Assessing Use of Data to Improve Delivery of Family Planning, Reproductive Health, and Other Health Services at the Community Level in Ethiopia

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The Evidence to Action Project (E2A) is USAID's global flagship for strengthening family planning and reproductive health service delivery. The project aims to address the reproductive healthcare needs of girls, women, and underserved communities around the world by increasing support, building evidence, and leading the scale-up of best practices that improve family planning services. A five-year Cooperative Agreement awarded in September 2011, E2A is led by Pathfinder International in partnership with the African Population and Health Research Center, ExpandNet, IntraHealth International, Management Sciences for Health, and PATH.

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Contents

Executive Summary 6
1. Introduction 8
1.1 Background and Rationale for this Assessment 8
1.2 The Ethiopia Health Extension Program/Workers 9
2. Study Design 12
2.1 Goal and Objectives of the Study 12
2.2 Assessment Framework 12
2.3 Sample Selection and Data Collection Approaches 15
2.4 Fieldworker Training 17
2.5 Administration of Study Instruments 17
2.6 Quality Assurance 18
2.7 Data Management and Analysis 18
2.8 Participant Information and Informed Consent Form 18
3. Results Part 1: Characteristics of Study Respondents and Preparation of Health Extension Workers for Data Use for Decision Making 19
3.1 Background Characteristics of Health Extension Workers 19
3.2 Pre-service Training in Data Use for Decision Making Functions 20
3.3 In-service Training in Data Management/Use 20
3.4 Workload and Number of Years Worked as a Health Extension Worker 21
4. Results Part 2: Data Use-Related Activities of Health Extension Workers 22
4.1 Data Collection and Presentation 22
4.2 Data Summary and Presentation Activities 23
4.3 Data Use for Decision Making 25
4.3.1 Data Reporting to Higher Program/Administrative Levels 25
4.3.2 Data Use to Plan, Monitor, and Inform Service Delivery 26
4.3.3 Referral Activities of the Health Extension Workers 28
4.4 Data Use Challenges Among Health Extension Workers 30
5. Summary/Conclusion 31
6. References 33

Acronyms

E2A	Evidence to Action for Strengthened Family Planning and Reproductive Health Services for Women and Girls Project
FGD	Focus Group Discussion
FMOH	Federal Ministry of Health
FP	Family Planning
HEP	Health Extension Program
HEW	Health Extension Worker
HMIS	Health Management Information System
IDI	Individual depth Interview (in-depth interviews)
IFHP	Integrated Family Health Project
ISS	Integrated Supportive Supervision
M&E	Monitoring and Evaluation
NGO	Nongovernmental Organization
USAID	United States Agency for International Development
WorHO	Woreda Health Office

Executive Summary

Background

Different stakeholders need data to inform program and/or policy decisions. Unfortunately, the data required for these purposes are usually not available in the right formats. In some countries, adequate structures that can be used to design, implement, and/or coordinate data collection activities and yield appropriate data to inform policy decisions are not available or functional. Over the past few years, several countries have supported the implementation of large-scale surveys, such as the Demographic and Health Surveys, to increase availability of data to monitor health outcomes and aid policy decisions at national and sub-national levels. Unfortunately, data from large surveys often have limited value at lower levels of the health system. Consequently, several countries have put in place measures to improve their health management information system (HMIS) with a view to generating more accurate, timely, and complete data that can be used at all levels of the health system to plan, monitor, and improve service delivery/program performance. The reformed HMIS and monitoring and evaluation system in Ethiopia is a good example of an effort to improve use of data at the lowest level of the health system for decision making.

In 2003, Ethiopia launched the Health Extension Program (HEP) to address the shortage of first-line, primary care service providers at the community level. The program's objectives were to reach the poor and deliver preventive and basic curative high-impact interventions to all Ethiopian people. At the heart of this program is the training and deployment of more than 30,000 health extension workers (HEWs) who are posted to rural communities across Ethiopia, where they provide better and more equitable access to health services for the poor, women, and children in a sustainable manner. Besides providing health services, the HEWs are expected to use data for decision making. This component of their work is of great interest to the USAID-funded Evidence to Action (E2A) project, which has a mandate to develop and/or promote strategies/practices to strengthen family planning and reproductive health service delivery and increase access to these services. Underlying E2A's mandate is the assumption that increased use of data to plan, monitor, and inform service delivery will lead to services that better meet people's needs. Consequently, this study was carried out to examine how and to what extent HEWs use data for decision making in Ethiopia, and the role of HEWs in implementing the referral system. This study is part of a proposed study in two to three countries to understand the facilitators and barriers to use of data to plan, monitor, and inform service delivery.

Study methods

Using an appropriate study logic model, E2A collected primary data through in-depth interviews (IDIs) and focus group discussions (FGDs) in 35 randomly selected woredas of Amhara and Tigray regions (20 woredas in Amhara, 15 in Tigray). The two regions constitute about 29% of Ethiopia's population. E2A also reviewed service statistics in selected health posts. Several steps were taken to select the woreda health offices (WorHOs) and health posts. All fieldworkers were trained using classroom lectures, small group discussions, and role plays. Data were collected for 18 days and special attention was paid to strict adherence to ethical requirements, with quality checks carried out throughout the study. Data were collected through: structured interviews with randomly selected HEWs (150 in Amhara, 100 in Tigray); IDIs with health center-based supervisors of HEWs (10 in each region); nongovernmental and community-based organization staff (5 in each region); WorHO-based supervisors of HEWs (5 in each region); and FGDs with volunteer community workers and community members (10 in each region). Service data were also reviewed to assess the number of people served, the types of services delivered, as well as the quality, completeness, and regularity of data reported by the HEWs and whether individual HEWs had been taking additional steps to analyze and present service data. A few service uptake indicators were selected for this purpose. The SPSS database system was used to analyze quantitative data. Frequency tables were generated to estimate the extent of data use, and through a bivariate statistical analysis, E2A examined regional differences in levels of data use for decision making. FGDs and IDIs were transcribed verbatim into Microsoft Word. All transcriptions were translated into English and

checked by the facilitator. The FGD/IDI data were coded and analyzed using a content-driven theme approach.

Results

The results show that most HEWs (more than 80%) reported to have received both pre- and in-service trainings on data use/management and demonstrated confidence in their ability to perform various data management functions. The study reveals slight regional differences in the proportion of HEWs trained on data management. While most HEWs reported to use the client register to record information, less than half reported to use a family folder, and only 12% reported use of the new tickler file system. Furthermore, the HEWs are generally able to calculate percentages and prepare tallies/charts despite the challenges they face related to data-recording tools. The study reveals a shortage of standardized HMIS tally sheets in some places. Consequently, the majority of HEWs (80%) reported to use improvised tally sheets to record information. Although data management has become an integral part of what the HEWs do, delivering a package of health services is their primary responsibility. The services provided by HEWs include antenatal care, postnatal care, family planning, training of volunteer workers, and ensuring hygienic conditions prevail in the communities. Responses from different segments of the population show appreciation for the HEWs' work.

With respect to data use, more than 95% of HEWs reported to use data to inform decisions about service delivery. Specifically, they use data to plan future activities (99.6%); monitor disease conditions (98.8%); track uptake of family planning and other health services and supplies (98%); project future family planning and other health needs of the community (98.8%); mobilize resources (96.4%); compare performance against plans to determine gaps (98%); and determine size of population to plan for (96%) and plan home visits (97.2%). HEWs also participate in meetings on data use at various levels and receive feedback on various aspects of the data they report to the health center staff, woreda health officers, and nongovernmental organization staff. In spite of the high levels of data use among HEWs, some HEWs still face challenges, which include the following: i) lack of capacity to interpret results; ii) heavy workload, which makes it difficult to allocate sufficient time to critical analysis of data to inform future service delivery activities; iii) inadequate logistical support to implement decisions; and iv) lack of commitment on the part of the community to attend meetings requiring collective decisions.

Conclusion

This study demonstrates that with strong political commitment, particularly at lower levels of the health system, and adequate technical and financial support, frontline health workers can develop the skills they need to use data to inform their service delivery activities. Although this study was not intended to assess the effect of the Integrated Family Health Program's (IFHP) technical and financial support on the ability of HEWs to use data for decision making, reports from HEWs indicate that IFHP support has contributed significantly to their ability to use data for decision making. Besides strong political commitment, this study also shows that continuous and integrated training in data use and service delivery is a facilitator of data use as it helps to build the capacity of frontline health workers to use data to inform health service delivery. Also, since in-service training in data use is usually combined with training in the delivery of health services, HEWs are trained to see how they can use the data they collect to detect the strengths and weaknesses in their program activities. The Ethiopia study also highlights challenges (constraints to data use) that must be addressed to motivate frontline health workers to use data. For instance, the need for frontline health workers to improvise essential data recording and reporting forms must be avoided. Having to improvise data forms can discourage health workers from collecting and reporting required data, resulting in data that may not be available for decision making. Efforts should also be made to review the workload of frontline health workers from time to time to ensure they are not overworked. Several HEWs reported that their service provision workload was already heavy and therefore found it difficult to undertake additional data management/use functions. Strategies must be developed to address these and other challenges.

1. Introduction

1.1 Background and Rationale for this Assessment

This study examines use of data for decision making by a cadre of frontline health workers in Ethiopia—the health extension workers (HEWs). The study also examines how the HEWs are prepared to use data to inform their health service delivery activities.

