, length of service, communication (advantages and challenges), HMIS (components, application, reporting, structure and challenges), performance management and eHealth (knowledge and feasibility) were included in the topic guides. Experienced qualitative researchers were trained in using the topic guides and conducted the interviews. Interviews were recorded using digital Dictaphone devices.

### Data analysis

Quantitative data from completed questionnaires were processed and analyzed using IBM SPSS Statistics for Windows Version 21 (Armonk, NY).

Qualitative data were transcribed by the SZHD team. An experienced external translator who was not part of the research converted these to English. Bilingual members of the research team verified the translations for accuracy. Transcripts were read and re-read by SZHD and LSTM researchers, informing the development of codes for analysis, identifying emerging themes and areas for further exploration. Transcripts were uploaded to transcription software NVivo version 10 and a coding framework was developed in a face-to-face meeting of researchers. Initial coding was undertaken as a group activity for two days. The transcripts were divided and the SZHD and LSTM teams continued to code separately, then analyzed thematically through face-to-face and virtual meetings. The qualitative and quantitative results are combined below and presented against key themes that emerged from the qualitative analysis.

Ethical approval for the baseline was given from the Federal Ministry of Science and Technology (MoST), National Research Ethics Review Committee in April 2014. A support letter was obtained from Regional Health Bureau to conduct the interviews. Written informed consent was obtained from the participants of the study.

**RESULTS**

**Descriptive profile of participants**

A total of 90 participants (57% of whom were women) were enrolled for the study. Of these, 49 were from the implementation zone (9 from district, 24 from HCs, and 16 from HPs). We enrolled 8 (5 men and 3 women) participants from control zones for qualitative study. Ten participants (3 from control and 7 from intervention zone) were interviewed using a semi-structured questionnaire. Three FGDs were conducted, comprising 23 participants from the implementation zone and 12 from the control zone.

**Setting the context: HEWs' commitment**

All HEWs interviewed reported and emphasized that their main role is to effectively deliver, monitor and evaluate their performance in delivering the 16 health packages:

*"Besides teaching sixteen health packages, we monitor or follow up the practice or application of what the society has learnt".* (HEW FGD Implementation Zone)

The inspiration of the HEWs comes from perceiving health outcomes they observe within the community, which consequently impact the HEWs' commitment to deliver the services expected from them by the rural communities.

*"I have served ... I have noticed changes up on the society and by myself. This inspires me to serve them more".* (HEW FGD Implementation Zone)

Their commitment and inspiration prevails despite the challenges they face related to the topographic barriers, communication difficulties, inadequate supervision, and juggling their role with commitments at home and in the family.

**Current modes of communication within the health system**

Communication emerged as a strong theme from the quantitative and qualitative data across the range of professionals. Key subthemes were related to mode of communication, with a large focus on mobile phones – factors involved with their use, including the advantages and the challenges (Table 1).

All HEWs (n = 18) completing the quantitative questionnaire had access to a mobile phone. Mobile phone communication was valued and used by HEWs for enabling clients to access health facilities, co-ordinating care, sharing information with colleagues and offices, and obtaining resources.

Most HEWs (n = 16) reported sending two or more SMS per week for general communication. However, two HEWs reported not knowing how to send a text. The majority of HEWs (94%, n = 17) were unable to use Internet via mobile phone.

Mobile phone communication was perceived by one HEW as contributing to the prevention of maternal and child mortality.

*"Labouring mothers call us in the midnight and we soon call ambulance. Hence, it is very useful to save lives of mothers in problem".* (HEW FGD Implementation Zone)

It was also perceived by many professionals as a method of sharing information urgently, effectively and efficiently between colleagues and officers.

**Table 1.** Mobile phone usage, advantages and challenges among the participants

Professional group	Regional Health Bureau (RHB) representative	Zonal Health Department (ZHD) representative	District Health Officer (DHO)	Health Centre Lead (HCL)	Health post – health extension worker (HEW)
Mode	Post, Internet, fax, fixed line phones, person to person, and mobile phones (fax, Internet, post, and fixed lines were the main modes at the regional level; fixed lines were the main mode for zones, districts and health centres; mobile phones were the main mode for HPs and across all the professional groups).				
Mobile phone use	Personal and professional purposes – calls, texts, social media, and emails.		Mainly personal and sometimes professional purposes – calls, texts.		
Mobile phone advantages	Useful for co-ordinating care, and for sharing information with colleagues and offices.		Useful for accessing health care facilities, co-ordinating care, sharing information with colleagues and offices, and obtaining resources.		
Mobile phone challenges			Mobile network – coverage, geography, and electricity supply.	Mobile network – coverage, connectivity, geography, and electricity supply.	
			Airtime cost.	Airtime and cost to charge phone.	

