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Stephanie Hackett **November 20, 2012**

Knowledge, attitudes, and practices surrounding maternal and newborn health among community health workers in Amhara Region, Ethiopia.

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MPH

Global Health

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An abstract of
A thesis submitted to the Faculty of the Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of Master of Public Health in Global Health
2012

Abstract

Knowledge, attitudes, and practices surrounding maternal and newborn health among community health workers in Amhara Region, Ethiopia.

By Stephanie Hackett

Background:
Ethiopia has a maternal mortality ratio of 673 per 100,000 live births and a 1 in 27 lifetime risk of maternal death[1]. The 2005 Ethiopia DHS reports 94% of births occur at home and a skilled attendant attends only 5.7% of births. The neonatal mortality rate also remains high, with 39 per 1,000 newborns dying within the first month of life. In a country where 85% of the population is classified as rural, access to health services presents an immense challenge in the provision of adequate healthcare[2].

Objective:
This study aimed to understand factors associated with the delivery of maternal and newborn health services by community-based health workers in Amhara region Ethiopia.

Methods: A survey was conducted with 169 community-based health workers in Amhara region Ethiopia. The surveys collected data on knowledge, attitudes and practices surrounding 18 key maternal and newborn health practices as well as demographics and perceived trust and confidence during the antenatal, labor and delivery, and postpartum period.

Results:
HEWs are the most educated ($p<.000$), have received more Clean and Safe Birth training ($p<.000$), and have the greatest overall knowledge of 18 maternal and newborn health practices that reduce mortality ($p<.000$), however in practice only 71% of HEWs attend births and among those who do, TBAs are attending statistically more births each month ($p<.000$). While only a tenth of the vCHWs attend births they have higher overall knowledge of key maternal health practices as compared to TBAs.

Discussion:
While most community-based health worker attitudes and knowledge support the goals of the Ethiopian Health Extension Program, in practice, TBAs are still providing the most labor and delivery care. It is important to bridge the gap in knowledge and practices of community health workers programmatically in order to ensure community members receive the most effective maternal and newborn care.

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Acknowledgements

I would like to thank and acknowledge all of the people over the last three years who made this thesis possible. This research was completed as part of a larger Gates Foundation funded project, the Maternal and Newborn Health in Ethiopia Partnership (MaNHEP), which was comprised of a large interdisciplinary team of faculty, staff, and students. Lynn Sibley, primary investigator of the Woodruff School of Nursing, compiled a wonderful team of faculty to conduct baseline data collection including Craig Hadley (Department of Anthropology), Deb McFarland (Rollins School of Public Health), and Rob Stephenson (Rollins School of Public Health). Their diverse expertise ensured I learned everything I ever wanted to know about field research and more.

The team of graduate students also working with MaNHEP including Kate Finneran, Lisa Oot, Anna Handley, Sonya Datta-Sandhu, Sarah Furlong, and Christine Bourey, provided academic collaboration as well as technical and personal support throughout our long days in the field. My sanity greatly thanks you for your companionship, ability to adapt, and skills at playing card games. I would also like to thank Michelle Dynes, PhD candidate at the Woodruff School of Nursing, in particular for her incredible mentorship from day one of survey development. I feel lucky to have not only benefitted from her wealth of academic wisdom, but to have also developed an invaluable friendship in the process.

This survey would not have been possible had it not been for the large team of enumerators who put in countless hours in the field with incredible tolerance to constantly changing schedules and leadership. I would also like to thank Digsu Negese and Dariye Getachew, who traveled all the way from Gondar Public Health College to serve as enumerators and translate this lengthy survey into Amharic. A huge thanks also goes out to the many community-based health workers who made themselves available for this survey at a moments notice.

Financial support for field activities was also made possible by the MaNHEP project. Without their support of first hand field experience, poor graduate students would not have been able to garner this unique and integral practicum experience.

I would like to thank Rob Stephenson for the massive amount of support, guidance, and patience he has had with me over the last three years. While I had no idea what I was getting myself into as I attempted to complete PA school and write this thesis, his presence and availability has been grounding and I have learned so much throughout this process.

Finally, I would like to thank my husband for his tireless support of my overambitious endeavors. I am eternally grateful for his confidence in me and in our relationship to persevere and strengthen throughout three months on different continents, two masters' programs, and the majority of every school break spent working on my thesis. Thank you for believing in me and believing that we could plan and pull off the best wedding ever during all of that chaos. Thank you Ryan, Lori, Louis, and Jeff for all of your love and support during this wonderful roller coaster.

Table of Contents

List of Figures

List of Tables

Chapter One: Introduction

Ethiopia continues to have one of the world's worst maternal mortality rates at 673 per 100,000 live births and a 1 in 27 lifetime risk of maternal death[1]. Neonatal mortality also remains exceptionally high at 39 per 1,000 live births[2]. Additionally, the 2005 Ethiopia DHS reported that 71.5% of women received no antenatal care (ANC) and that 94% of births occur at home with only 5.7% of births attended by a skilled attendant[2]. In a country where 85% of the population is classified as rural, access to health services presents an immense challenge in the provision of adequate healthcare[2].

Over 25,000 women will die and over 400,000 will suffer disabilities due to pregnancy complications such as sepsis, hemorrhage, unsafe abortion, and obstructed labor[3]. The Maternal and Neonatal Program Effort Index ranked services second to last out of the 55 countries evaluated and the worst in sub-Saharan Africa[4]. There is only a 4.5% met need for emergency obstetric care (EmOC)[5] and only one midwife per 20,000, making it nearly impossible for a rural woman to receive the appropriate ANC and a skilled attendant during delivery[3]. Since the median age at first birth in Amhara region is 18 years old, a significant portion of the total fertility rate (TFR) is the product of 15-19 year olds who, due to their physical immaturity, are at a much higher risk for pregnancy complications[4].

In order to best improve maternal health outcomes, Ethiopia must first implement efforts that align with the cultural norms of the country. The average age at first birth is 19.2 years with a TFR of 6 in the rural areas compared to 2.4 in urban areas[2]. While 71.5% of women received no ANC during their last pregnancy, urban women (32.4%) were much more likely than rural women (3.9%) to have WHO's recommended first antenatal visit

during the first four months[2]. Delivery attendance is typically by an unskilled attendant such as a relative or other person (61%) or a traditional birth attendant (TBA) (28%) instead of a skilled attendant[2].

Objective:

This study aimed to understand factors associated with the delivery of maternal and newborn health services by community-based health workers in Amhara region Ethiopia.

Aims:

- Assess the level of maternal and newborn health (MNH) knowledge among community-based health workers in Amhara Region Ethiopia.
- Survey the attitudes and practices of community-based health workers towards MNH duties.
- Explore the perceptions of frontline health workers (FLWs) towards the duties, trust, and knowledge of other FLWs in providing MNH services.

Background

While maternal and newborn health statistics for Ethiopia are alarming, the poorest MNH outcomes and indicators in the country are seen almost exclusively in Amhara region[2] (Table 1.1). Among 25-49 year olds, Amhara has the lowest median age at first marriage (14.4 years old) first intercourse (14.7 years old) and first birth (18 years old) in the entire country[2]. Neonatal (50 per 1,000 live births) mortality is also highest in Amhara region[2]. In Amhara region the largest percentage of women deliver at home and the fewest percentage of women reported having the assistance of a health professional during their labor and birth[2].

Table 1.1: A comparison of MNH data before Amhara region and all of Ethiopia

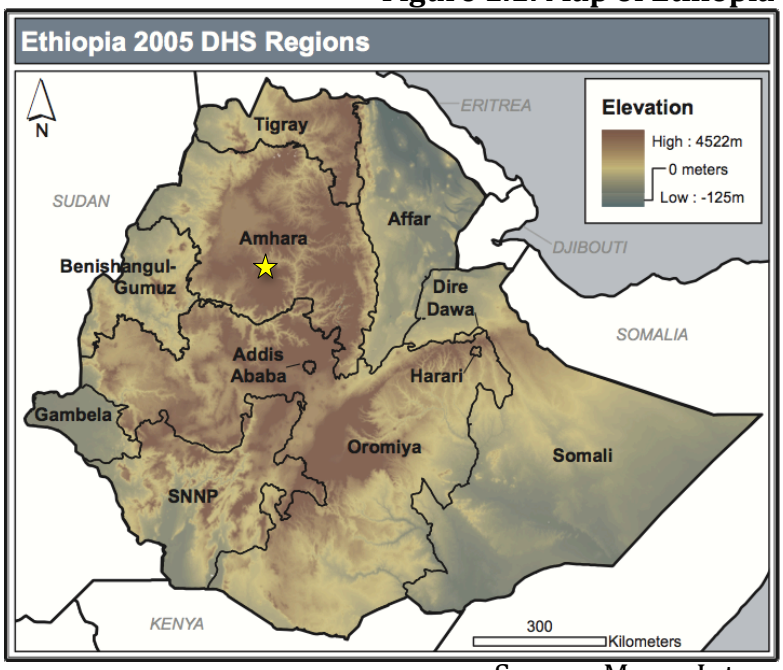
	Amhara region	Ethiopia
Total fertility rate	5.1	5.4
Median age at first birth among 20-49 year olds (years of age)	18 .0	19.0
Median age at marriage among 20-49 year olds (years of age)	14.4	16.5
Mean age at first sexual intercourse among 20-49 year olds (years of age)	14.7	16.5
Neonatal mortality (per 1,000 live births)	50	41
Infant mortality (per 1,000 live births)	94	80
Percentage of women receiving no antenatal care	73.1	75.1
Percentage of women delivering at home	96.3	94.1
Percentage of women with assistance during labor and birth provided by a health professional	3.7	5.7

Amhara Region

This research study was carried out in Amhara region Ethiopia, which is located in the northwest quadrant of the country (Figure 1.1). Amhara region is predominantly mountainous and is home to the country's highest peak, Ras Dashen, which is the fourth highest in Africa at an elevation of 4620 meters[6]. Ethiopia's largest lake, Tana, is also located in the region[6].