Data play an important role in program and policy decisions.[1-2] For example, donors require data to aid their funding decisions by directing their attention to what works and does not work and consequently what should be funded. Governments need evaluation data to make evidence-based decisions to aid policy and planning processes. For implementing organizations/service providers (including nongovernmental organizations (NGOs)), availability of timely, accurate, and relevant data enables program performance to be assessed and service delivery strategies to be adjusted accordingly.

Unfortunately, the data needed for these purposes are usually not available in the right formats. In some countries, adequate structures that can be used to design, implement, and/or coordinate data collection activities and yield appropriate data to inform policy decisions are not available or functional. Organizations may also lack the skills and capacity to design and implement appropriate evaluations that yield data required for a meaningful assessment of program effects and/or effectiveness. Even where data exist, lack of skills and capacity to analyze, interpret, and effectively present the data hinders its utility in guiding program implementation. Those working at lower levels of the health system, in particular, may lack the necessary skills to use data to inform decision making, hindering the delivery of health services and introduction and scale-up of that practices are evidence based. For these reasons, many projects have failed to progress beyond the pilot stage, to achieve desired results when scaled up, and to make necessary adjustments to unsuccessful or inefficient program strategies.

Over the past few years, several countries have supported the implementation of large-scale surveys, such as the Demographic and Health Surveys, to increase availability of data to monitor health outcomes and aid policy decisions at national, regional, and provincial levels. Unfortunately, data from large surveys often have limited value at lower levels of the health system (community and facility). With support from multilateral and bilateral donors and implementing organizations, several countries have established measures to improve their health management information systems (HMIS) with a view to generating more accurate, timely, and complete data that can be used at all levels of the health system to plan, monitor, and improve service delivery/program performance.

The reformed HMIS/monitoring and evaluation (M&E) system in Ethiopia is a good example of an effort to improve use of data at the lowest level of the health system for decision making. An evaluation of the former HMIS system revealed that decision making at different levels of Ethiopia's health system was not often evidence based because program reports were largely inaccurate, untimely, and incomplete. The evaluation of the old HMIS system also revealed that a lack of coordination and leadership, an unclear strategy, inadequate policy and guidelines, and a shortage of skilled human resources were the key factors affecting HMIS performance. Furthermore, the effect of parallel reporting with multiple and redundant formats compromised data quality and increased administrative workload. Data were collected primarily for reporting, and use of data was very limited at lower levels of the health system.[3]

Following the evaluation of the old system, a new HMIS/M&E system was designed in 2006, pilot tested, evaluated, and approved for national scale-up by the end of 2007.[4] The radical HMIS/M&E redesign was expected to eliminate redundant parallel reporting, reduce data burden and the number of reportable indicators, and support continuous improvement of health services and health status of the population through action-oriented, evidence-based decision making.[5] With the reformed HMIS/M&E system, managers and health workers at all levels are expected to ensure timely collection of reliable and relevant service statistics and use data collected to plan, monitor, and improve performance. Evaluation of the pilot testing revealed great achievements and scale-up was recommended. As of 2010, however,

the HMIS had not yet reached the lowest health care level (health posts), and activities at that level (as well as at the community level) were not included in the HMIS. The most recent Health Sector Strategy (HSDP IV) called for the HMIS to be integrated at all levels of the health care system, including at the health post level.

In 2003, Ethiopia launched the Health Extension Program (HEP) to address the shortage of first-line, primary care service providers at the community level. The program's objectives were to reach the poor and deliver preventive and basic curative high-impact interventions to all Ethiopian people. At the heart of this program is the training and deployment of more than 30,000 HEWs who are posted to rural communities across Ethiopia, where they provide better and more equitable access to health services for the poor, women, and children in a sustainable.[6-9] Besides providing health services, the HEWs are expected to use data for decision making. In the old and reformed systems, the HEWs have been government sponsored and trained individuals who provide services at the community and health facility levels; their outputs are captured and incorporated into the HMIS. Data collected by HEWs are expected to feed into data used by health centers and districts for planning.

This paper examines the factors that facilitate or constrain use of data by frontline health workers in select woredas of Amhara and Tigray regions of Ethiopia. Ethiopia presents such a unique opportunity because of the pivotal role of the HEWs in delivering home- and facility-based health services to community members. This study was carried out to understand to what extent HEWs use data for decision making in Ethiopia, and examines the role of the HEWs in the implementation of the referral system. Results from this analysis may contribute to the increased use of data at all levels of the health system, particularly use of data by frontline health workers, with a view to improving service delivery, including referral of clients to higher level facilities or other service delivery points for services they do not provide. Improving use of data may then lead to the development and/or promotion of strategies and practices to strengthen family planning and reproductive health service delivery and increase access to these services in Ethiopia and elsewhere.

1.2 The Ethiopia Health Extension Program/Workers

As mentioned above, Ethiopia launched the HEP to address the shortage of community-level primary care services in 2003. The HEP is an ambitious government-led community health service delivery program designed to improve access and utilization of preventive and basic curative services. The HEWs constitute a significant proportion of health providers at the community level in Ethiopia. The HEWs are recruited from the communities in which they work according to specific criteria: they must be female (except in pastoralist areas), at least 18 years old, have at least a tenth grade education, and speak the local language. Selection is made by a committee made up of members nominated by the local community, representatives from the woreda (district) health office, woreda capacity building office, and woreda education office.[3] Upon completion of training, pairs of HEWs are assigned as salaried government employees to kebeles (neighborhoods or villages), where they staff health posts and work directly with individual households. Each kebele has a health post that serves 5,000 people and functions as an operational center for a HEW. The health post is under the supervision of the woreda health office and kebele administration, and receives technical and practical support from the nearby health center.

HEWs are trained to do the following:

- Manage operations of health posts;
- Conduct home visits and outreach services to promote preventive health actions;
- Refer cases to health centers and follow up on referrals;
- Identify, train, and collaborate with voluntary community health workers; and
- Provide performance reports to woreda health offices and village councils for local decision making.

Upon assignment, HEWs conduct a baseline survey of the village, using a standardized tool. They map households and the population by age category. They also prioritize health problems of the village, set targets with respect to the 16 packages of services,[a] and draft a plan of action for the year. The draft plan of action is then submitted to the village council and approved. The plans are also disseminated to the woreda council, woreda health office, regional council, and regional health bureau. Since the basic philosophy of the HEP is to transfer ownership of and responsibility of health issues to individual households through the provision of knowledge and skills to households, the HEWs spend 75% of their time visiting families in their homes and performing outreach activities in the community.

Their house-to-house activity starts with identifying households to be portrayed as role models. The model households are households that have earned the respect and credibility of the community because of their extraordinary performance in social aspects, such as agricultural production. The model households are willing to change and able to persuade and convince other households upon completion of the training. The model households are considered early adopters of health practices in line with heath extension packages. They help diffuse health messages, leading to the adoption of the desired practices and behaviors by the rest of the community.

HEWs' remaining time is spent providing services, including immunizations and injectable contraceptives, at the health posts. They are trained to provide first aid, conduct safe and clean deliveries, diagnose and treat malaria, diarrhea, and intestinal parasites. They are also trained to make referrals for cases which need a higher level of care or treatment. Referrals are usually implemented within a structure that formally links lower level facilities with higher level ones. Under the Ethiopia HEP, formal linkages are established between a number of health posts and a health center. The health posts report data and refer clients to the health center. The health center, on the other hand, provides integrated supervision services and on-the-job-training to the health post staff.

To record and report service data at the community level, the Federal Ministry of Health (FMOH) specifies tools that include the family folder, health card, field book, and client cards.[10] The **family folder**, a pouch issued to every household in the kebele, contains information about the household that helps the HEW identify the health service needs of household members with a view to providing them appropriate health services. The family folder has five sections that must be completed by the HEW in order to have comprehensive information about the household and individuals:

- Identification (location of the household and name of household head);
- Description of household members (name, date of birth, place of birth, sex, occupation, marital status, date died and cause of death);
- Characteristics of household (in terms of latrine, hand washing, waste disposal, and drinking water facilities, and availability of long-lasting insecticide treated nets);
- HEP package training status; and,
- Household implementation status of the HEW packages (recording on the training of household on difference HEP packages).[b]

The family folder also contains health cards and integrated maternal and child care cards to record disease information, and preventive and promotive services to members of the household.

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[a] The 16 packages are in four main areas: (A) Hygiene and Environmental Sanitation (7 packages): proper and safe excreta disposal system; proper and safe solid and liquid waste management; water supply safety measures; food hygiene and safety measures; healthy home environment; arthropods and rodent control; personal hygiene; (B) Disease Prevention and Control (4 packages): HIV/AIDS prevention and control; TB prevention and control; malaria prevention and control; first aid; (C) Family Health Services (5 packages): maternal and child health; family planning; immunization; adolescent reproductive health; nutrition; (D) Health Education and Communication.

[b] For comprehensive description of the family folder, see Federal Ministry of Health, Government of Ethiopia, *Community Health Information System Users Manual for Data Recording and Reporting* (2010).

The **field book** is used during household visits or outreach to record detailed information on services provided to clients for whom the HEW does not have a family folder. The information recorded is then used to update the family folder when the HEW returns to the health post. The field book has five columns: date of visit; name of the client; service provided; household number/name; and name of the specific *Gote* (subdivision of a *kebele*, or village).