*“We use (Mobile) to exchange information ... to share it quickly and timely. When immediate information is required in certain level, for example Zone or District level, we use either fixed or mobile phones to convey the required message”. (HCH Interview Implementation Zone)*

Significant challenges were reported by the majority of participants concerning mobile network availability:

*“... in our village, may be because of topography of our village, there is extreme shortage of network”. (HEW FGD Implementation Zone)*

*“Unavailability of network coverage is a common challenge. If there is a little coverage, it becomes very busy. As a result, sharing information in a timely way is a bit impeded. Moreover, lack of electric power to recharge the battery when it gets lower is another problem in rural area”. (HCH Interview Implementation Zone)*

The DHO and ZHD Officers in the implementation zone triangulate the experience and challenges related to network.

These issues are recurrent and persistent challenges which have an impact on communication flow and service delivery. Several HEWs in the implementation zone reported that in urgent situations, they would travel to find network coverage or travel to the client to relay a message.

There was reported personal economic cost of paying for pre-pay airtime when using a mobile phone for work purposes, and sometimes unavailability of local suppliers for a new airtime card.

*“... re-charging the balance is challenging us. Thus, as we use it for office work too, I think the office should have budget for its service”. (HP FGD Implementation Zone)*

The majority of quantitative participants charged their mobile phones at home, however there was a personal economic cost for 11% of HEWs ( $n=2$ ) who paid to charge their phone at a local shop.

**Perceptions, limitations and opportunities of the current health information management system**

HEWs described a HMIS for capturing family data through registration, logging HEW service provision, and assisting in follow-up. The benefit of HMIS perceived by most HEWs relates to the ability to organize and access information.

*“HMIS is important specially to get TB clients who stopped prescribed medication. HMIS provides full address ... so that they can get him or her with a little effort. So, HMIS is very helpful for our work”. (HEW FGD Implementation Zone)*

In contrast, the Health Professionals, DHOs, HCHs and ZHD representatives described the benefits of a HMIS based on indicators, with a systematic reporting process for monitoring and evaluation to assess outcomes and the performance of HEP.

Issues associated with HMIS also varied depending on the professional’s grade (Table 1). HPs, DHOs, HCHs and ZHD representatives describe problems with information quality, accuracy, reliability and timeliness.

*“Reports flow from base levels to higher levels. In certain part there is supply and logistics shortage, in another database problem, ... in other Districts you see transportation problem. These problems mainly affect timeliness”. (ZHD Interview Implementation Zone)*

The majority of HC participants ( $n=8$ ) stated HMIS reports take between 1–7 days to reach districts and all HEW ( $n=18$ ) participants stated that HMIS reports take 1–3 days to reach health centres. However, the majority of HEWs ( $n=16$ ) reported discrepancy between HP tally sheets and HMIS reports.

Most HEWs report workload, shortage of resources for documenting HMIS activity, multiple HMIS formats, and management of patient folders as challenges of HMIS.

*“HMIS report is not sent in time ... because of campaign of certain activities, when the format or report is delayed (shortage of resources), and when we are overloaded with business in which case we forget tallying customers received health service, and in turn this affect our performance negatively”. (HEW FGD Control Zone)*

HMIS format being in the English language was a significant area for improvement expressed by many HEWs, as this impeded their ability to report accurately.

*“We get recurrent feedback which shows some errors. But, as to me, these errors are recurring just because the HMIS documents are written in English. As we have gaps in understanding ideas written in this medium, we repeatedly mistake ... we face language barriers which affect our performance”. (HEW FGD Implementation Zone)*

One HCH recognized that workload was an issue for HEW data capture and quality.

*“Sometimes we face problems ... because there are many formats consisted of HMIS and require the worker to take much time to complete it. As our HEWs are a bit experienced in it, it is hard to say that there are skill gaps; rather, it is due to over business or work over load”. (HCH Interview Implementation Zone)*

There were mixed perceptions regarding data quality and completeness, including DHO/HC/HEW boredom and lack of commitment to data collection while a DHO and HEW stated that it is not significant. Other HEWs raised such further reasons as human error, work overload and demands, lack of training, and language. One HEW reported that over-reporting resulted in data inaccuracy.

Solutions proposed to improve data quality included systems for requesting resources, supervision, and performance management.

**Knowledge, awareness and benefits of using eHealth**

In the majority of individual interviews and FGDs with HEWs in the implementation zone, there was a significant lack of awareness and knowledge about eHealth. A total of 67% of 12 DHOs, 81% of 27 HCHs and all (18) HEWs did not know what eHealth is about. However, the potential benefit, current use, and issues related to eHealth are described below.