Amhara is the second most populous region of Ethiopia with a population of 17,214,056[7]. Of this population, 87.4% are classified as rural residents[7]. The annual population growth rate of Amhara, 1.7, is now the lowest in the country[7]. Amharic, which is the national language of Ethiopia, also serves as the working language of Amhara[7]. While there are over 85 ethnic groups represented in Amhara, 91.48% of the population reported their ethnicity as Amhara[7]. The predominant religion of Amhara is Ethiopian Orthodox (82.5%) followed by Muslim (17.2%)[7]. The major products of Amhara are Teff, barley, wheat, oil seeds, sorghum, maize, wheat, oats, beans and peas[6].

Figure 1.1: Map of Ethiopia



Source: Macro International Inc, 2008

The majority of women (69.5%) and men (62.2%) in Amhara have no education and 74.8% of women and 45.6% of men cannot read at all[2]. The primary occupation of men (91.7%) and women (68.4%) is agriculture however, 59.9% of women have not been employed in the last year[2].

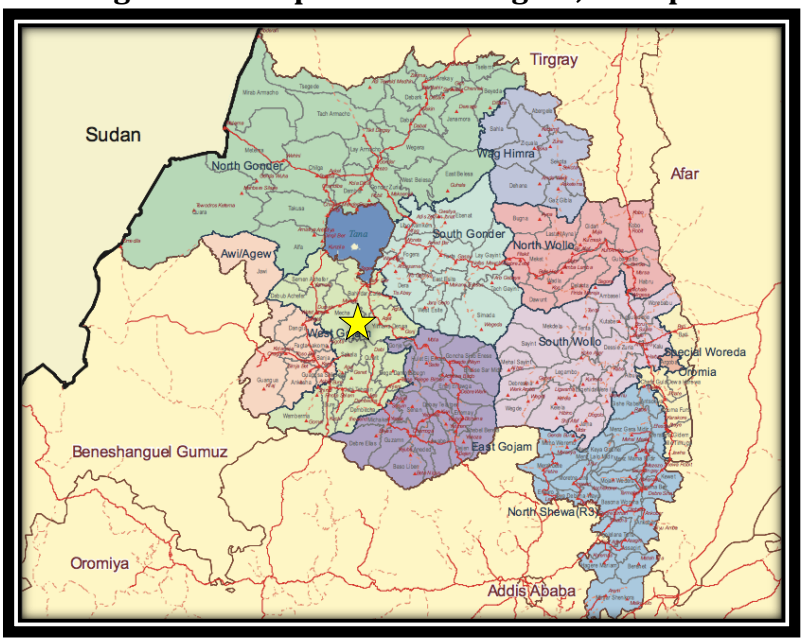
The total fertility rate of Amhara region is 5.1 compared to 5.4 nationally[2]. Contraception use remains low with 16.1% of women using any method of contraception and 15.7% using any modern method. Of currently married women, 29.7% report an unmet need for family planning[2].

West Gojjam Zone

Amhara region is divided into 12 zones. This study was based in the West Gojjam zone (Figure 1.2), which is located on the southern border of lake Tana. West Gojjam has a population of 2,107,723, 91.3% of which is rural[7]. West Gojjam region was selected based on its proximity to Bahir Dar, which is the capital city of Amhara region. Although Bahir Dar

is located within West Gojjam zone, it is identified as a separate zone. With a population of 220,344, Bahir Dar is the seventh most populous city in the Ethiopia[7].

Figure 1.2: Map of Amhara region, Ethiopia



Source: UN OCHA Ethiopia 2010

Woreda level descriptions

West Gojjam is further divided into fourteen woredas. Data collection occurred in the woredas of North Achefer (Semien Achefer), South Achefer (Debub Achefer), and Mecha[7](Figure 1.3). These three woredas were chosen based on their representative demographic composition and proximity to Bahir Dar, where research operations were based. In order to collect representative health data from each of these woredas, two health centers were identified in each location. All kebeles served by these health centers were then included in the study population.

Mecha, located southwest of Bahir Dar, was the largest woreda surveyed[7] (Figure 1.4). Merawi Health Center and Berakat Health Center were the two health centers chosen for Mecha. Merawi Health Center and the six kebeles it serves, Kurete Bahir, Bachema, Enashenfalen, Enameret, Kudeme, and Engute, were located the closest to Bahir Dar and

thus the easiest to reach. (Figure 1.4). Berkat Health Center and the kebeles it serves were the most difficult to access due to their great distance from an all-weather road. Due to time and vehicle constraints only Barkat and Zemenehiwot kebeles were surveyed (Figure 1.4).

Figure 1.3: Map of West Gojam Zone

Source: UN OCHA Ethiopia 2010

South Achefer is located west of Bahir Dar and was the next closest woreda reached by vehicle. It has a population of 155,863, 90.0% of whom are rural[7](Figure 1.4). Lalibela Health Center and Durbetie Health Center were chosen to represent South Achefer. Lalibela Health Center serves Lalibela, Dilamo, and Korench kebeles. Durbetie Health Center serves Ahurie, Guta, Care, and Abechikili Zuria (Figure 1.5)

North Achefer, located to the northwest of Bahir, was the farthest woreda surveyed and had the largest rural population[7] (Figure 1.4). Liben Health Center and Yesemala Health Center were selected for surveying. Liben Health Center serves Kongerie, Denbola, and Liben Zuria kebeles. Yesemala Health Center serves Yesemala Janket, Kualabaka, Ambeshen, and Shambela kebeles (Figure 1.5).

Figure 1.4: Woreda demographics

Woreda	Population[7]	Rural Population[7]
Mecha	292,250	92.2%
South Achefer	155,863	90.0%
North Achefer	173,211	93.2%

Figure 1.5: Study kebeles and their geographic locations

Woreda	Cluster Health Center	Kebele/ Name of Health post	Distance from Bahir Dar by Car	Distance from Road by Foot
North Achefer	Liben Health Center	Kongerie	104km	5km (1hr)
		Denbola	110km	0
		Liben Zuria	104km	0
	Yisemala Health Center	Yesemala Janket	90km	0
		Kualabaka	90km	4km (40min)
		Ambeshen	90km	6km(1hr 20mins)
		Shambela	90km	10(2hrs)
South Achefer	Lalibella Health Center	Lalibela	78km	0
		Dilamo	78km	5km (1hr)
		Korench	78km	8km (1.5hrs)
	Durbetie Health Center	Ahurie	68km	0
		Guta	60km	7km (1.25hrs)
		Care	60km	8km (1.5hrs)
		Abechikili Zuria	60km	0
Mecha	Berakat Health Center	Barkat HP	35km	21km
		Zemenehiwot	35km	25km
	Merawi Health Center	Kurete bahir	35km	10km
		Bachema	31km	0km
		Enashenfalen	35km	4km
		Enameret	35km	3km
		Kudeme	35km	5km (if wet)
		Enegute	35km	5km (if wet)

Governmental Involvement

Currently policies and interventions have produced varying degrees of progress towards improved maternal health outcomes. For example, Care International implemented the *Foundations to Enhance the Management of Maternal Emergencies* in order to reduce the deficit in EmOCs. This involved renovations, provision of necessary supplies, and training of the hospital staff in the ACNM Life Saving Skills program. Ethiopia saw a modest increase in the met need for EmOCs from 2% in 2000 to 4.5% in 2004 and a

decline in case fatality rate from 10.4% to 5.2% over the same time period but struggled to make their desired progress due to inadequacies in the health infrastructure, resource scarcity, transportation barriers, and poor management [5].

The Home-based Life Saving Skills Program (HBLSS) was implemented in the Guji region of Southern Ethiopia to reach the 94% of women who deliver at home. HBLSS provides those unskilled and predominantly illiterate women, caregivers, and traditional birth attendants (TBAs) who attend the vast majority of Ethiopian births, basic instruction on maternal and newborn first aid through pictorial "Take Action Cards" and demonstrations. Evaluation has shown the HBLSS guides' performance scores to be much better than other unskilled attendants in areas such as "Too Much Bleeding (98 v. 19)," and "Referrals (104 v 21)" respectively[8].

In 1993 Ethiopia created and adopted the Health Policy of the Transitional Government of Ethiopia. A four-tier health system was created that has as its most basic component primary health care units that include a health center and five health posts. These units are over seen by district health offices due to the national health policy's decentralization of the health system, which has created barriers to the national adoption of community programs to serve those at the source of maternal mortality[9].

The Ethiopian Ministry of Health has formally adopted and implemented the Making Pregnancy Safer (MPS) initiative. This program focuses on the country's five most populous regions that account for 90% of the population by focusing on both the central and regional level. This ambitious initiative supported the development of the National Reproductive Health Policy and emphasizes the need for EmOCs, skilled birth attendance, and referral

among health institutions. Funding, personnel, and adequate implementation strategies remain the largest barriers to significant health improvements[10].

In 2001 USAID created nearly 200 Woreda Advisory Committees (WACs) that have trained over 5,000 Reproductive Health Agents (RHAs) that educate and advocate for family planning, child health, nutrition, maternal health, and sanitation. The WACs meet quarterly to discuss district health and are an effective example of community level interventions that maintain district oversight and collaboration[11].

Study population – FLW's

The study population defined as frontline health workers (FLWs) consisted of Health Extension Workers (HEWs), Voluntary Community Health Workers (vCHWs), and Traditional Birth Attendants (TBAs). These three types of community-level health workers were selected because they all serve the maternal and newborn health needs of the local community in varying capacities. As 96.3% of births in Amhara occur at home, these FLW fill integral gaps between the often-isolated women in the kebeles and area health centers[2].

In Amhara, family members attended the largest portion of births (64.6%) followed by TBAs (39.6%)[2]. However, unlike family members, TBAs consistently attend multiple births a year and thus have long been looked to as culturally accessible and appropriate providers of delivery care. Even though TBAs provided less than 1% of pregnant women with antenatal and postnatal care, it was important to fully explore their knowledge and practice of healthcare from the antenatal to the postnatal period in order to better understand their role and potential impact on maternal and newborn health at the community level[2].