The **client card** refers to the health card, used at both the household and health post to document health/care/support services provided to individual household members. Information collected through the health card includes: follow-up and home-based care and support for HIV and AIDS, TB, and other diseases; referral information; family planning status; immunization history; height and weight; and support for identified orphans.

The **tallies** are expected to be completed on a regular basis (daily or monthly) to record counts of services provided or supplies used. The tallies include the service delivery tally (daily counts of each health service activity), disease information tally (daily count of each type of disease diagnosis encountered by HEW), tracer drug availability tally (monthly record of tracer drug availability), and family planning method dispensed count (monthly record of contraceptives distributed).

Also as part of the reformed HMIS system in Ethiopia is the **tickler file system**. A tickler file system is a means of organizing documents and reminders by date with a view to reminding the service provider—in this case the HEW—of what needs to be accomplished on particular dates. The tickler file systems requires that the health cards of mothers who need follow-up care are stored in boxes arranged according to the month when the follow-up actions should take place. The health cards of women receiving family planning services or antenatal care and children getting their vaccines are kept in the tickler boxes. At the end of the day, the health cards in the current month's box are reviewed and follow-up actions are planned accordingly. The implementation of the tickler file system, which helps HEWs identify service defaulters and conduct quick follow-up, varies by region, with SNNPR being the region with the highest coverage. HEWs also participate in local politics and are part of the multi-sectoral local decision-making process. One of the two HEWs in a village sits on the village council, along with an elected village chairman, a teacher, an agricultural development agent, and a community representative. The council is a political administration of the village that serves to prioritize the work of the Health Extension Service, provide support to HEWs, and review their regular performance reports. These reports are critical for health decision making, both at the woreda and village levels.

The description of the HEWs provided above shows that the success of health programs at the community level in Ethiopia depends on the extent to which the HEWs are able to produce accurate performance reports, galvanize decisions and action around arising health issues and trends, advocate for changes and improvements, and in turn, provide evidence-based and informed services. Evidence-based and informed family planning and reproductive health services therefore depend on the availability and use of timely, accurate and relevant data to guide decisions.

2. Study Design

2.1 Goal and Objectives of the Study

This study was conducted to examine the extent to which HEWs use data collected from households and health posts to improve/strengthen delivery of family planning, reproductive health, and other health services. For this study, data use to improve/strengthen service delivery (or for decision making) refers to actions/activities of HEWs related to: (1) the collection, recording, analysis, and interpretation of primary[c] and/or secondary data; and (2) using the results to plan, monitor, and improve services they provide to community members. It refers to HEWs' use, either alone or in conjunction with others, of the summary tables they generate, the wall charts and graphs they produce, and the information they gather from different sources, including the family folder (where it has been introduced), to identify/determine:

- The demographic profile of people being served;
- The health needs of communities they serve;
- The essential services provided in order to meet these needs;
- The changes in family planning and reproductive health commodity and other health supply needs;
- Where, when, and how to provide these services; and,
- Information needs of the community (that is, what to feed back to the community).

Specifically, this assessment aimed to achieve the following objectives:

- Determine the proportion of HEWs who use data for any purpose related to (i) providing health information to community members, (ii) determining the health needs of community members, and (iii) providing services that meet those needs;
- Determine the proportion of HEWs who are implementing the family folder system, where it has been introduced, and how they use the information from the family folder, for instance, in planning field/household visits;
- Determine the implementation of the tickler file system where it has been introduced;
- Determine how data collected by HEWs feed into the health center and WorHO data system for planning purposes;
- Determine the types of training HEWs receive on or related to use of data for decision making;
- Determine how HEWs use data to improve health service delivery. For instance, do they use the data to: (i) determine project/commodity needs; (ii) inform woreda-based planning on health; (iii) plan home visits; (iv) monitor changes in demand for services/commodities; (v) examine trends in services provided; (vi) provide community feedback on health situations; and (vii) determine health issues that need urgent attention?; and
- Identify factors that facilitate and constrain the use of data by HEWs.

In addition to examining data use generally, this paper examined the involvement of HEWs in the implementation of the referral system in Ethiopia.

2.2 Assessment Framework

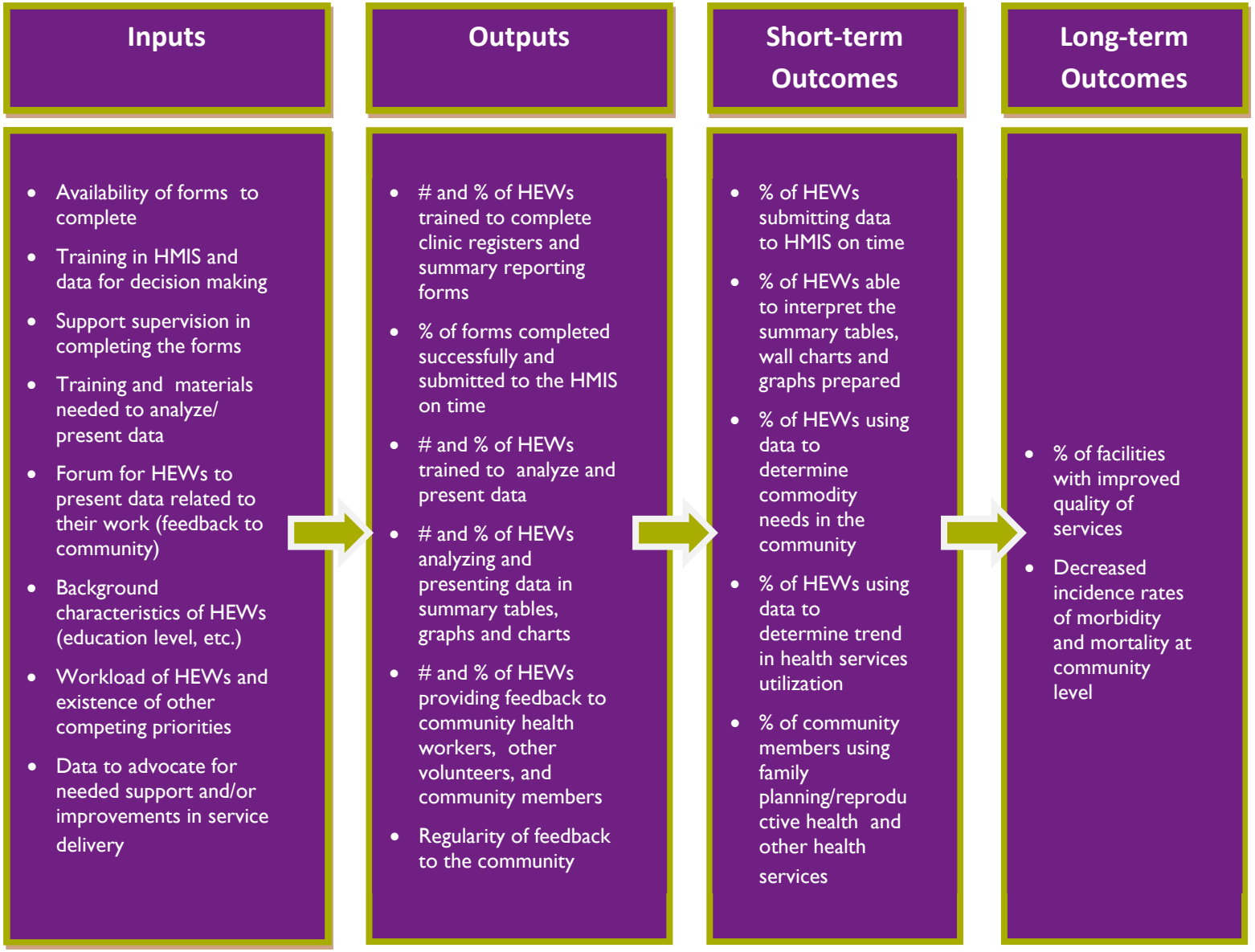
The logic model below highlights types of indicators that were developed to guide this study and shows how the indicators relate to one another. The indicators informed the types of questions that were asked during the study. The last column in the logic model, labeled "long-term outcomes," refers to the expected long-term improvements in the quality of services and decreased morbidity and mortality rates at community level.[d] Working backwards, "short-term outcomes" refer to expected uses of data by

[c] Primary data include data they (HEWs) or others collect at the community or health posts.

[d] The long-term outcomes and some short-term outcomes were not examined in this study; the study was not designed to measure them. The current analysis ends with the examination of most short-term outcomes shown in this model.

HEWs based on skills acquired. It is expected that increased use of data by HEWs to (i) determine the health and commodity needs of their communities; and (ii) plan and monitor services provided to meet those needs, will translate into improved services that could be associated with increased demand for those services. The short-term outcomes are examined in section 4 of this paper. "Outputs" measure the extent of skills acquisition by the HEWs—assessed by the number and proportion of HEWs exposed to specific trainings and their ability to produce summary tables and charts; these are examined in section 4. "Inputs" are essentially the conditions needed at the individual, community, and health facility level in order to have a fully functioning HMIS system at the district and village levels. The inputs are discussed as background characteristics of respondents, participation in training programs, and availability of HMIS materials, among others, in section 3 of this paper. It should be noted that not all indicators are captured in this study.