Several HEW participants in the intervention zone proposed thoughts about what eHealth might entail, ranging from “education health” to “consolidating health through education” and “improving health of society via education”.

Within the control zone, the HEW focus group were aware of eHealth as an immediate system to receive and share health information, but had not used eHealth.

One participant proposed that eHealth through a mobile phone would facilitate work, keep quality and protect the safety of information.

*“If we use our mobile cell phone, it will facilitate our work. It also used to keep the quality of information and to keep information or documents safely”.* (HEW FGD Participant – Control Zone)

One HEW in the implementation zone focus group believed that data quality would impact service provision and then increase HEW personal confidence and the trust of the community and country in the HEW.

*“When there is a quality of data, it helps to make sure better service provision to the society and thereby get full confidence for ourselves, and trust and acceptance from the community we serve ... we are also contributing our share for the development of entire country”.* (HEW FGD Participant – Implementation Zone)

HEWs reported current use of mobile phone text messaging and a resulting increase in speed of preparing and delivering the communication message. The use of mobile phones for prompting appointments was triangulated with similar responses from health professionals. HCHs perceived that use of mobile phone texting could reduce the number of non-attendees at clinical appointments.

## DISCUSSION

### HMIS – current challenges

HMIS was seen as an important component of the health system with the benefit of providing the ability to organize and access information to effectively provide health services. The key findings of this study revealed a number of challenges with HMIS in its current form, related to information quality, accuracy, reliability and timeliness.<sup>17</sup> Keeping multiple records – often in different formats – in paper form is challenging for HEWs, and some supervisors felt that some HEWs needed to be more committed to data collection. The multiple formats in a paper system were seen as tedious and time consuming, creating a large work burden and having the potential to lead to mistakes and inconsistencies, as observed in the record review process.<sup>4</sup> An eHealth system if properly embedded and used could enhance the rigour, quality and timeliness of reporting, and the responsiveness of the health system.<sup>4,18,19</sup>

### Knowledge and experience of mobile phones, technology and eHealth

With the advances in technology, access to mobile phones and improved connectivity, countries have revolutionized the data-capturing mechanism, shifted from paper-based to electronic

system, improved patient care and follow-up, and contributed to better access to care and improved outcomes.<sup>20</sup> However, the utilization of mobile phones for health varies across settings depending on the availability of the technology, capacity of the health system to use them, and infrastructure. In our study, HEWs used mobiles for both personal and professional purposes for calls, although the majority had not used the Internet on their mobile phones. There is limited experience of using mobile phones to facilitate HMIS. There is great potential as the health workers from HC and higher up in the health system used mobile phones for emails and communication for health. With the rapid expansion of mobile phone services, the electronic HMIS system and available strategies extending the services to improve HMIS and patient care have great potential to improve health service delivery and data capturing for decision-making without delay.<sup>21,22</sup> However, most of the respondents surveyed have limited experience of Internet use, technology and eHealth in general, although they expressed considerable enthusiasm to learn and thereby improve health services. Compared to HEWs, health professionals had relatively more awareness and knowledge of eHealth and its benefits, as has been shown in other settings.<sup>23</sup>

This has implications for training of HEWs and their supervisors in terms of pedagogic approach deployed, time dedicated to training, and opportunities for ongoing support. These issues will be taken into consideration when training is provided by the project to HEWs and their managers in the districts chosen.

### Challenges with using mobile phones

The main challenges identified include limited network coverage and power sources, especially in rural areas.<sup>12</sup> Therefore interventions that improve the capacity of the eHealth system to use mobile phones, alleviate problems related to connectivity and improve interoperability with the existing HMIS will surely contribute to better health in the community by providing accurate and timely data for decision making. We have designed the eHealth system to ensure that it is possible to save data on the phone, which can then be submitted once network coverage is available, while also retaining records already submitted.

Another challenge relates to concerns about having to pay to recharge airtime balance. This challenge is particularly faced by HEWs and has the potential to adversely affect their ability to use their mobiles in a responsive manner. Therefore, there is a need to ensure access to prepaid airtime for use in rural communities.