In 2003, the Ethiopian Federal Ministry of Health developed a comprehensive Health Extension Program (HEP) to address the deficit that existed within the Ethiopian healthcare system[12]. HEWs were developed to be at the core of the HEP in order to improve the availability of healthcare for the over 84% of the population that lives in rural areas[12]. HEWs are all females, over the age of eighteen, with at least a tenth grade education level and were recruited from the communities that they serve[12]. HEWs have undergone a year of technical and field training in order to address the Health Extension Package that covers disease prevention and control, family health, hygiene and environmental sanitation, and health education and communication in the kebeles that they are working in[12]. Health posts are being constructed in every kebele[12]. Two HEWs are then placed in each kebele to provide the community with maternal and newborn health services among the other Health Extension Package items[12].

Volunteer community health workers serve their kebeles by providing education and community mobilization on a range of topics[12]. There are a variety of vCHWs that are trained on different subjects. Some of them include Community-Based Reproductive Health Agents (CBRHAs), Community Health Promoters (CHPs), Community Health Assistants (CHAs) and community volunteers for prevention of malaria and other health problems[12]. For the purposes of this study only CBRHAs, CHPs, and CHAs were included because they are responsible for maternal and newborn health duties[12]. All vCHWs are supervised by the HEWs in their kebele[12].

Summary

This thesis will contribute novel information about Ethiopia's FLW, who currently supply or are expected to supply community-level MNH services. While these services

were designed to bridge the large gap in accessible and skilled health professionals, relatively little data exists about the efficacy of these government sponsored community health workers and their impact on MNH outcomes. In order to better assess the FLW contribution to MNH it is imperative to understand the knowledge, attitudes, and practices of these community health workers. This information can then be used to inform more effective and practical MNH policies and programs that address both national and local MNH needs.

Chapter Two: Comprehensive Review of the Literature

Community Health Worker Programs

Since the 1978 Alma Ata Declaration primary health care has been the focus of World Health Organization (WHO) states. In article seven of the Declaration, emphasis was put on the promotion of community participation in the development and operation of primary health care strategies[13]. This blossomed into the creation of community health worker (CHW) programs around the globe, which were designed to bridge the gap between the government healthcare system and the community[14, 15]. While every program is different, CHW programs typically involve paid and/or volunteer health workers who have been trained to deliver basic community-based healthcare, provide referrals to health centers, and educate the community about a variety of health topics[15].

Community Health Worker programs have been well researched and have shown that CHWs, who are often illiterate, impoverished, and geographically isolated, can be trained to effectively deliver health services that improve health outcomes[16, 17]. More specifically, these low-cost and highly effective CHW programs are being used to tackle the

difficult task of improving maternal and newborn health (MNH) indicators[18]. A meta-analysis of five trials conducted by Goglia and Sachdev in 2009 showed that home visits by CHWs were associated with a reduced neonatal mortality (RR=.62 CI=.44-.87) [19]. Few other researchers however have made such definitive claims about reductions in mortality. This is most likely due, not to the efficacy of the programs, but rather to the lack of comprehensive and long term monitoring and evaluation of CHW programs.

While it has been shown that "between 13% and 33% of maternal deaths could be eliminated by the presence of skilled attendance at delivery," the definition of a skilled attendant remains largely in flux[16]. In general the definition often includes the ability to use aseptic technique during delivery, actively manage the third stage of delivery, manage post partum hemorrhage, manually remove the placenta, and provide immediate newborn care and resuscitation. Carlough and McCall in 2005 showed that these are skills that can be competently demonstrated by CHWs after just six weeks of targeted training[16]. Few CHWs can currently practice at the leveled of a skilled attendant but it promising to know that with adequate training CHWs can deliver even more effective healthcare to their community.

Challenges faced by CHW programs

Implementation difficulties

Once CHW programs have been designed, they often face their first set of hurdles during program implementation. Weak health systems such as those that lack a generally cohesive public health care hospital system, a referral system, and adequate infrastructure pose great limitations on the success of a CHW program[18]. While typical public hospitals and clinics are few and have a large capacity, CHW programs are often designed based on

the principle of creating many smaller health posts (HPs) and staffing them with CHWs whom individually serve a much smaller capacity of people. Thus, a weak health system most often only becomes weaker with the introduction of CHW programs due to the further dispersion of limited functional resources.

Many countries often introduce CHW programs due to a lack of affordable and accessible healthcare, so it is no surprise that these same countries often experience detrimental human resource shortages. Cultural preferences often favor female assistance during delivery, but a lack of female CHWs trained in skilled birth attendance and a lack of skilled female staff in secondary and tertiary hospitals make it very difficult to deliver MNH services[18, 20]. In order to ensure the adequate availability of staff for CHW programs, governmental policies must be created that specifically target the human resources needs of MNH services[20]. These policies must address the societal and cultural biases that perpetuate illiterate and undereducated women to ensure a long-term expansion of MNH human resources.

Training deficiencies

The comprehensive training of CHWs and volunteers, which should include evidence-based practices and clinical experience, is imperative to their effective delivery of MNH services[18, 20, 21]. In order to address the unique needs of each country, CHW trainings should be designed with the participation of relevant stakeholders and community groups in conjunction with a thorough review of effective MNH practices[20]. The stakeholders and community members present a particularly unique perspective on the health needs of their community and how they feel it is best to address them. By increasing community involvement and ownership of the local MNH needs, personal motivation to address these

issues will also increase, which has been shown to improve CHW and volunteer productivity[15].

An important aspect of training that is often omitted due to financial constraints is clinical training. While CHWs may complete their training and adequately demonstrate their knowledge of MNH skills through role plays or surveys, their actual use of these skills in the community is lower than expected. In 2005, Chettry et al reported that among 112 of Nepal's Maternal and Child Health Workers only attend 1.4% of all expected births and although trained in the management of postpartum complications, they reported managing less than one a month. Without adequate hands on experience and knowledge, CHWs are less likely to feel confident in independently providing labor and birth care in their communities[16]. This decreased confidence may account for why so many trained CHWs report attending births only sporadically.

Just as most American health professions require continuing medical education in order to continue practicing medicine it is important to provide CHWs with additional training and refresher courses[14, 16, 22]. Retention of knowledge decreases over time after a training is given and CHWs report feeling as though they have insufficient knowledge of emerging health issues[14]. It is not however due to a lack of interest in continuing their education as many CHWs show a willingness to participate in refresher trainings[14]. Refresher trainings have been shown to significantly improve MNH knowledge and skills as well as increase CHW confidence[16]. In order to ensure that all of the effort and financial resources that are initially put into the training of CHWs are not wasted, it is important that CHWs receive some form of continuing education during the years following their initial training.

Overburdened Workers

As evidence for the utility of CHWs as agents for positive health outcomes has grown, so has their list of tasks to carry out in their communities. This increased burden of responsibility negatively impacts the ability of CHWs to effectively address all aspects of their job description[16, 18, 21, 22]. This issue is clearly highlighted with the case of Malawai's Health Surveillance Assistant (HSAs). The original role of HSAs was to support immunization activities, which brought Malawi's coverage rates above 80%. However, in recent years the role of HSAs has dramatically expanded to include a variety of primary healthcare activities including MNH services and the national immunization coverage has dropped 10%[22]. Kadzandira et al reported that while HSAs are now responsible for over ten health tasks, they spend 65% of their time on just four health tasks. With this many jobs, it means that the efficacy of performing all of these tasks is diminished. Additionally, CHWs will favor tasks that they feel confident performing or that they deem to be more important.

In order to ensure the stability and success of a CHW program, it is important that all parties involved with the program including community members, stakeholders, and CHWs have similar expectations[23]. For example, if a CHW works in a rural location where some of the families they are expected to visit are beyond a days walk and the CHW is not given some form of transportation, it is unrealistic to expect that these families would receive a monthly visit due to the time that would be taken away from performing their many other activities[16, 23]. This discordance between expectations and performance would reflect negatively on the programs goals, which could have been avoided had all parties discussed their expectations during program design and implementation.

The issues of inaccessibility in remote areas and a multitude of health tasks have been shown to decrease CHW productivity in remote areas[21]. While those who live the farthest from medical services are most in need of CHW visits, given the workload, it is increasingly difficult for a CHW to spend a whole day traveling to visit only one family for one health issue[16, 21]. Unfortunately, this means that while CHW programs have brought healthcare closer to those families far out of reach, for now accessible healthcare still remains illusive.

Program Oversight

Supervision and program monitoring acts to create an enabling environment and ensure that CHWs feel adequately supported in their work[18, 21, 22]. Program monitoring should document CHW visits as well as services provided, patient outcomes, and inventory. Regular meetings with a supervisor in conjunction with information from local program monitoring allow CHWs the chance to discuss the services they provide, remain up to date in their skills, and maintain a more complete understanding of the needs and issues in their community[21].

Regular CHW program supervision as well as communication in general between CHWs and local health officials is often insufficient or irregular [18, 22]. Without a system of feedback and communication, CHWs can feel insecure and isolated in their community. This isolation undermines the gap in healthcare between community members and secondary and tertiary clinics that CHWs were designed to bridge. With increased communication and information sharing, not only does the confidence and success of individual workers improve, but so does the success of the program[14].

Community Attitudes

The most successful CHW program is one that involves the local community in its development. Many communities still prefer the practice of traditional medicine by family or local community members[18]. Without addressing these realities by working with the local community to design and implement a program that aligns with their needs and cultural norms, community members have reported feeling ignored and misunderstood by CHWs[22]. Oftentimes a community may not understand the skill level of the CHW or understand the availability of their resources and services[15, 21]. Without understanding the general purpose of CHWs, especially in light of the more traditional healthcare alternatives, CHWs can be overlooked and poorly respected by their community members.

Research by Haq and Hafeez in 2009 has shown that media campaigns can be successful tools in promoting the image of CHWs as credible health workers among local community members[14]. Among the female community health volunteers (FCHWs) of Nepal identification cards and an annual FCHW celebration day have helped create more awareness and respect of their work among the local community[15]. While these campaigns and initiatives can improve the status of CHWs, they also require financial support. With resources for CHWs often such that HPs remain barren, it is unlikely that these media campaigns will receive widespread acceptance in the near future.