Study Logic Model



2.3 Sample Selection and Data Collection Approaches

Amhara and Tigray constitute about 29% of Ethiopia's population and were randomly selected at the first stage from the four implementation regions of the Integrated Family Health Program (IFHP).[e] During the second stage, 35 woredas within Amhara and Tigray regions (20 woredas in Amhara, 15 in Tigray) were selected. In order to select the woredas and then the district health offices and health posts within woredas, several steps were taken. First, in each region, three administrative zones[f] were selected for inclusion in this study. Once the first zone was randomly selected, two other zones that were contiguous to the randomly selected one were selected to minimize travel time and save costs. Secondly, five woredas were selected from each of the three zones in Amhara and three were selected from each of the three zones in Tigray. Also, in order to minimize travel time, woredas that were contiguous to the first randomly selected one were selected. Health centers located in the capitals of the woredas were selected for the study for a total of 25 health centers.

At the third stage, 10 health posts were selected from each woreda in Amhara region and 11 from each woreda in Tigray region.[g] Again, once the first health post was randomly selected in each woreda, efforts were made to select those that are within 20 kilometers of the first one to minimize travel time. In all, 150 health posts were selected in Amhara and 100 in Tigray. In each selected health post, the interviewers randomly selected one of two HEWs for interview. It should be noted that IFHP cluster officers were involved in the selection of the zones, woredas and health posts. Information was collected on the role of HEWs in generating, analyzing, and interpreting data, how the HEWs use data to inform family planning and reproductive health service delivery, and the constraints to more effective use of data for decision making, among other areas.

Estimating the true level of data use among HEWs in Ethiopia would have required making some assumptions that would yield a sample size large enough to ensure statistically significant difference between data use level obtained from the sample and that which would have been obtained had all HEWs (at least those in the two selected regions) been included in the study.

This study is not so much about drawing inferences or making generalizations about overall level of data use among HEWs in Ethiopia. Rather, it is an in-depth exploratory[h] study to determine whether and how HEWs use data to inform their health service delivery activities, the challenges they face while doing so, how well they were equipped for these tasks, and why some of them might not be using data to plan and monitor their health service delivery activities.

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[e] The Integrated Family Health Program (IFHP) implements family planning and reproductive health programs in four regions, including Amhara, Tigray, Southern Nations, Nationalities and People Region (SNNP), and Oromia. SNNP was not considered for this study because IFHP's partner John Snow International is already examining data use as part of their HMIS program in the region. Since the initial plan was to conduct the study in two IFHP-focused regions, Amhara and Tigray were randomly chosen from the three remaining regions.

[f] Each region in Ethiopia is divided into administrative zones, each of which consists of woredas (districts). Amhara region has 11 administrative zones while Tigray has 5.

[g] In one of the woredas in Tigray, 12 health posts were selected for a total of 100 health posts in that region.

[h] We refer to this study as exploratory because not much is known about the use of data by this cadre of health workers in Ethiopia. Hence, we are conducting this study to increase our understanding of the use of data among HEWs, how increased use of data can improve service delivery, and factors that facilitate/constrain data use.

Consequently, rather than using an estimated maximum sample size of 440 that would have yielded a statistically insignificant difference between data use level obtained from this study and that which would have been obtained had all HEWs (at least those in the two selected regions) been included in the study, we limited the number of interviewed HEWs to 250 (150 in Amhara,100 in Tigray).[i]

Data were collected through: structured interviews with randomly selected HEWs (150 in Amhara, 100 in Tigray); semi-structured interviews with health center-based supervisors of HEWs (15 in Amhara, 10 in Tigray); nongovernmental and community-based organization staff (5 in each region); and WorHO-based supervisors of HEWs (11 in Amhara, 5 in Tigray)[j]; and FGDs with volunteer community workers and community members (10 in each region).[k] Information collected from the different groups of individuals was expected to provide more insights into how data collected by HEWs are used to inform delivery of health services and the challenges they face in using data for decision making. IFHP staff assisted in selecting individuals for the FGDs. The quantitative and the qualitative data were collected simultaneously. Below is a table summarizing the respondent, interview type, and desired sample sizes.

Service data were also reviewed to assess the number of people served, the types of services delivered, as well as the quality, completeness, and regularity of data reported by the HEWs and whether individual HEWs are taking additional steps to analyze and present service data. A few service uptake indicators were selected for this purpose.

Table 2.1: Number and type of respondents

Respondent	Interview Type	Number per region	Number (total)
HEWs	Structured interviews	150 in Amhara, 100 in Tigray	250
Supervisory health center staff	Semi-structured Interviews	15 in Amhara,10 in Tigray	25
CBO/NGO coordinators	Semi-structured Interviews	5	10
District health supervisors of HEWs	Semi-structured interviews	11 in Amhara, 5 in Tigray	16
Voluntary community health workers	Focus group discussions	5	10
Community members	Focus group discussions	5	10

[i] In the absence of reliable data on the proportion of HEWs using data for planning, monitoring, or service delivery-related purposes, we would have estimated a maximum sample size based on the assumption that 50 of 100 HEWs will use data for decision making. With a probability of 0.5, a maximum allowed difference between the sample and true population levels of 5% and a significance level of 95%, the number of HEWs who would have been interviewed in the selected regions would have been about 440, using appropriate formula and allowing a 10% non-response.

[j] Semi-structured interviews among health center staff, nongovernmental and community-based organization (NGO/CBO) staff and key WorHo staff provide opportunities to determine their perceptions of how well HEWs have performed their roles (including data collection and reporting), the challenges they face in the process of doing so, how they (health centers, NGOs/CBOs, and WorHo staff) have supported the HEWs to perform their roles and how they have utilized data collected by the HEWs.

[k] The FGDs among volunteer community workers and community members will help to gauge what they think about the activities of the HEWs in the community, services received from HEWs, feedback they get from HEWs on the health situation in the community, their perceptions of how well HEWs have used the family folders to identify and address family and community health needs, their interaction with the HEWs, and what should be done to make the HEWs do their work better.

2.4 Fieldworker Training

All fieldworkers were trained for two days to have a clear understanding of the study objectives, the structure of data collection instruments, their roles in the study, the need for good quality data, and the principles and procedures related to human subjects' protection. Recruitment of fieldworkers was based upon past experiences conducting qualitative field studies or quantitative surveys (as appropriate), ability to relate to the target group, and ability to speak the local languages. E2A and IFHP staff and a local consultant trained the field workers and participated in the supervision of field activities to ensure high-quality data. The training covered the following issues:

- Objectives of the assessment;
- Identification and recruitment of respondents;
- Conducting FGDs, IDIs, and structured interviews, including addressing confidentiality and sensitive issues; and
- Administering the study tools.

2.5 Administration of Study Instruments

Field personnel consisted of two teams of two persons (facilitator, note-taker) for FGDs and five teams of three people (two interviewers and a supervisor) for the structured and in-depth interviews—three teams in Amhara and two teams in Tigray. Besides supervising the interviewers, the supervisors assisted in reviewing service statistics at the health posts and conducting IDIs. Data collection took about 18 working days. Each FGD was convened at a venue where there was no interruption or excessive noise interference and was convenient to participants. Each FGD lasted about one hour and consisted of six to eight participants. Discussions commenced with introductions and clarifications about the purpose and procedures of the focus group. Participants were briefed on the need for confidentiality and asked to participate through an informed consent process which outlined the investigators' commitment to confidentiality. Participants were asked to not share any information about the participation of others, including the identification of other participants and what other participants discussed.

FGD participants were asked to provide information on their age, education, occupation, and length of stay in the community/kebele where the study was conducted. Each FGD was facilitated with a guide that contained questions on a range of topics related to the role of HEWs in the community, challenges that they face in the process of performing their roles, and how health service data/results are disseminated at the community level. Each FGD had a main facilitator who introduced and guided the discussion and a co-facilitator who managed recording equipment and took detailed notes. The entire proceedings of the focus group were digitally recorded.

IDIs also included introductions and opportunity for clarification, and proceeded with informed consent. They were facilitated with guides that contained questions on a range of topics related to the work of HEWs. The interviews were conducted in a common language (or languages) agreed upon between the interviewer and participant and were digitally recorded.

The interviews with HEWs were conducted face to face by means of standardized, pre-coded questionnaires. The interviewer asked the respondent questions and filled out a paper-and-pen questionnaire. Interviews were conducted in the most discrete and private circumstances possible to protect confidentiality of responses and enhance the comfort of respondents. As with other approaches, each respondent was asked to give informed consent before being interviewed. Respondents answered a series of questions relating to their background characteristics; training; services they provide; use of data for decision making; and coordination with community health workers, their health posts, and the woreda/district health management offices. The questionnaire took about 30 to 40 minutes to complete.

At the beginning of the fieldwork, IFHP officers who manage program at the district level contacted woreda health officers, community leaders (political and religious), and the different categories of study respondents to inform them of the study. Being well known because of their program activities in the communities, the IFHP cluster officers were able to facilitate the participation of the different categories of study respondents. Stakeholders included regional and woreda health officers, community leaders, and staff of NGOs working in the community.

2.6 Quality Assurance

Quality assurance was achieved by:

- Principal investigators and the consultant who briefed and trained field staff;
- Data collection instruments that were pilot tested and modified as necessary with guidance from the consultant and principal investigators; and
- Field activities that included direct on-site supervision of fieldworkers by team supervisor with support from the consultant and principal investigator(s). The team supervisors checked questionnaires for completeness and consistency. On-the-spot editing of completed forms involved detecting filter errors, out-of-range values, and missing responses.