### The gender lens: Performance management supervision

All HEWs are female and juggle multiple roles at home and at work. The support of husbands, family members and communities was appreciated. There is a clear sense of excitement about the potential of eHealth, and given that HEWs are already balancing and delivering multiple roles and service packages, this will need to be carefully supported so that it enhances rather than undermines their work and experience. Engaging HEWs in using eHealth has great potential in terms of empowering women living in remote and rural communities to improve service delivery, capture quality data and use the data for timely reporting and contribution to local decision making and action. The importance of ensuring ongoing supportive supervision structures to address emerging problems,

and of empowering HEWs to use technologies to support their work will be considered as we move forward. Gender discrepancies exist in general health between men and women not only in Ethiopia but also in the neighbouring countries in the region.<sup>24</sup> Evidence from other studies has demonstrated that eHealth could address these gender discrepancies in health service access, providing equitable access.<sup>25</sup> In Ethiopia, women face particular challenges with respect to maternal and reproductive health and TB outcomes.<sup>26</sup> Based on the evidence above, targeting these two health areas and working directly with women HEWs in ways that are supportive and empowering and that enable them to enhance confidential services to women, poor and marginalized groups could contribute to equitable access to services.

### Strengths and limitations

The strength of this study is that it included health workers ranging from policy-makers to members of the community to understand the context and obtain necessary information to design a pragmatic solution. The limitations of the study were its inability to assess the distance and frequency of travel of HEWs to access the Internet, and lack of quantitative data to verify the data inconsistencies. Reference to the “intervention” and “control” terminology in the paper does not refer to any comparison aspects of the zones and the data should not be interpreted as such.

### CONCLUSION

Despite limited knowledge and experience of eHealth technology in the Ethiopian health system, its use presents a new opportunity to improve data quality and community health by providing real-time data for decision-making. Front-line female HEWs are a critical bridge between communities and health systems. Empowering HEWs, supporting them and responding to the challenges they face will be an important part of ensuring the sustainability and responsiveness of eHealth strategies. The lessons for this study indicate that there is great potential in using eHealth technology and that pragmatic design and implementation should be built on the existing HMIS and based on the available knowledge and skills, challenges and potential of the technology. Therefore appropriate training, supportive supervision and performance management should be in place to ensure eHealth's successful implementation. The intervention should address all the challenges identified in this paper, including network coverage, performance issues, eHealth training, and mobile telephony infrastructure.

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### RÉSUMÉ

**OBJECTIFS :** Cette étude porte sur la faisabilité pour les vulgarisatrices de la santé (VS) d'utiliser la télésanté dans leurs tâches principales, en appuyant à

la fois la conception et le renforcement des capacités en vue d'un projet de système de télésanté axé initialement sur la tuberculose, la santé maternelle et infantile et l'égalité des sexes.

**PARTICIPANTS :** Vulgarisatrices de la santé, chefs de centres sanitaires, responsables sanitaires de district et représentants de services de santé de zone et du bureau régional de la santé dans le Sud de l'Éthiopie.

**LIEU :** L'étude a été menée dans le Sud de l'Éthiopie avec trois districts de la zone Sidama (3,5 millions d'habitants) et un district de la zone Gedeo (une zone témoin où la couverture des services de santé et la densité de population sont semblables).

**MÉTHODE :** Nous avons entrepris une collecte de données de référence à méthodes mixtes à l'aide de questionnaires quantitatifs ( $n = 57$ ), d'entretiens qualitatifs semi-directifs en personne auprès d'un échantillon délibérément choisi ( $n = 10$ ) et de groupes de discussion ( $n = 3$ ).

**RÉSULTATS :** Les thèmes qui se sont dessinés avaient trait à l'engagement et au rôle des VS, à leur supervision et à la gestion de leur rendement. Le système de gestion des informations de santé (SGIS) a été jugé important

par tous les participants, mais la qualité, l'exactitude, la fiabilité et l'actualité de l'information posent des défis. Les perceptions des participants concernant le but et les avantages du SGIS et le potentiel d'un système de télésanté ont varié d'un groupe à l'autre. Tous les participants utilisaient régulièrement des téléphones mobiles.

**CONCLUSION :** Les techniques de télésanté offrent au système de santé éthiopien une nouvelle possibilité d'améliorer la qualité des données et la santé communautaire. Les vulgarisatrices de la santé travaillant aux premières lignes sont une passerelle indispensable entre les communautés et les systèmes de santé. Il sera important d'habiliter ces VS, de les appuyer et de répondre à leurs besoins pour assurer la durabilité et la réceptivité des stratégies de télésanté. Ces constatations ont éclairé la conception et la mise en œuvre de techniques de télésanté, la démarche de renforcement des capacités, la supervision et la démarche de gestion du rendement adoptées ultérieurement.

**MOTS CLÉS :** télésanté; vulgarisatrices de la santé; systèmes de gestion des informations de santé; tuberculose; santé maternelle et infantile; sexe