Insufficient Governmental Policy

In order to effectively improve maternal and newborn mortality rates, governments must not merely acknowledge MCH as a "health" issue but rather see it as a political one that is made a priority in the governmental agenda[24]. The governmental agenda and the policies that are created as a result set the tone for producing nationwide change. Not only are national policies needed that specifically support CHW programs, but they must also

permit CHWs to perform the health tasks that they are trained to complete[16]. Without explicit policies dictating the authorized tasks of CHWs, CHWs with adequate MCH training will be prohibited from providing much needed care to their communities[16]. Pakistan serves as a good example of a country with well directed MCH policies that have been prioritized in the agenda. While resource allocation is still insufficient, it has risen substantially over the last decade and has lead to improvements in MCH[20].

When advocating for MCH and the implementation of CHW programs, the importance of stakeholders in influencing governmental policy must be considered[20]. Whether they are major donors, members of the community, or currently working in the government or international health agencies, stakeholders can play key roles in the development of MCH policies[20]. Stakeholders must be seen as allies and should be conveyed a clear understanding of the issues surrounding MNH in their country as well as feel confident in the ability of CHW programs to address disparities in MNH. Their trust and support not only affects the implementation of MCH programs, but it also affects their future success when stakeholders remain committed to the cause[20]. Many may argue that the number of mothers and newborns who lose their lives everyday should be enough to influence policy, but without convincing those who are influencing policy of the importance of community MNH programs you would be unlikely to get the buy in from the community whose support you would need to make the program a success.

The structure and division of labor within a country's national government can also present immense challenges to MCH program implementation[20]. In some cases the federal government may be responsible for creating MCH health policies, while the regional or local governments may be responsible for program implementation[20]. A lack of support

from those agencies that design the policies creates a breakdown in effective implementation and often puts the burden on understaffed regional and local government offices[20].

When the federal government is readily subdivided into a number of segregated ministries the possibility for overlapping responsibilities increases. Often MCH is the territory of multiple ministries and these ministries often operate in isolation from each other[20]. This can lead to duplication of some efforts while entirely ignoring other important MCH needs[20]. In order for CHW programs and other health programs to be implemented and function most effectively, a chain of communication must exist between different governmental levels. Program support and supervision should ultimately be channeled through one source in order to maintain the integrity of the original policy as well as create a clear reference for the local program to access support.

Poor Government Funding

Financial constraints impact nearly all health programs, however they present unique challenges to national CHW programs[18, 22, 23, 25]. While resource shortages are common among health centers and hospitals in developing countries, the lack of supplies and community health facilities like a HP prevent CHWs from providing even the most basic health services that they have been trained for[22]. Not only does this impede the functioning of the CHWs, it promotes an image of an incapable health system and unqualified CHWs among the local community[22]. With low status given to the CHWs by the community it prevents the utilization of the CHW programs that is needed to prove their efficacy and promote health among the community. It also prevents governments from

seeing the true value and potential of the CHWs and thus further inhibits governmental funding.

In addition to program infrastructure and success, funding shortfalls also affect the salary and incentives of CHWs, which can negatively impact their motivation[22, 23]. Without feeling adequately compensated, it can be expected that overburdened CHWs are more likely to put in the minimum amount of effort given their limited resources. In the case of attending deliveries, which happen around the clock, there must be some kind of incentive, financial or otherwise, that encourages CHWs to actively provide these MNH services after their normal working hours.

Providing incentives doesn't necessarily mean that limited funding is spread even thinner. By simply making CHW program stakeholders fully aware of CHW motivations and expectations during program design and implementation the sustainability of the CHW program can be increased by ensuring that these incentives can be supplied with the original budget[23]. By designing appropriate incentives to align with the motivations of the CHWs, CHWs will likely feel more encouraged and empowered to provide their services.

CHW Profiles

Nepal- Female Community Health Volunteer Program

The Female Community Health Volunteer (FCHV) Program is an MNH CHW program established by the government of Nepal[15, 18, 23]. Volunteers are expected to spend about eight hours a week on community health initiatives such as family planning, MNH care, care of ill children, and immunizations[15, 18]. While about half of FCHVs are illiterate, they performed health services just as well as those FCHVs who were literate and nearly all FCHVs provided antenatal, labor and birth, and postnatal visits in the previous year[15].

Additionally, while this is a volunteer program, there is only about a four percent turnover rate annually[15, 23]. This low turnover rate is thought to be due in large part to the thorough understanding of FCHV desires by program stakeholders as well as the targeted incentives that FCHVs receive[15, 23]. FCHV incentives range from transport stipends for training and micro-finance loans to an official identification card and national FCHV day[15, 18].

A shortcoming of the FCHV program appears to be the ability of the FCHVs to engage the community members in MNH projects[18]. Additionally, as a volunteer program, the FCHV program lacks a formal system for FCHVs to provide feedback about their expectations and desires for the position[18]. These challenges appear to be in part, a result of the larger number of volunteers needed to provide the same number of hours of service that one paid CHW would provide. With more volunteers, this would further stress the already difficult tasks of communication and supervision that seem to plague even the best CHW programs. Also, without a formal campaign by the government to introduce the FCHVs, FCHVs must also serve as their own advocates in the community in addition to providing their health services.

Overall, the FCHV Program presents an important example of a low cost CHW program that is effectively utilizing many previously uneducated volunteers to provide better MNH services. It is often thought that using volunteers is too much of an investment with no guarantee that the volunteers will provide any services or remain with the program past the costly training investment. FCHV shows that when programs are specifically designed not only to address the needs of the local community, but also the motivations and interests of the volunteers prior its inception, that a sustainable and effective CHW program can be implemented.

Brazil- Family Health Program

Brazil's Family Health Program (PSF) uniquely integrates its CHW program within health teams comprised of four to six CHWs, with a physician, nurse, and nurse assistant assigned to distinct geographical regions of no more than 5000 people[18, 26, 27]. Over the past 15 years the PSF has emerged as the pivotal component of Brazil's Unified Health System, which was created to shift the healthcare system to a free primary care focused national health program[26, 27]. In this time infant mortality has declined from 48 per 1000 to 17 per 1000 and over 75% of women are now receiving at least seven antenatal consultations[26]. The PSF is now in 95% of municipalities and covers over 85 million people with free healthcare, including MNH services[26]. Evidence has also shown that the PSF is actually more effective in regions that are rural and have less public health infrastructure[27].

The PSF's well integrated health teams including CHWs provide a comprehensive approach to healthcare by not only delivering primary healthcare, but by also providing the community with health education and preventative medicine to further improve health outcomes[26, 27]. CHWs specifically support home health promotion, disease surveillance and population registries, and identify and provide care for those acute problems that can be dealt with in the home[26]. Not only is the PSF cost effective, costing only the equivalent of between thirty-five and fifty U.S. dollars per individual covered, it also reduces the burden on public hospitals and clinics[27].

The difficulty however in incorporating CHWs with doctors and nurses is that in order to be successful a program must first overcome health worker shortages. Overcoming this barrier requires immense support both financially and through policy change so that necessary health workers are recruited and trained to round out the

healthcare teams and ensure that they serve in the often rurally located HPs[18, 27]. While this barrier may seem too difficult to overcome, it is important to remember that fifteen to twenty years ago Brazil's health and economic profile was comparable to many African and Asian countries struggling today with maternal and newborn mortality. Brazil's PSF is an example of the accomplishments that can be achieved through local and national support.

While having an integrated health team all serving out of the same HP helps overcome the barriers of communication and supervision, CHWs still reported feeling overburden[18]. This may be in part due to the relatively broad nature of their health duties as well as the fact that they are each responsible for almost 1000 members of the local community. Additionally since the CHWs receive more frequent feedback and tasks from the rest of their health team they likely receive patient specific tasks in addition to their regular duties. While this conveys a high level of trust and responsibility to the CHWs, it can also make for an onerous day of work, especially when all homes must be reached on foot.

Traditional and Trained Traditional Birth Attendants

While many countries are moving towards CHW programs to address the lack of skilled attendance at birth, traditional birth attendants (TBAs) and trained traditional birth attendants (TTBAs), due to their historical presence and cultural significance, are still attending a large portion of births in developing nations[20, 28, 29]. Among 44 developing countries, TBAs and TTBAs are attending 24 percent of all births[28]. When survey categories are combined to include TBAs, TTBAs, family specific TBAs who only attend births in their family, and relatives who repeatedly attend births but may not identify themselves at TBAs, this group of TBAs and relatives attend 43 percent of all births[28]. With

such a large community presence it is important to explore the role that TBAs and TTBAs play in providing MNH services and whether they can play a role in CHW programs and in improving MNH outcomes.

Across the world TBAs and TTBAs are often called upon during labor because they understand the local culture and respect the needs of the woman[16]. They are often older women who are well respected in their community and sought after because of their knowledge and experience attending birth. Additionally, the availability of other health workers is often scarce or they're too expensive to be sollicited[16, 28]. While every TBA and TTBA functions differently, they usually perform a variety of household tasks such as bathing and massaging the woman, doing household chores, and cooking in addition to attending the birth[28]. This support and care for the woman and her household's wellbeing often sets the services of TBAs and TTBAs apart from CHWs who are simply trained to provide medical care and counseling surrounding the pregnancy and birth. While their services are well regarded, maternal and newborn morbidity and mortality under their care still remains relatively high.

From the 1970's through the 1990's the World Health Organization advocated for the training of TBAs in order to reduce maternal and newborn mortality[28]. Unfortunately after this long period of investment and support, data that proves the efficacy of these efforts has been limited and inconsistent[28]. While a TTBA is defined as any TBA who has received addition training in the modern health sector to improve their ability to provide MNH care, the trainings can range from several days of basic care skills to several month of more advanced skills[28]. This incredible diversity in the trainings that TTBAs completed has

made it very difficult to evaluate the true effects of TTBA programs and the magnitude of their influence[28].