2.7 Data Management and Analysis

The questionnaires were sent to Pathfinder/Ethiopia head office where they were entered into the SPSS database system. A data entry screen was developed and research assistants were trained to enter the data from the questionnaires. Once entered, frequency tables were generated to estimate the extent of data use, and a bivariate statistical analysis was conducted to examine regional differences in levels of data use for decision making.

FGDs and IDIs were transcribed verbatim into Microsoft Word. The FGD facilitators, supervised by the IFHP consultant, performed the transcription of the discussions. No names were included in the transcription; each speaker was identified only by gender and number. All transcriptions were translated into English and checked by the facilitator. The FGD/IDI data were coded and analyzed using a content-driven theme approach.

2.8 Participant Information and Informed Consent Form

The purpose of the study was explained to participants. Fieldworkers highlighted all key elements of the consent form and allowed participants to ask questions. The consent form followed standard ethical guidelines and was included in the protocol.

The study was only conducted after obtaining ethical approval from appropriate ethics review boards in Ethiopia and the United States. Written permission was also sought from the regional/provincial health offices where the study took place. The study included no invasive or medical procedures of any kind. Participation in the study was strictly voluntary. Measures were taken to assure the respect, dignity, and freedom of each participant.

During the training of fieldworkers, emphasis was placed on the importance of obtaining informed consent and avoiding coercion of any kind. Complete confidentiality of study subjects was also emphasized.

3. Results Part 1: Characteristics of Study Respondents and Preparation of Health Extension Workers for Data Use for Decision Making

The logic model in section 2 of this paper specifies expected relationships among inputs, outputs, short-term and long-term outcomes. Evaluation tools were designed to measure most of these factors, and the results section will be presented according to this model. The expectation is that the inputs, consisting mainly of HEWs' relevant background characteristics (age, education, how long they have worked as HEWs), their preparation for data use (in terms of training in data collection, management, and analysis), and enabling environment (in terms of availability of materials for recording and reporting data and support supervision), among others, will influence data use for decision-making skills and ability to put those skills to use in service delivery activities. This first section of results will therefore examine these factors as measured in the study.

Related to the preparation of HEWs for using data for decision making, E2A examined their participation in pre- and post-service trainings in data collection, data management, data analysis and reporting, and use of data for decision making. Other factors examined for their potential influence on acquisition and effective use of data use for decision-making skills include workload and availability of materials for data recording and reporting.

3.1 Background Characteristics of Health Extension Workers

Table 3.1 shows data on relevant background characteristics of HEWs. As mentioned previously, 250 HEWs were interviewed (150 in Amhara, 100 in Tigray). With a mean age of 25.7 years (25.3 years in Amhara, 26.2 years in Tigray),[l] the HEWs were relatively young; 92% were below age 30 years (95% in Amhara, 89% in Tigray) at the time of the study. All the HEWs were female. Although more than 90% of HEWs were younger than 30 years of age, only 26% had never married (33% in Amhara, 16% in Tigray) at the time of the study. A total of 190 HEWs (111 in Amhara, 79 in Tigray) responded to the question on the number of children ever born. Among the respondents, the number of children they had ranged from 0 to 5 in Amhara and 1 to 4 in Tigray (data not shown). In line with the educational requirements for the HEW program, the HEWs in this study were enrolled in the program after they had obtained a minimum required education of the tenth grade.

Table 3.1 Background Characteristics of Health Extension Workers

Characteristics of respondents	Amhara (N=150)	Tigray (N=100)	Total (N=250)
Age:			
20-24	34.7	35.0	34.8
25-29	60.0	54.0	57.6
30+	5.3	11.0	7.6
Mean age	25.3	26.2	25.7
Current marital status:			
Never married	33.3	16.0	26.4
Currently married	62.0	69.0	64.8
Formerly married	4.7	15.0	8.8
Level of education before HEW training:			
8-9th grade	0.7	1.0	0.8
10th grade	87.3	90.0	88.4
Above 10th grade	12.0	9.0	10.8

[l] For the two regions combined, the median age is 25 years. The youngest HEW was 20 years old while the oldest was 40 years.

3.2 Pre-service Training in Data Use for Decision Making Functions

One of the major research areas of interest was determining whether HEWs were prepared for the task of using data to inform service delivery. In order for them to use data to make decisions about the services they deliver, HEWs must acquire skills in data collection, data management, data analysis and interpretation. By design, HEWs are supposed to receive pre-service training in these areas. Table 3.2 shows the percentage of HEWs who received training in different data management and use areas.

Table 3.2 Percentage of HEWs who received data management/use training during pre-service HEW training, by region

Respondents were trained in the following data management/use areas:	Region		Total
	Amhara	Tigray	
Collect data from clients and households	92.7	99.0	95.2*
Analyze data	86.0	94.0	89.2*
Report summary data	87.3	55.0	74.4***
Use data to review program activities	81.3	85.0	82.8
Use data to plan activities	85.3	89.0	86.8
Use data to analyze referrals	64.7	88.0	74.0***
Sample size	**150**	**100**	**250**

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

The percentages of HEWs who reported to have received pre-service training in different areas of data use and collection are generally high. In Amhara, the percentages ranged from 65% (for training in use of data to analyze referrals) to 93% (for training in data recording). In Tigray, the percentages ranged from 55% (for training in reporting summary data) to 99% (for training in data recording). The two regions differ significantly in the percentages of HEWs who reported to have pre-service training in data recording, reporting of summary data, and use of data to analyze referrals. While significantly lower percentages of HEWs in Amhara reported to have had pre-service training in use of data to analyze referrals (65% in Amhara, 88% in Tigray) and data collection (93% in Amhara, 99% in Tigray), a significantly higher percentage of HEWs in Amhara reported to receive pre-service training in reporting summary data (87% in Amhara, 55% in Tigray). The data suggest that the basic HEW training prepares a majority of the HEWs for the task of using data to understand community needs and develop strategies to meet those needs.

3.3 In-service Training in Data Management/Use

In-service training serves to refresh and update worker skills and makes up for shortcomings in basic pre-service training. Table 3.3 shows that nearly all HEWs recall receiving training in data management and use skills during in-service training, especially as compared to pre-service training, as shown in Table 3.2. No significant differences were noted by region with respect to in-service training on data collection and use.

Table 3.3 Percentage of HEWs who received in-service training in data management/use

Respondents were trained in the following data management/use areas:	Region		Total
	Amhara	Tigray	
Collect data from clients and households	96.7	94.0	95.6
Analyze data	92.7	94.0	93.2
Report summary data	94.7	90.0	92.8
Use data to review program activities	90.0	84.0	87.6
Use data to plan activities	92.7	90.0	91.6
Use data to analyze referrals	88.0	87.0	87.6
Sample size	**150**	**100**	**250**

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

3.4 Workload and Number of Years Worked as a Health Extension Worker

Besides training in data collection, management, and interpretation, other factors that could influence application of data use for decision-making skills include service delivery workload and length of employment as a HEW. HEWs with a higher service delivery workload are less likely to have the time to critically review data and apply their data use skills, HEWs who have been on the job for a longer period of time are more likely to acquire enough data use skills and feel more comfortable applying them.

With respect to their workload, over one-third (38%) of HEWs in both regions reported that they work an average of 10 hours per day (data not shown). Most of the HEWs' time is spent providing services to households (56%), followed by provision of services at the health post (24%). About 10% of their time is spent participating in community social and political activities (data not shown).

The reported number of years that HEWs have worked for the Health Extension Program ranges from 0 (less than a year)(22%) to 10 years (0.4%). There were no significant regional differences in numbers of years worked as HEWs.

4. Results Part 2: Data Use-Related Activities of Health Extension Workers

4.1 Data Collection and Presentation

In order for HEWs to use data for decision making, they should be able to record service data and present them in ways that help them to understand trends in service delivery, changes over time, and identify areas that need improvement. Table 4.1 shows the percentage of HEWs who reported recording data using routine data recording forms (i.e., family folder, health card, field book, and client card) described in the first section of this report by region. The table shows that all the HEWs have been involved in data recording using one or more instruments. There are regional variations (sometimes statistically significant) in the proportion of HEWs that have recorded data using these forms, and within each region, the proportion of HEWs that have used different forms to record data. For instance, in Amhara where almost all HEWs have recorded data using the client register (98%), only 22% have collected data using the family folder (although it should be noted that the implementation of the family folder system was just starting in Amhara at the time of the survey). In Tigray, all HEWs have recorded information using the field book, and 80% have recorded data with the client card.

Table 4.1: Percentage of HEWs who collect data by region and type of data collection tool

Data collection tool	Region		Total (n=250)
	Amhara (n=150)	Tigray (n=100)	
Family folder	22.0	89.0	48.8***
Client register	99.3	97.0	98.4
Field book	66.7	100.0	80.0***
Client card	62.0	80.0	69.2**
Tally sheet	86.7	80.0	84.0
Other	0.0	5.0	2.0**

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

In semi-structured interviews, health center, NGO, and WorHO staff were interviewed and asked to state whether HEWs collect data on the different health services that they provide. All 51 interviewed staff (25 health center staff, 10 NGO staff, and 16 WorHO staff) confirmed that the HEWs collect data on tuberculosis, immunization, and pregnancy history from household members on a regular basis; 98% of the interviewed staff reported that the HEWs collect data on family planning and growth monitoring and nutrition, and 94% reported that the HEWs consistently collect data on referrals, antenatal care, delivery/labor, and postnatal care.

Some HEWs reported that there were instances when the conventional data recording forms were not available. During shortages of standard forms, HEWs resorted to using improvised forms to record data; they reported to use 'hard paper'/cardboard when client cards were out of stock and bought notebooks, which they usually reformatted to resemble conventional record-keeping forms (Table 4.2).

Table 4.2: Methods of recording information when registers or forms are not available

Question: How do you record information when registers or forms are not available? (RECORDED VERBATIM)
…By dividing one form into two or more…
…By drawing line on the paper most of the time as there is no paper as well we buy using our own money…
…I keep [record] information using hand prepared paper…
…If there is shortage of client appointment card I will prepare from hard paper…
…We are working by drawing lines to prepare the format with our hands manually. We do not have enough summary format…

As described in the introduction, a tickler file system was introduced in Ethiopia to help HEWs identify those who did not attend services for quick follow-up. There are regional and district-level variations in how long the tickler file system has been implemented and its coverage according to the HEWs interviewed. Only12% of HEWs in the two regions reported to have implemented the tickler file system. The duration of implementation varies between one month and seven years (data not shown).

Although a high percentage of the HEWs reported to engage in data recording activities, they also reported some challenges which could affect the quality and timeliness of information recorded (Table 4.3). The most common challenge is the inadequate supply of forms/registers to record information. Except for HEWs who are able to improvise, a shortage of recording forms can lead to failure to record important information or failure to record an event at the right time. About 60% of HEWs reported a shortage of essential recording forms at one time or another (there is no statistically significant difference between the two regions). The second most common challenge is the reluctance of clients to provide information (46%). This challenge draws attention to the need for more on-the-job training for HEWs on how to obtain information on sensitive issues from their clients.

Approximately two-fifths of HEWs reported that data recording is too time consuming and hence takes time away from health care service delivery (43%). This finding suggests that a considerable percentage of HEWs find it challenging to maintain a good balance between data recording and health care service delivery activities. It is important to help HEWs understand that data recording is an integral part of service delivery—services delivered can only meet the needs of the clients when there is adequate information on what clients need. At the same time, efforts should be geared toward developing strategies to reduce the time spent collecting information. A few HEWs reported having a hard time recording data, probably because they lacked the necessary skills (12%). These findings underscore the need for more on-the-job training on data recording.

Table 4.3: Percentage of HEWs who faced challenges with data recording by type of challenge and region

Challenges with data recording	Region		Total (n=250)
	Amhara (n=150)	Tigray (n=100)	
Inadequate supply of forms/registers to record data	62.0	57.0	60.0
People's reluctance to provide information	47.3	45.0	46.4
Recording information takes away time from service provision	38.0	32.0	35.6
Recording data is hard for me	26.7	13.0	21.2**
Recording data is too time consuming	50.0	33.0	43.2**
Don't have enough skill to record data	13.3	9.0	11.6
Other	3.3	1.0	2.4

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

4.2 Data Summary and Presentation Activities

In addition to collecting and recording data, HEWs are expected to analyze data, produce summary reports, and present them in ways that make them easy to understand and useful for monitoring the health situation in the community. The main outputs produced are summaries or tallies (96%) and performance rates[m] (99%), while graphs and charts are the main presentation formats (89%). More than

[m] The performance rate is the percentage of the target achieved. The HEWs are trained to calculate targets, using information from current and previous years' activities.

90% of HEWs reported that they have been engaged in calculating percentages to compare performance with targets.

Table 4.4: Percentage of HEWs who produce summary data and present data by type of output produced and region

Method of data summary	Region		Total (n=250)
	Amhara (n=150)	Tigray (n=100)	
Generate frequencies/tallies	100.0	90.0	96.0***
Calculate percentages to compare performance with plan	98.7	100.0	99.2
Prepare charts and graphs of performance	84.7	96.0	89.2**

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

Reports from NGO, WorHO, and health center staff confirmed the data summary activities of HEWs: 45 of the 51 interviewed staff reported that the HEWs produce summaries of the data they collect. All 45 (100%) reported that HEWs generate frequencies/tallies on a regular basis; 91% (41) reported that the HEWs calculate percentages to compare performance with targets, and 87% (39) reported that the HEWs prepare charts and graphs of their performance.

As evidence of data summary and presentation activities reported by HEWs, interviewers checked for existence of wall charts or tables prepared by HEWs. Charts and tables were found displayed on the office walls of 99% of the HEWs. When asked about who prepared the charts/tables, almost all HEWs (98%) reported to have done so. They also reported the involvement of health center staff, WorHo staff, and other health providers in the preparation of the wall charts/tables. In response to the question on the tools they use to summarize data, less than half (47%) reported standard HMIS summary forms and 80% reported to use improvised forms for summarizing data. Use of standard HMIS summary forms was higher in Tigray than in Amhara. Use of improvised forms was often necessitated by shortage of standard forms. Table 4.5 provides an overview of what HEWs say they often do when they are faced with shortages of standard summary forms/tallies.

Table 4.5: **What HEWs do when standard forms for reporting summary data are not available**

Question: How do you summarize data when standard forms are not available? (RECORDED VERBATIM)
…For example we have not done immunization summary until now. We are trying to use by preparing lines with our hand…
…We ask [for] support from health center; we ask [for] support from the Woreda health professionals when they come here. If there is no response we ask from other government facilities in the kibele like schools…
…We ask to get from the health office. We discuss with others like [officers from] education and agriculture office. We prepare by ourselves and post it…
…We document using paper or notebook we buy or borrow from agriculture office. There is serious stationary problem…
…If there is shortage [of forms] we use notebooks for the time being and [transfer the information] when the forms are available…

On challenges related to the preparation of summary data, some HEWs mentioned the inadequate supply of standard summary forms, while others pointed out that collating data or doing tallies is time consuming and consequently takes away time from service provision. Furthermore, some HEWs reported that it has been difficult coping with data analysis demands and that they lack the skills to collate and present data (Table 4.6).

Table 4.6: Percentage of HEWs who reported to face challenges with summarizing data by type of challenge and region

Challenges with summarizing	Region		Total (n=250)
	Amhara (n=150)	Tigray (n=100)	
Inadequate supply of standard forms to summarize data	66.0	39.0	55.2***
Collating data/doing tallies takes away time from service provision	28.0	35.0	30.8
Collating data/doing tallies is hard for me	12.7	12.0	12.4
Collating data/doing tallies is too time consuming	28.7	29.0	28.8
I do not have enough skills to collate and present data	14.0	5.0	10.4*
Difficult to cope with the frequency of data presentation	21.3	14.0	18.4

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

4.3 Data Use for Decision Making

In this section short-term outcomes are examined; that is, how and the extent to which HEWs use data to plan, monitor, and inform the services they provide at the community and health post levels. In doing so, the role of HEWs in data reporting and interpretation and challenges they face while performing these tasks is examined.

4.3.1 Data Reporting to Higher Program/Administrative Levels

HEWs are required to report data to the health centers which oversee their assigned health posts and to the WorHOs to inform the design and implementation of health programs at the district level. The percentages of HEWs who report data to the health center and WorHO at different intervals are shown in Table 4.7. The percentages of HEWs who said they report service data to the health center vary by the reporting interval: weekly (80%), monthly (94%), quarterly (95%), and annually (91%). There is also little variation in the percentages of various reporting frequencies of HEWs to WorHOs, and the regional variations are statistically insignificant. Less than one-fifth of HEWs who reported to submit service data to health centers reported that they submit service data to the WorHOs that are already collecting the service data from the health centers.

Table 4.7: **Percentage of HEWs reporting data to health centers and WorHO by reporting interval**

Frequency of reporting data	Health Center			Woreda Health Office		
	Amhara (n=150)	Tigray (n=100)	Total (n=250)	Amhara (n=150)	Tigray (n=100)	Total (n=250)
Annually	96.0	84.0	91.2	20.0	13.0	17.2
Quarterly	98.0	90.0	94.8	18.0	16.0	17.2
Monthly	100.0	85.0	94.0	18.0	16.0	17.2
Weekly	97.3	55.0	80.4	12.7	14.0	13.2

The HEWs reported that the WorHOs use the data they collect from the health centers and/or the HEWs to plan health programs for the districts and monitor performance of health facilities/providers. Regarding the feedback they receive from health centers and WorHOs, about three-quarters of HEWs (77%) reported to usually receive feedback from the health center staff and 46% (54% in Amhara, 33% in Tigray) reported to usually receive feedback from WorHO staff.

One of the ways HEWs can improve data use is to receive feedback from their supervisors at health centers and WorHOs on how well they are doing with respect to data recording and reporting. Table 4.8 shows the percentages of HEW who reported to receive feedback from their supervisors on different aspects of their reports: timeliness, completeness, accuracy, and consistency of data as well as what they could/should do with the data. The percentages of HEWs who reported to receive feedback

from the health center staff on different aspects of their reports vary from 73% (information on what the health center staff will do with the data received from HEWs) to 86% (timeliness of reporting). Similarly, the percentages of HEWs who reported to receive feedback from the WorHO staff range from 75% (information on what the WorHO staff will do with the data) to 90% (timeliness of data reporting). The percentages of HEWs who reported to receive feedback from health center and WorHO staff are much lower in Tigray than in Amhara.