A meta-analysis by Sibley et al in 2009 showed that TTBAs may be effective agents in reducing perinatal death compared to TBAs. Some evidence also showed that among TTBAs, there were lower rates of stillbirth and postpartum hemorrhage and that rates of referral increased[28]. The authors concluded that while this evidence is promising, especially when combined with imp roved healthcare services, the limited number of studies (four), is insufficient to be able to draw firm conclusions that training of TBAs is effective in improving MNH health outcomes[28]. In addition to the limited number of studies that met inclusion criteria, the variety of outcomes measured by each study presented a challenge to making comparisons across outcomes. While the meta-analysis included four studies, results of each outcome were often only supported by one or two studies that had measured each outcome. Furthermore, the measurement of each outcome varied between groups making it more difficult to pool data. This meta-analysis does however support the need for further randomized control trials of TBA and TTBA efficacy in order to determine their relevance and potential contributions to CHW programs.

Ethiopia's Health Extension Program

The Ethiopian Heath Extension Program (HEP), which was created in 2003, is an example of a national community health program that was designed to address a nation's poor health indicators [30] [31]. The HEP was designed by the Ethiopian Federal Ministry of Health (FMOH) as part of their Health Sector Development Program (HSDP)[30]. The HSDP was created in 1998 to increase the quality and coverage of the nation's health services and was financed by the government, NGOs, bilateral and multilateral donors, and private

corporations[32, 33]. Under the HSDP, the number of health centers rose from 243 in 1996 to 600 in 2004, the number of HPs rose from 76 in 1997 to 4211 in 2004, and the number of hospitals rose from 87 in 1996 to 131 in 2004[33]. Antenatal and postnatal service coverage also increased from five to forty two percent and three and a half to almost fourteen percent respectively during phase one and phase two of the HSDP from 1998 to 2005[33].

The HEP was designed to address the large gap in affordable and accessible healthcare by "providing quality promotive, preventative, and selected curative health care services in an accessible and equitable manner to reach all segments of the population, with special attention to mothers and children."[12] The HEP specifically targets rural communities by decentralizing healthcare delivery in order to give more power to the regional health bureaus and streamline the referral process[31]. It focuses on addressing primary healthcare through sustainable preventative health skills and behaviors at the household level that reduce the number of facility based services needed[12, 31].

The success of the HEP is largely dependent on its salaried CHWs, referred to as Health Extension Workers (HEWs) who serve as the delivery system for nearly every component of the HEP [12, 30]. The goal of the HEP is to have one HP in each kebele, with two HEWs at each HP to serve the community. In order to adequately meet the human resource demands of the new HEP, recruitment of HEWs was targeted towards females who were at least eighteen years old, had completed at least the tenth grade, and were from the communities where they would eventually work[12, 30]. A 2005 survey of HEWs revealed however that there was no limit to the time HEWs had been out of school, that they had a lower grade point average compared to other Technical and Vocational Education

programs, and that few HEWs were actually recruited from the area that they would serve due to the lack of applicants[34].

Selected applicants complete a one year training course in preventative healthcare focused on sixteen health extension packages promoted by the HEP. The health extension package can be divided into four categories: disease prevention and control, family health services including maternal and child health, hygiene and environmental sanitation, and health education (Table 2.1) [12, 30, 31]. Upon completion of their training, HEWs are assigned in pairs to a HP where they, in addition to their health duties, should participate in the kebele council in order to promote linkages between interrelated sectors[12, 30, 31].

Table 2.1: Health Extension Package Contents

Health Extension Package
Disease Prevention and Control a. TB, HIV/AIDS, and other STI prevention and control b. Malaria prevention and control c. First Aid and emergency measures
Family Health Service a. Maternal and child health b. Family planning c. Immunization d. Adolescent reproductive health e. Nutrition
Hygiene and Environmental Sanitation a. Excreta disposal b. Solid and liquid waste disposal c. Water supply and safety d. Food hygiene and safety e. Healthy home environment f. Control of insects and rodents g. Personal Hygiene
Health Education and Communication

(Argaw, 2007)

In the kebele, HEWs are expected to spend 75% of their time working outside of the HP in the community[12, 30]. This time may be spent making house visits, giving trainings,

mobilizing volunteer community health workers, and educating families with an emphasis on providing mothers with knowledge of common problems as well as culturally harmful practices like female circumcision and early marriage[31]. The remaining 25% of their time should be spent at the health post providing services such as immunizations and injectable contraception[12, 30].

HEWs are also responsible for training capable families to become model households that set good examples for their neighbors through positive health behaviors. HEWs should aim to train 360 families in the Health Extension Package each year. At the completion of their training, those families that implement at least 75% of the program activities will receive a certificate identifying them as a model household[12, 30, 31, 35].

A 2009 study of 204 kebeles in four regions showed that 70% of kebeles had HPs. Only 21% of sampled kebeles had Health Centers or Health Stations. While not every kebele had a HP, 93% of kebeles had at least one HEW and 82% had two[35]. As of February 2008, more than 24,000 HEWs had been trained and an estimated 80% of planned coverage had been achieved[12, 30]. In 2009, the FMOH reported that with 30,193 HEWS, they had already achieved their 2010 goal of having 30,000 HEWs trained[12, 30]. They also reported that 11,000 of the 15,000 health posts had been constructed[12, 30].

HEWs relationship with other CHWs

While the role of HEWs within the HEP has been defined as central, their relationship with other CHWs such as TBAs and volunteer community health workers (vCHWs) has not been clearly established[36]. Almost 90% of kebeles have at least one vCHW and on average there are twelve per kebele[35]. Types of vCHWs include Pathfinder's community based reproductive health agents, TTBAs, community health promoters, and

other community volunteers[12]. While some vCHWs are selected by HEWs, most are nominated and elected by the community. They must have credibility within the community and show literacy and communication skills[37]. In a qualitative study of vCHWs in eight kebeles in four regions, the strongest reason for becoming a vCHW is the desire to promote and protect the health of their community and family[37].

Some vCHWs are organized, trained, and supervised by HEWs with the goal of integrating the understanding of healthy behaviors taught by HEWs into the community. In practice however, this relationship is informal and left to the discretion of the individual HEW[12]. In the same qualitative study of eight kebeles, vCHWs expressed a need for stronger support and encouragement from government and local places of worship in order to be most effective[37].

TBAs and TTBAs still remain the most utilized resource for MNH services, however since 1994 TTBAs have not been supported by the FMOH[31]. While Argaw (2007) states that TTBAs should be mobilized by HEWs to deliver health messages and help implement health interventions, this assertion is unsupported by data and opposes the general theme in the literature that TBAs and TTBAs carry out their duties independently from HEWs.

Effectiveness of HEW work

In a survey of 6,277 women in 204 kebeles, 36% reported that an HEW had contacted them in the previous six months about their health or the health of their children[35]. The majority of women reported that they were contacted about pit latrines and personal hygiene[35]. Less than a fifth of women reported that they received information about family planning[35]. Maternal and newborn health topics such as pregnancy care, newborn care, and treatment practices for sick children were rarely discussed[35]. In a

random sample survey of sixty female heads of household in a remote area of Tigray, only 12% of women reported that their HEW visited them at the recommended weekly interval[38]. Another 3% reported they were visited biweekly however 27% of women did not know the name of their HEW[38]. While women may not have reported frequent HEW visits, 58% reported that they thought their HEW was "very helpful[38]."

In addition to filling the gap in preventative healthcare at the community level, a large reason HEWs were created was to provide community members with an accessible referral system to the nearest health center or health facility. A survey of sixty HEWs in six regions, found that about 60% reported having ever provided a referral[39]. Many sited a lack of communication with the nearest facility and a lack of a formal referral process that would confer any type of privilege to those patients they were referring[39]. No HEW reported hearing any feedback from the health facility they referred to about the quality of their referral either[39].

In a survey of 2,448 women from four regions with a birth in the previous year, 54% reported that they had received any antenatal care with their most recent birth[35]. Among them, 32% reported that the HP was their major source for antenatal care[35]. HEWs were reported to have attended about 4% of these births over the previous year while TTBAs were reported to have attended about 8% and TBAs were reported to have attended about 12% of these deliveries. The majority (63%) were attended by family, friends, or neighbors of the women, which further stresses the importance of providing MNH education to the local families and not just to other CHWs[35]. In a separate study of sixty female heads of households, 93% reported that they would rather have an HEW attend their birth than a TBA because they felt they were more knowledgeable[38]. This is a very surprising finding

given the fact that no study has shown more than a marginal number of births attended by HEWs, but it does indicate that there may be more interest in HEW attended births than HEWs had previously perceived.

The Last Ten Kilometers Project also assessed essential newborn care practices among those women that had a birth in the last year. Just over half of the 2,448 women reported that they used new or boiled string to tie the cord and the vast majority of women reported having used a new or boiled blade to cut the cord[35]. Butter was applied to the cord stump of 27% of the babies born[35]. Three quarters of the women then dried their baby before the placenta was delivered however only 13% delayed the baby's first bath for two or more days[35]. Additionally, only 43% of women reported feeding the colostrums to their child[35]. Following delivery, less than 1% of women reported receiving postpartum care during the critical forty eight hour window following their birth and only 2% received care within two to forty five days after birth[35].

While the frequency of HEW visits remains less than ideal and MNH statistics still indicate a strong need for further intervention, data has begun to support the importance of HEWs as effective MNH care providers. A cross-sectional study of 2,916 women from five regions with a child less than a year old found that those households that were most frequently visited by HEWs were associated with improved postnatal health care use and higher tetanus toxoid vaccination coverage[40]. The lack of improvement in antenatal care coverage with increased HEW visits is likely due to the dearth of MNH education provided during household visits. A higher prevalence of vCHW visits and of model households in the kebele were each associated with improved antenatal care coverage, tetanus toxoid vaccination, and postnatal care visits[40]. The association of vCHW visits was not

independent of other HEP outreach services, but nonetheless remains an encouraging indicator[40].

Strengths of the HEW model

HEWs, as an all female workforce, positively impact the communities they work in through a variety of powerful ways. The healthcare workforce in Ethiopia is predominately male and those female workers are mainly found in urban centers. Given the traditional gender roles that much of Ethiopia still supports, female HEWs serve as unique access points for attainable culturally acceptable MNH care[32]. HEWs also serve as good role models for female children in their kebeles, given the low rural literacy and secondary education rates[31].