Table 4.8: Percentage of HEWs who received feedback on data reports by issues addressed in the feedback, region, and feedback provider

Receives feedback on	Health Centre			Woreda Health Office		
	Amhara (n=113)	Tigray (n=80)	Total (n=193)	Amhara (n=81)	Tigray (n=33)	Total (n=114)
Data completeness	91.1	57.5	77.1***	90.1	84.8	88.6
Data accuracy	92.0	51.2	75.1***	91.4	72.7	86.0**
Consistency in the data	93.8	58.8	79.3***	90.1	72.7	85.1*
Timeliness of data reporting	96.5	70.0	85.5***	93.8	78.8	89.5*
What I will do with the data	81.4	60.0	72.5***	75.3	75.8	75.4
What I should/can do with the data	92.9	62.5	80.3***	92.6	69.7	86.0***

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

4.3.2 Data Use to Plan, Monitor, and Inform Service Delivery

A major objective of this study is to determine how and the extent to which HEWs use data they collect to plan, monitor, and assess the services they provide. Having determined that an overwhelming majority of the HEWs have received some training to prepare them to use data for decision making, how and the extent to which the acquired skills were put to use was examined.

Ideally, HEWs record and analyze their monitoring data in order to understand salient health issues in the communities they serve, to communicate these findings to their communities, to advocate for changes, and to mobilize resources to make needed improvements to services. Feedback to decision makers at higher levels is also an important step in improving community-based services. HEWs were asked whether they had ever participated in a meeting organized by the health center, WorHO, FMOH, or other agency to discuss/review data they and others have collected from various service delivery points, with 87% (91% in Amhara, 80% in Tigray) of the HEWs reported to have attended such meetings at the health center level and 83% (88% in Amhara, 76% in Tigray) reported to have attended such meetings at the WorHO level. Less than one-third (27% total, 37% in Amhara, 12% in Tigray) reported participation in such meetings at the FMOH/donor agency level (data not shown).

Table 4.9 shows the different ways in which HEWs have used the data that they collect. Almost all HEWs reported to use data to plan future activities, monitor disease conditions in their communities (99%), track uptake of family planning and other health services (99%), project future family planning and other health needs of the community (99%), mobilize more resources (96%), compare performance against targets to determine gaps (96%), and plan home visits (97%). Although not shown on Table 4.9, 64% of HEWs (57% in Amhara, 74% in Tigray) reported to have had the opportunity to utilize summary reports to suggest improvements to family planning and reproductive health services.

Among NGO, WorHO, and health center staff, 46 of the 51 interviewed confirmed that the HEWs use the data they collect to make decisions. Of the 46, 45 (98%) reported that HEWs use the data to compare performance against targets; 44 (96%) reported that HEWs use the data to monitor disease conditions; 43 (94%) reported that HEWs use the data to plan future activities; 42 (91%) reported that HEWs use the data to track defaulters; and 41 (89%) reported that HEWs use the data to project future

family planning and other health needs of the community and mobilize more resources. In addition, 41 of the 51 NGO, WorHO, and health center staff reported that the data collected by HEWs feed into the HMIS system; respondents emphasized the need for HEWs to collect information from the people they serve, report data to higher level structures, and use data they collect to inform the services they provide.

Table 4.9: Different ways in which data are used by HEWs, by region

Ways in which data collected have been used	Region		Total (n=249)
	Amhara (n=149)	Tigray (n=100)	
Plan future activities	99.3	100.0	99.6
Monitor disease conditions	98.7	99.0	98.8
Track uptake of family planning and other health services and supplies	98.0	98.0	98.0
Project future family planning and other health needs of the community	98.0	100.0	98.8
Mobilize more resources	96.0	97.0	96.4
Compare performance against target to determine gaps	99.3	96.0	98.0
Determine size of population to plan for	98.0	94.0	96.4
Plan home visits	98.0	96.0	97.2

The majority of HEWs reported to receive Integrated Support Supervision from health center and WorHO staff on how to use data.[n] About 97% of HEWs (95% in Amhara, 100% in Tigray) reported to have received Integrated Supportive Supervision from health center staff, WorHO staff, and/or NGO staff.[o] The HEWs reported further that the health center and WorHO staff provide on-the-job assistance to prepare the charts and analyze data with a view to determining trends in program performance and to identify areas that need improvement and supplies of commodities/medicines. A higher proportion of HEWs reported to receive help from the health center staff (79%) than from the WorHO staff (67%; data not shown).

The NGO, WorHO, and health center staff respondents confirmed that they provide monitoring, supportive supervision, and on-the-job technical support to the HEWs to enable them to implement their data collection and reporting activities adequately. Of the 51 staff, 50 reported to provide support to collect and report data, 44 reported to provide support to analyze and interpret data, and 43 reported to provide support to use data for decision making.

Regarding the relevance of the training they had received to their ability to use data to plan, monitor, and inform service delivery activities, an overwhelming majority of the HEWs reported that the training they have received prepared them for these functions. They noted that without the pre-and post-service trainings, it would have been impossible for them to perform these functions. Table 4.10 shows that the percentages of HEWs who reported that the training programs helped to prepare them for the different data recording, reporting, and use functions vary by type of data management/use function. For instance, the data suggest that HEWs felt most prepared for data collection tasks and least prepared for use of data to analyze/make referrals. There were some regional differences in the perceived abilities of the

[n] Integrated Supportive Supervision is a process of guiding, helping, training, and encouraging staff to improve their performance in order to provide high-quality health services through the use of integrated tools for all priority programs and motivating health service providers at all levels. Supervision is a helping process and not an inspection. Supportive supervision applies a practical system of objective measures to foster improvements in the procedures, personal interactions, and management of primary health care facilities.

[o] Of those who have received supportive supervision, 90% received it from health center staff, 92% from WorHO staff, and 76% from NGO staff.

HEWs to analyze data, report summary data, and use data to analyze referrals. For all data management/use competencies, Amhara has a higher proportion of HEWs who felt that the training they had received enabled them to perform the various data for decision making-related functions.

The majority of the interviewed NGO, WorHo, and health center staff also noted that the HEWs possess adequate skills for data collection and reporting activities. Of the 51 staff who responded to the question on whether HEWs have adequate skills for data collection and reporting activities, 47 (92%) reported that HEWs have sufficient skills to collect data from clients; 46 (90%) reported that HEWs have sufficient skills to report data to higher authorities; and 36 (71%) reported that HEWs have sufficient skills to use data to review programs and make decisions.

Regarding feedback to the community, 85% of HEWs (75% in Amhara, 100% in Tigray) reported to have shared summary reports/data with community members. Also, 99% reported to work with community health workers, the women development army, and the health development army, which work closely with community members. NGO, WorHO and health center staff confirmed that HEWs have had opportunities to report back to community members through community conversation sessions, safety-net meetings, women development army meetings, pregnant mothers experience-sharing sessions, and kebele council meetings.

Table 4.10: Percentage of HEWs who felt that the training received enables them to perform data management/use functions by region

Training received enables HEW to:	Region		Total (n=248)
	Amhara (n=148)	Tigray (n=100)	
Collect data from clients and households	92.6	86.0	89.9
Analyze data	91.2	80.0	86.7*
Report summary data	89.2	73.0	82.7**
Use data to review program activities	85.8	80.0	83.5
Use data to plan activities	87.8	85.0	86.7
Use data to analyze referrals	81.8	69.0	76.6*

Cross tabulation with significance testing using chi-square test: *p≤0.05; **p≤0.01; ***p≤0.000.

4.3.3 Referral Activities of the Health Extension Workers

One of the ways to strengthen the health system is to have effective linkages between community-based and health facility-based services. Because of the high priority given to system strengthening in E2A project activities, an attempt was made to examine HEWs' referral activities.

The results show that a significantly high percentage of HEWs have been trained to refer clients to a health center for other services, and that the training they received has enabled them to use data to analyze referrals. Referring clients to health centers and organizations for services they could not adequately provide helps to strengthen the health system by establishing linkages between community-based and health facility-based health services on the one hand, and between community-based health and non-health services on the other, thereby facilitating access and continuity of services for their clients. The HEWs were asked a few questions to determine the extent to which they have been involved in referral services, the challenges they have faced while providing those services, and how they have addressed the challenges (Table 4.11).

Referring clients to a health center is an integral part of the HEWs' work. Almost all (97%) of the HEWs reported that they refer clients to health centers as needed; however, only 7% have referred clients to NGOs, usually for social services. With the exception of one HEW in Amhara, all (249) of the HEWs reported that clients are always referred to health centers for services that are beyond their scope; that

is, not in the list of services they are allowed to provide by FMOH guidelines. In addition to being beyond their scope, services for which clients were referred to the health center included: (i) those the health centers could provide more adequately (91% in Amhara, 77% in Tigray); (ii) those the HEWs were not trained to provide (85% in Amhara, 43% in Tigray); and (iii) those for which clients were required by FMOH guidelines to be referred to the health centers (65% in Amhara, 46% in Tigray). Among HEWs interviewed, 65% reported that they applied national guidelines each time they made referrals. This finding implies that about one-third (35%) of the HEWs do not always follow the guidelines in making referrals. Strategies should be developed to ensure full compliance.

Table 4.11: Summary of referral activities among HEWs

Percentage of HEWs who:	Region		Total (n=250)
	Amhara (n=150)	Tigray (n=100)	
Receive training on referring clients to health center (HC) for services	88.0	86.0	87.2
Refer clients to HC as part of their regular job	98.0	96.0	97.2
Refer clients to NGO for other services	9.3	3.0	6.8
Refer clients for the following reasons:			
Services beyond their scope	99.3	100.0	99.6
Ministry of Health regulations	65.3	46.0	57.6
Not trained to provide required services	85.3	43.0	68.4
HC/NGO can provide services better	91.3	77.0	85.6
Always apply national guideline when making referrals	64.0	67.0	65.2
Reported to usually have referral forms	69.3	54.0	63.2
Reported to usually have enough referral forms	28.0	22.0	25.6
Reported existence of formal referral arrangement between their health post and HC/NGO	91.3	93.0	92.0
Reported specific ways of ensuring clients go to places they are referred to:			
Getting feedback from the receiving facilities	25.3	20.0	23.3
Getting feedback and visiting households	38.7	1.0	23.6
Household visit only	18.2	14.0	16.4
Accompanying referred clients to HC or check from HC	10.7	44.0	24.0
Using volunteers to confirm	3.3	11.0	6.4
Other	4.0	10.0	6.4
Reported to usually get a feedback from HC/NGO on their referrals	52.7	49.0	51.2
Reported various challenges in the implementation of the referral system:			
Insufficient forms	63.3	78.0	69.2
Inability to follow up on referrals	61.3	18.0	44.0
No designated staff to monitor referrals at sending and receiving facilities	58.0	40.0	50.8
Insufficient HCs to refer clients to	15.3	9.0	12.8
Reluctance of clients to accept referral	55.3	12.0	38.0

To ensure a proper system of referrals, there should be adequate supply of referral forms. A completed referral form provides information on the referred client, the sending and receiving facility/provider, and the type(s) of service required by the referred client. Referral services may be deferred when required forms are not available unless the HEWs are able to improvise. The study shows that these forms are not always available. About 60% of HEWs (69% in Amhara, 54% in Tigray) reported to usually have forms and only 26% (28% in Amhara, 22% in Tigray) reported to usually have enough standard referral forms to give to all clients who require referral services. To avoid delays in referring clients for essential

services when standard forms were not available, some HEWs reported to have used improvised forms for referrals.

Referrals are meaningful and will achieve desired outcomes only when patients go to the health center or other places to which they are referred and receive required services. Referrals need to be managed, particularly by the sending facility (in this case the health post), to ensure patients obtain the services for which they have been referred. The HEWs reported a couple of strategies that have been adopted to ensure their clients go to a health center or other places to obtain services for which they have been referred. These strategies, which vary significantly between the two regions, include: (i) getting feedback from the facilities as to which clients have been referred for services (25% in Amhara, 20% in Tigray); (ii) combining feedback from receiving facilities with follow-up household visits to the referred patients (39% in Amhara, 1% in Tigray); (iii) household visits only (18% in Amhara, 14% in Tigray); (iv) accompanying referred clients to a health center or confirm from the health center that the clients actually visited for required services (11% in Amhara, 44% in Tigray); and (v) using volunteers to confirm attendance at the receiving facilities (3% in Amhara, 11% in Tigray). Among HEWs interviewed, 51% (53% in Amhara, 49% in Tigray) reported that they usually get feedback from a health center or NGO about their referrals.

The HEWs highlighted a couple of challenges facing the implementation of referral services in Ethiopia. The first major challenge is insufficiency of referral forms (63% in Amhara, 78% in Tigray). This report is consistent with the fact that only 26% of HEWs reported to always have had enough referral forms. Some HEWs reported to have used improvised forms when standard forms were not available. The inability to follow up on referrals was reported as another major challenge (61% in Amhara, 18% in Tigray). Although several HEWs reported getting feedback from the receiving facilities, such feedback might not contain information on care/treatment services provided.

Consequently, in the absence of an adequate follow-up mechanism, HEWs might not be well informed of the type of care or treatments provided at the health center or NGO facility—51% of HEWs (58% in Amhara, 40% in Tigray) reported a lack of designated staff to monitor referrals at sending and receiving facilities as another major challenge. Other challenges reported include reluctance of clients to accept a referral (55% in Amhara, 12% in Tigray) and an insufficient number of centers to which they can refer clients (15% in Amhara, 9% in Tigray). Efforts should be made to address these challenges in order to increase the efficiency of implementation and desired outcomes of referral services.

4.4 Data Use Challenges Among Health Extension Workers

HEWs face a number of challenges regarding utilization of data they record at households and health posts to improve health services they deliver. The challenges include, among others:

- Lack of capacity to interpret results—some of them expressed the need for more training to increase their ability to interpret data;
- A high workload, which makes it difficult to have adequate time to critically analyze the data to inform future service delivery activities;
- Inadequate logistical support to implement decisions—a couple of them reported that they lacked the ability to do anything beyond what they were instructed to do even when the data they had appeared to suggest the need to do something else; and
- Lack of commitment on the part of the community to attend meetings requiring some collective decisions.

5. Summary/Conclusion

The main objective of this study was to examine the extent to which HEWs use data collected from households and health posts to improve/strengthen delivery of family planning, reproductive health, and other health services. In line with this objective and using various data collection tools, data were collected from 250 HEWs, 25 health center staff, 10 NGO staff, and 16 supervisors of HEWs at WorHos. FGDs with community volunteer workers (community health workers, women development armies, and health development armies) were conducted. A range of issues were examined, from training in data collection, data management, and use to actual use of data to plan, monitor, and inform service delivery activities.

Most HEWs (more than 80%) reported to have received both pre- and in-service trainings on data use/management and demonstrated confidence in their ability to perform various data management functions. The study reveals regional differences in the proportion of HEWs trained in data management. Except for reporting of summary data, Amhara region had a lower proportion of HEWs trained in different areas of data management than Tigray. While most HEWs reported to use the client register to record information, less than half reported to use family folder and 12% the new tickler file system. Furthermore, the HEWs are generally able to calculate percentages and prepare tallies/charts despite the challenges they face regarding data recording tools. The study reveals an acute shortage of standardized HMIS tally sheets in some places. Consequently, the majority of HEWs (80%) reported to use improvised tally sheets to record information.

Although data management has become an integral part of what the HEWs do, delivery of a package of health services is their primary responsibility. The services provided by HEWs include antenatal care, postnatal care, family planning, training of volunteer workers and ensuring hygienic conditions prevail in the communities. Responses from different segment of the population show appreciation for HEWs' work.

With respect to data use, over 95% of HEWs reported to use data to inform decisions on service delivery. HEWs also participate in meetings on data use at various levels and receive feedback on various aspects of the data they report to the NGO, WorHO and health center staff.

Despite the high rate of data use among HEWs, some of them still face challenges, which include the following: i) lack of capacity to interpret results; ii) heavy workload, which makes it difficult to allocate sufficient time to critical analysis of data to inform future service delivery activities; iii) inadequate logistical support to implement decisions; and iv) lack of commitment on the part of the community to attend meetings requiring collective decisions.

The conclusions from this study follow.

With strong political commitment, particularly at lower levels of the health system, and adequate technical and financial support, frontline health workers can develop the skills needed to use data to inform their service delivery activities. At the time of the study, health workers at all levels of the health system in Ethiopia were being trained to use data for decision making as part of the management approaches mandated by the Government of Ethiopia. The study was conducted in two of the regions where IFHP supports the implementation of activities related to data use for decision making. Though not intended as an assessment of the effect of IFHP's technical and financial support on the ability of HEWs to use data for decision making, reports from HEWs indicate that the IFHP support has contributed significantly to acquiring the skills they need to use data for decision making.

Continuous and integrated training in data use and service delivery helps to build the capacity of frontline health workers to use data to inform delivery of health services. Besides the initial pre-service training, the HEWs reported that in-service training at intervals contributed to building their capacity to use data. Also, since the training in data use is usually combined with training in delivery of health services, HEWs are trained to see how they can use data they collect to detect strengths and weaknesses in their program activities.

Besides strong political commitment and training (pre- and in-service), Integrated Supportive Supervision is a facilitator of data use. Integrated Supportive Supervision provides HEWs with opportunities for continuous learning in data use for decision making.

Constant feedback from supervisors builds confidence in data use by confirming the quality of data the HEWs collect and report, and gives direct attention to areas that need strengthening. Thus, HEWs expect to receive suggestions on how best to use their data from time to time.

HEWs need assistance with developing strategies to achieve a balance between data management/use and service provision demands on their time. One of the major complaints of HEWs is that data management/use activities take time away from their primary assignment of providing services to the communities. As long as HEWs see data management/use and service provision activities as competitive rather than complementary, data management activities may fall off the radar. Efforts should be made and strategies developed to review the workload of HEWs from time to time to ensure they are not overworked.

The need for HEWs to improvise essential data collection and reporting forms needs to be eliminated. Having to improvise data forms can discourage health workers from collecting and reporting required data, with the result that data may not be available for decision making.

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