According to a 2005 Center for Health Development in Ethiopia report, there has only been about a 1% HEW attrition rate. This evidence demonstrates the devotion HEWs have to their jobs and supports the substantial investment of resources and money that made creating such a program possible[34]. Additional data from the L10K project showed that about half of all HEWs live in their HP or on the property[35]. This community presence increases the accessibility and utilization of HEWs by their communities and further shows their commitment to their duties.

While HEWs are designed to substantially impact the health of their communities, the training they undergo makes them more likely to lead healthier lives for themselves and their families now and in the future[31]. The HEW profession also allows women, most often single, to earn money for their families and gives them a standard of living that they consider to be on par with kebele officials[36]. It is still customary for women to live with

their parents until they are married and the HEW position allows those women who desire a culturally acceptable form of early financial and personal independence to achieve it.

Weaknesses of the HEW model

The implementation of 30,000 HEWs in five years was a tremendous undertaking for the country as a whole[34]. The haste with which the first cadre of HEWs was instituted left them without clear financial or structural support. The Center for National Health Development in Ethiopia found that when the first group of HEWs was deployed in 2004, only their salaries had been budgeted. This left no formal operational budget or structured system of supervision. The FMOH also admitted to a lack of long term funding for supplies and salaries[33].

This uncertainty on behalf of both the FMOH and the HEWs means that the HP has no knowledge of its own budget[36, 37]. This gap in knowledge leaves the HP to receive supplies and program funding ad hoc without any leverage for acquisition of necessary resources. Due to the circuitous nature of the funding and oversight from the regional health offices, most HEWs lose at least an entire day of work each month to travel to the woreda capital to receive their monthly salary[36, 39]. While these monthly trips could serve as consistent meetings for supervision and feedback, there was no reference of any additional purpose for these trips. A variety of studies have sited the lack of consistent supervision and feedback as a perceived barrier to HEW success and efficacy[31, 34, 36].

A lack of adequate supplies and medications in HPs also contributes to poor health statistics and HEW efficacy[33, 35, 36]. Knowledge and training of how to use those supplies and medications that are available also proves to be a barrier. In a study of sixty HEWs in twenty six woredas, a general theme was seen that available drugs were not always utilized

by HEWs because HEWs did not feel competent enough to use them or senior health workers in their HP denied them access to them[36]. Additionally, while hygiene and sanitation are areas of focus in the health extension package, a study of sixty HEWs from the first cadre of deployed HEWs found that 25% of HPs had no protected water source, 16% had no toilet, and only 4% had electricity[30, 39].

The ability of HEWs to integrate and be accepted by the community has also been difficult. While the HEP stressed the creation of Kebele Health Committees together with local kebele leaders to guide health activities, only 25% of the 50 kebeles surveyed reported having established such a committee[39]. A survey of 6,277 women in 204 kebeles found that only 19% of women had heard of another key component of the HEP, the model family. While disappointing, of those women who had heard of the model family and were not yet enrolled, 87% expressed a willingness to participate in the program[35]. These indicators show a clear need for a better understanding among community members of the role that HEWs should be playing in the health of their community and what community activities they lead.

There is also a difference between what kind of healthcare the community desires and what kind of healthcare the HEWs are trained to provide. In general communities express a strong desire for curative services, however the focus of the training of HEWs is on preventative care. Originally, the HEP wanted HPs to focus solely on preventative care so that it would not be eclipsed by curative care given the high need among rural communities[30, 39]. Some curative services such as diagnosis and treatment of malaria, treatment of diarrhea, treatment of eye infections and select skin conditions, and basic first aid are outlined as services expected to be given at the HP[33]. While these services are highly

requested by the community, a disproportionately smaller portion of training has been dedicated to educating HEWs about how to carry out these tasks.

One goal the FMOH hopes that the HEP will accomplish is to reach the 2015 millennium development goal of reducing maternal mortality from an estimated 673 in 2005 to 218[30]. As outlined in the HEP, all HPs should be equipped with a delivery couch and all HEWs should be attending births in their kebele. HEWs should be promoting birth preparedness and readiness for complications as well as providing newborn care with TBAs after delivery, active management of the third stage of labor, an immediate postpartum visit to the mother, and breast feeding support[30].

In reality however, HEWs received little to no hands on experience providing labor and delivery care and HEWs reported feeling inadequately prepared to attend births on their own[30, 34]. As such, an independent sample project carried out by the Last Ten Kilometers Project found that only 4% of births in the year prior to the 2009 survey were carried out by HEWs[35]. In 2009, only 50% of HPs had a delivery couch, only 20% of HEWs underwent a clean and safe birth training, and only 20% were trained in essential neonatal healthcare[30]. Overall, the underwhelming MNH contribution HEWs are providing to their kebele is likely due to a combination of factors. HEWs report feeling a lack of confidence and being unprepared to attend labor and birth[36]. Traditionally, TBAs or family members attend most births, so community members are less likely to seek out HEWs as birth attendants. Additionally, HEWs are responsible for providing education and services pertaining to sixteen different health extension package items, which leaves little time for HEWs to devote only to MNH services.

Gaps in Knowledge

The literature has shown that CHW programs can be effective in improving community level health outcomes, however many gaps still exist in being able to fully understand the intricacies of successful CHW programs and how they fit into the larger healthcare delivery system. The majority of studies in support of CHW programs have been done on well-established programs such as Brazil's PSF program or involve CHWs trained to achieve relatively focused objectives such as the Nepali FCHV program. While data from the implementation and roll out of the HEP remains hopeful, there is a dearth of evidence to support the efficacy of CHWs in providing antenatal, labor and birth, and postpartum care, especially when MNH duties are only one portion among a multitude of other responsibilities. Ethiopia also presents a unique opportunity to compare MNH knowledge, attitudes, and practices among HEWs, vCHWs, and TBAs who all independently impact MNH at the community level.

Chapter Three: Methodology and Results

Conceptualization of 18 MNH package items

When successfully delivered with 90% coverage during the birth-to-48 hour window, a defined MNH package can reduce newborn mortality by up to 37%[41]. This study's MNH package was designed by MNH experts who selected critical evidence-based interventions that could simply and effectively be delivered by community-based health workers[41]. Due to Amhara region's rural setting and distance from emergency obstetric services, the 18 MNH package items were selected to include preventative, basic, and inexpensive practices that reduce maternal and newborn mortality. By understanding FLW's knowledge, attitudes, and practices of these basic MNH health practices, future

interventions could better target specific FLW gaps in care and more effectively improve maternal and newborn mortality[41] (Table 3.1).

Table 3.1: MNH Package Items

MNH Package Items	
MNH Package Item	Evidence
Counseling a pregnant woman to create a safe birth plan	Creating a birth plan as part of an outreach visit has been shown to be a cost effective method of reducing newborn morbidity and mortality[41].
Counseling a woman about calling for assistance when labor begins	Skilled birth attendance has been shown to reduce all cause neonatal mortality by 20-30%[41]. Hemorrhage and hypertension account for half of all maternal deaths and can be prevented or managed with skilled labor attendence[42].
Counseling a woman about creating a clean birth environment	Using clean delivery practices has been shown to reduce all cause neonatal mortality or morbidity by 58-78%[41]. These practices have also been shown to reduce newborn tetanus by 55-99%[41].
Counseling everyone present during labor and birth to wash their hands	
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	
Counseling a woman about practicing clean cord care	
Safely delivering the placenta	
Encouraging a woman to change positions during labor	Changing positions during labor has been shown to significantly shorten the second stage of labor, reduce abnormal fetal heart tones, and reduce the need for birth intervention[43].
Women being given misoprostal before delivery of the placenta to stop bleeding	Misoprostal has been recommended by the WHO for the prevention of postpartum hemorrhage where no skilled birth attendants are available[44].
Rubbing the womb after delivery to stop bleeding	Uterine massage has been shown to reduce the blood loss and thus postpartum hemorrhage following delivery[45]. Postpartum hemorrhage is the leading cause of maternal mortality[46].
Keeping the baby warm and dry after birth	The prevention and management of hypothermia has been shown to reduce all cause neonatal mortality or morbidity by 18 to 42%[41].
Checking the warmth of the baby	
The baby being checked for proper color and breathing	
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	Breastfeeding including exclusively breastfeeding for six months has been shown to reduce all cause neonatal mortality or morbidity by 55-87%[41]. As the primary source for secretory IgA, colostrum helps to establish the newborn immune system[47].
Counseling a woman to give only breast milk for 6 months	

Counseling a woman on the proper position of the baby during breastfeeding	
Counseling a postpartum woman to rest for at least 12 days	Postpartum pelvic rest is important to avoid complications [48].
A woman being checked for fever and bleeding after birth	Postpartum hemorrhage and infection are two of the leading causes of maternal mortality[46]. By assessing women for signs of these conditions, more timely referral and treatment can be obtained[46]. Forty five percent of postpartum deaths occur in the first 24 hours[46].

Tool Development

Due to the dearth of knowledge about FLWs, the survey was developed to obtain comprehensive maternal and health indicators that address basic FLW demographic characteristics, background characteristics, compensation, challenges, confidence, trust, beliefs, skill based competence, prioritization, and teamwork.

Section one of the survey tool explored basic FLW background demographics. These demographics included age, gender, number of pregnancies, number of live children, and marital status. Section two was developed to obtain more specific information on the education and training of the FLWs as well as their detailed maternal and newborn health experience covering pregnancy through postpartum and newborn care. Information on the compensation of these services, if provided, was also collected.

Section Two Questions

What type of health worker are you?
How many years of schooling have you had?
What type of education or training did you have to become a (type of health worker)?
Have you ever received a clean and safe birth training?
How many years have you worked as a (type of health worker)?
How many hours each week do you spend in your duty as a (type of health worker)?
Do you receive monetary payments for your work as a (type of health worker)?
How much money do you receive for your work as a (type of health worker)?
When do you receive this amount?
Who pays you for your work as a (type of health worker)?
Do you give care to women in pregnancy?

How many women in pregnancy do you give care to a month?
Do you have the supplies you need to give care to women in pregnancy?
What supplies do you have to give care to women in pregnancy?
Do you receive compensation from the family for giving care to a woman in pregnancy?
Is the compensation monetary?
How much money do you receive from each family?
What else do you receive as compensation for giving care to a woman in pregnancy?
Do you deliver babies?
How many babies are born in your kebele each month?
How many babies do you deliver each month?
Do you have the supplies you need to provide care to women during labor and birth?
What supplies do you have to provide care to women during labor and birth?
Do you receive compensation from the family for providing care to women during labor and birth?
Is the compensation monetary?
How much money do you receive from each family for providing care to women during labor and birth?
What else do you receive as compensation for providing care to women during labor and birth?
Do you give postpartum care to mothers?
How many mothers do you give postpartum care to each month?
For each woman that you care for, when are all the times you usually give postpartum care?
Do you have the supplies you need to give postpartum care to mothers?
What supplies do you have available to give postpartum care to mothers?
Do you receive compensation from the family for giving postpartum care to mothers?
Is the compensation monetary?
How much money do you receive from each family for giving postpartum care to mothers?
What else do you receive as compensation for giving postpartum care for mothers?
Do you give newborn care?
How many times do you give newborn care each month?
When do you give the newborn care?
Do you have the supplies you need to give newborn care?
What supplies do you have to give newborn care?
Do you receive compensation from the family for giving newborn care?
Is the compensation monetary?
How much money do you receive from each family for giving newborn care?
What else do you receive as compensation for giving newborn care?

Sections three, four, and six used agree or disagree statements to assess FLW perceptions. These questions were informed by data from 40 formative in-depth interviews of FLWs in Amhara region Ethiopia. Sampling methods sought to interview

equal numbers of HEWs, vCHWs, and TBAs in woredas neighboring those used for quantitative data collection. These interviews explored FLW roles, normative care practices, challenges, teamwork, and predictors of confidence.

Section three addressed possible challenges faced by FLWs in providing health services. Formative data revealed that these challenges may include the interference of farming and household duties with health duties as well as a lack of supplies. Distance between houses in the kebele was also a possible challenge of FLWs.

Section Three Questions

Do you agree or disagree with the following statements:
" My farming duties interfere with my health duties."
"My household chores interfere with my health duties."
"Taking care of my children interferes with my health duties."
"I have difficulty providing health services because I don't have the materials I need."
"I have difficulty providing health services because the distance between the houses in my kebele is too great"

Section four addressed factors that affect health worker confidence. FLWs were asked about their own perceptions and attitudes towards their knowledge, responsibilities, and health duties. These questions as well as those in section six were designed using specific language and phrases collected from FLWs during formative interviews in order to elicit greater comprehension of the questions by FLWs.

Section Four Questions

Do you agree or disagree with the following statements:
"I have had training to provide care to mothers and babies."
"I have a role in a health committee in my kebele."
"I have the knowledge, but I don't have the practical experience to attend to delivery."
"I know when to say no for the health services I can't do."
"I am eager to work my health activities."
"I have too many activities as a health worker."
"Sometimes when I perform my health duties, I have fear in my face."
"I feel I have sufficient knowledge and experience to manage *serakian***"**
"I do not have enough support from a supervisor in my health tasks."
"I communicate with kebele leaders about my work."
"If I have the training, I can provide service which is better than what I am doing now"

"I forget things from my training because it was long ago."
"I am able to attend a delivery alone."
"People ask for my help if there is a problem with mothers and babies."
"People in the community tell me that I helped them get better."
"When I face a difficult labor, I have someone who will come and help me."
"If I have the training, I have the capability of becoming a nurse."
"I have written materials I can refer to if I need more information."
"My main duty focuses on mothers and babies."
"There is nothing to be done about excessive bleeding after birth because it is caused by *serakian*."
"When I need advice about a health problem, I feel there is someone I can ask."
"There is little to be done to save a mother or child. If one dies during delivery it is a matter of chance."

Section six explored FLW beliefs about maternal and newborn normative care practices that occur in West Gojjam. Formative research revealed that many potentially harmful practices occur that are in contrast to the Maternal and Newborn Health Package utilized in this study. Practices surrounding delivery of the placenta included pulling on the placenta if it had difficulty detaching and letting it detach into a hole. Practices surrounding feeding included feeding the newborn butter after it was born, throwing away the first milk, and giving newborns water and cows milk if it was available. Other questions included the appropriateness of notifying a health worker when a woman is pregnant and when she is in labor.

Section Six Questions

Do you agree or disagree with the following statement:
"The *seng* cord should be tied both on the mother's part and the baby's part."
"It is a problem that the community expects health workers to be in the health post, but they are out in the community."
"A woman should have the same workload before and during her pregnancy."
"A mother should take rest only up to 10 days after the baby is born."
"If the *seng* has trouble detaching, it should be pulled out in the home."
"After birth, the baby needs to be away from the mother while she sits over the hole to detach the *seng*."
"A mother who has had peaceful births in the past will have only peaceful births in the future."

"A health worker will come to deliver a baby at nighttime."
"The baby should be washed immediately after birth."
"If the uvula has dropped, then it is best to cut the uvula."
"A woman should deliver in the home unless the labor is serious."
"When labor begins, a health worker should be called to the home."
"A woman should tell a health worker when she knows she is pregnant."
"A woman and family should not prepare for a problem ahead of time because the birth may be peaceful."
"A mother needs to breastfeed the new baby because it helps the detachment of the placenta."
"If labor is not serious, there is no reason to call a health worker."
"It is both women and men who could help with delivery."
"There is no reason for a healthy pregnant woman to go for checkups by health workers."
"Mothers should provide water or cow's milk to new babies if it is available."
"The main duties of health extension workers are family planning and vaccination.
"A baby's cord should be plastered with butter."
"The first milk is unclean and should not be given to the baby."
"It is only by chance when health workers discover that a woman is pregnant."

Section five included a variety of questions aimed at assessing self-perceptions of knowledge, confidence, and role responsibilities as well as defining the role of others in providing pregnancy, labor and delivery, postpartum, and newborn care. Although not all FLWs provide care during all four of these periods, this section was important in identifying their perceived confidence and preparedness in providing such care. When asking about confidence, enumerators were instructed to show FLW a figure of a ladder that had numbers by its side. FLW were told to indicate on the ladder how confident they felt, with the top of the ladder being the most confident. The enumerators recorded the number corresponding to the rung that the FLW pointed to. FLWs were also specifically asked whose duty it was and who had the knowledge and skills to provide care to women

during these four periods. A question about what kind of incentives would make FLWs feel more confident was also asked.

Section Five Questions

The follow questions were asked about providing care to women/newborns during the following time periods: pregnancy, labor, postpartum, and neonatal.

Is it your duty to provide care (during this phase of pregnancy)?
Tell me how much you agree with this statement "It is important for me to provide care (during this phase of pregnancy)"
Do you have the knowledge and skills to provide care (during this phase of pregnancy)?

Please look at the ladder and point to how confident you feel in your ability to provide care (during this phase of pregnancy). The top of the ladder means you are very confident and the bottom of the ladder means you feel very unconfident in the skill.
(CIRCLE RESPONSE)

0	1	2	3	4	5	6	7	8	9	10
Very Unconfident				Moderately Confident					Very Confident	

Whose duty is it to provide care (during this phase of pregnancy) in the kebele?
Who has the knowledge and skills to provide care (during this phase of pregnancy)?
Who do you trust to provide care to (during this phase of pregnancy)?

Section seven sought to quantify FLW knowledge and practices of 18 items in the Maternal and Newborn Health Package. These questions sought to identify which package item FLWs had heard of and if so, which they could perform. If the FLW could perform these items, they were asked how often they performed them in the last month and if they performed them during their last applicable obstetric visit. If they did perform it, they were asked if they felt good about their performance. If the FLW had heard of the package item, they were asked whose duty it was to perform the task.

Section Seven Questions

The following were asked for each MNH package item:

Have you heard of (MNH package item)?
Whose duty is it to (MNH package item)?
Are you able to (MNH package item)?
In the past month how many times did you do (MNH package item)?

The last time you visited a women during (applicable phase of pregnancy), did you do (MNH package item)?
Did you feel good about your performance?

Section eight explores how FLWs prioritize the many tasks they are responsible for. FLW were asked to state their three most important health tasks. The tasks were grouped based on content areas covered in the HEP package, known vCHW practices, and TBA duties. The content areas are identified as follows: sanitation, vaccination, family planning, work for mothers and babies, nutrition, ITN provision, fuel efficient stoves, separating livestock from the house, infectious disease prevention and control, and mobilizing the community for health services (Table 3.2).

Table 3.2 HEW Content Areas

AREAS (EXAMPLES)	CODE
Sanitation (hygiene protection of disease, making hole for toilet, solid/liquid waste removal, safe water supply)	**01**
Vaccination (vaccinations for children and adults)	**02**
Family Planning (birth spacing, pills, condoms, injections, Depo-Provera, Implanon)	**03**
Work for Mothers and Babies (antenatal care, labor and delivery, postnatal care for mother and baby, counseling pregnant women)	**04**
Nutrition (breastfeeding, counseling on nutrition in pregnancy and for mothers/babies)	**05**
ITN Provision (bed net provision, prevention of Malaria)	**06**
Fuel Efficient Stoves (building chimneys, building stoves)	**07**
Separating Livestock from the House (moving animals away from living areas)	**08**
Infectious Disease Prevention and Control (HIV/AIDS, Tuberculosis)	**09**
Mobilizing the community for health services (giving messages to the community)	**10**
OTHER: Specify _____	**11**

The final section includes questions about teamwork and interactions among FLWs. FLWs were asked whether or not they work alone and if they consider themselves part of a

team. If so they were asked to identify whom they consider a member of their team and how strong their sense of team was. Each FLW was asked how often they interact with all three types of FLW and whether or not they thought people in their community called TBAs to attend delivery. Lastly, FLWs were asked who they felt they could go to if they had questions.

Section nine questions:

Do you agree or disagree with the following statement: "I usually do my work as a health worker alone."
Do you see yourself as part of a team in proving care to mothers and babies in your kebele?
Who do you consider to be part of your team in providing care to mothers and babies in your kebele?
How strong is your teamwork in providing care to mothers and babies?
In the past month how many times did you interact with an HEW?
In the past month how many times did you interact with a vCHW?
Do you agree or disagree with the following statement: "People call traditional birth attendants to help in delivery."
In the past month how many times did you interact with a TBA?
Who do you ask when you have a question about giving care to mothers and babies?

Translation of tools

The FLW survey tool was originally developed in English. It was then translated into Amharic, the predominant language in Mecha, South Achefer, and North Achefer woredas. Two bilingual masters-level students carried out the initial translation prior to enumerator training.

Training of Enumerators

Six female enumerators were selected from a pool of twenty-one enumerators who had been trained on a separate survey tool that explored the knowledge of the MNH package and general MNH practices among women who had given birth in the last year. This initial training took three days and was broken down into several components.

Enumerators were first trained in how to conduct an interview. This process reviewed professional greetings, how to approach community members about the survey, informed consent, and how to eliminate bias when conducting the survey. Then, enumerators received a training session on the MNH package in order to ensure that enumerators understood each item and why it was selected. If an enumerator did not understand one of the MNH package items or felt that items in the package were not effective or went against cultural practices it would have had the potential to introduce bias into the survey.

Enumerators who would receive additional training for the FLW survey were then selected based on their comprehension and comfort level of the survey process. Due to the length of the FLW survey tool and the limited number of FLW in each kebele, it was important to select enumerators who could effectively administer the tool without compromising its integrity.

Once selected, the entire survey was reviewed, question by question, with the enumerators to ensure their comprehension of the tool and that the survey questions would be easily understood by the FLWs, many of whom have low or no literacy. The questions were also reviewed in English with the enumerators in order to ensure that the questions were accurately translated. Skip patterns and instructions for each question were included throughout the training. Translational, phrasing, and instructional changes were then incorporated into the initial translation of the tool to produce the final translated version.

Pilot testing

After finishing the translation of the FLW tool, it was taken into the field for one day of pilot testing. All six enumerators took place in the pilot testing, which occurred in a

kebele in the woreda of Mecha. This kebele was not visited during data collection, but because of its proximity to our study kebeles, enumerators faced similar conditions. Each enumerator conducted one interview on the day of pilot testing.

Following pilot testing, project staff then reviewed the surveys in order to identify any errors. Individual errors were reviewed with each enumerator one-on-one. The most common errors occurred in trying to follow the skip pattern. The skip pattern was then reviewed with all of the enumerators before entering the field again for data collection.

Sampling method

The sampling method used to conduct the surveys was a non-random sampling method based upon available FLWs in each kebele. Enumerators visited kebeles in pairs and were first instructed to visit the health post of that kebele where HEWs are stationed. All HEWs available in the kebele were interviewed. HEWs then identified vCHWs in the kebele as well as any TBAs they knew of. If no TBAs were known, enumerators were instructed to ask community members to identify them. Due to the limited number of FLWs in each kebele, enumerators were instructed to survey up to ten FLW per kebele, depending on the number that could be identified in the community.

Data Entry & Data Analysis

Data entry was conducted using Microsoft Excel. The data was then imported and analyzed using STATA 11 (Stata corp, 2009). Only surveys with greater than 95% of the relevant questions answered were included for analysis. The largest amount of missing data was from respondents who did not know their age. The total analyzed sample size 162 FLWs. The final sample sizes were: 35 HEWs; 70 vCHWs; and 57 TBAs. Univariate analysis was conducted to generate descriptive variables and eliminate improbable values.

Bivariate analysis was conducted using chi square analysis and multivariate analysis was conducted using ANOVA.

Results

Demographics:

Key Demographic Results
• HEWs were the youngest FLWs – mean age of 23.2 years old • About 38% lived greater than 5 km from an all weather road • HEWs had a mean of 11.3 years of school while TBAs had only .85 years • The majority of HEWs (94%) completed formal education training while 51% of TBAs had informal training and 44% had no training at all. vCHWs training varied • HEWs reported a mean of 60.2 hours of work a week compared to less than 10 by vCHWs and TBAs

Of the 162 FLWs surveyed, 23% were HEWs (n=35), 43% were vCHWs (n=70), and 35% were TBAs (n=57). About 62% of all FLWs were female. HEWs and TBAs were all female, while 88.6% of vCHWs were male. When surveyed, 9% of FLWs did not know their age and the mean age among all FLWs was 36.1 years old (sd 10.87). HEWs were the youngest FLWs with a mean age of 23.2 years old (sd 3.57) and TBAs were the oldest with a mean age of 42.0 years old (sd 8.28) (Table One). The marital status among HEWs varied greatly with 51% single, 43% married, and 6% divorced, while the majority of vCHWs were married (84%) and the majority of TBAs were divorced (65%) (Table 3.3).

Among all FLW, 38% were considered to live far from an all weather road, which was defined as living greater than five kilometers from either a paved or gravel road that can be utilized throughout the rainy season. About a third of all HEWs and TBAs lived far from an all weather road (34% and 30% respectively) compared to 46% of vCHWs who did (Table 3.3).

FLW had a mean of 4.7 years (sd 4.70) of schooling. HEWs had the most years of schooling with a mean of 11.3 years (sd .87) followed by vCHWs with 4.3 years (sd 3.34) and TBAs with .85 years (sd 2.53). There was no significant difference in years of schooling between FLWs who lived close to an all-weather road (4.74 years) and FLWs who did not (4.53 years)(p=.79). (Table 3.3)

Table 3.3: FLW Demographics

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
HEW Type, %	21.60	43.21	35.19%
Age mean (SD) *15 TBA didn't know age	23.23 (3.57)	39.19 (9.33) n=68	42.05 (8.28) n=41*
Female , %	100	11.43	100
Marital Status, %			
Single	51.43	8.57	5.26
Married	42.86	84.29	29.82
Divorced	5.71	7.14	64.91
Lives >5 kilo. from an all-weather road, %	34.29	45.71	29.82 n=55
Years of Schooling mean (SD)	11.34 (.87)	4.32 (3.34)	.85 (2.53) n=55
Type of Education, %			
Informal Training (Apprenticeship)	2.86	45.71	50.88
Formal Educational Program	94.29	22.86	1.75
Both informal & formal education	2.86	21.43	1.75
No training	0	10	43.86
Experience as FLW			n=55
Percent working <1 yr	14.29	12.86	21.82
Mean years among those working >1 yr	3.17 (1.37)	6.02 (6.91)	14.95 (9.75)
Hours spent each week working as FLW mean (SD)	60.17 (14.33)	10.01 (13.93)	6.15 (14.05)

There was significant variation in the type of education and training completed in order to become an HEW, vCHW, or TBA. The majority of HEWs (94%) reported having completed a formal education program. Among vCHW, 23% completed a formal education program, 46% had informal training, 21.43% reported having completed both, and 10%

reported having had no training at all. A large portion of TBAs completed no training or formal education (45%) and just over half (51%) completed only informal training (Table 3.3).

The majority of FLWs have been working for at least one year or more. Of those FLWs working for one year or more, the mean years of experience was 3.2 (sd 1.37) among HEWs, 6.0 among vCHWs (sd 6.91), and 14.95 among TBAs (sd 9.75). The number of hours worked each week as an FLW also differed significantly by FLW type. HEWs worked a mean of 60.2 hours per week (sd 14.33), compared to just 10.0 hours worked per week as a vCHW (sd 13.94), and 6.2 hours worked per week as a TBA (sd 14.05) (Table 3.3).

General Job Perceptions:

Key General Job Perception Results
• About a third of vCHWs and TBAs (34% and 30% respectively) felt farming duties interfered with their health duties • 83% of TBAs, 70% of vCHWs, and 37% of HEWs reported a lack of health supplies • About 40% of all FLWs felt distance between houses caused difficulty in providing health services • 94% of HEWs and 86% of vCHWs felt they had too many health duties • 40% of HEWs and 56% of vCHWs report a lack of supervision • Only 60% of TBAs felt they had someone to go to for health advice

The following information about general challenges that FLWs face can be found in Table 3.4. No HEWs agreed with the statement "My farming duties interfere with my health duties," however among vCHWs and TBAs, 34% and 30% respectively agreed with this statement. About 83% of TBAs, 70% of vCHWs, and 37% of HEWs reported having difficulty providing health services due to a lack of supplies. With just over 40% of FLWs

agreeing with the statement "I have difficulty providing health services because the distance between the houses in my kebele is too great," there was no statistical difference between FLW groups. (Table 3.4)

Table 3.4: FLW Challenges

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
"My farming duties interfere with my health duties." % agreement	0	34.29	30.36
"I have difficulty providing health services because I don't have the materials I need." % agreement	37.14	70.00	82.46
"I have difficulty providing health services because the distance between the houses in my kebele is too great" % agreement	42.86	40.58	42.11

The majority of HEWs and vCHWs, 94% and 86% respectively agree with the statement "I have too many activities as a health worker," compared to just 65% of TBAs. Significantly fewer TBAs, 79% ($p<.001$), agree with the statement "If I have the training, I can provide service which is better than what I am doing now, " compared to 100% of HEWs and vCHWs who agreed. Forty percent of HEWs compared to 56% of vCHWs and 35% of TBAs reported a lack of support from a supervisor for their health tasks (Table 3.5).

There was a significant difference between the responses of all three FLW types to the statement, "I have written materials I can refer to if I need more information." Among HEWs, 88.57% agreed with the statement ($p=.018$ compared to vCHWs and $<.001$ compared to TBAs), while 67.14% of vCHWs agreed with the statement ($p<.001$ compared to TBAs), and 7.14% of TBAs agreed with the statement. Significantly fewer TBAs, 60% compared to 83% of HEWs and 99% of vCHWs felt they have someone to talk to when they need advice about a health problem ($p=.020$ compared to HEWs and $p<.001$ compared to

vCHW). The last general question about confidence and general job perceptions was whether or not FLWs agreed with the statement "The main duties of health extension workers are family planning and vaccination." Just over half (51%) of HEWs agreed with this statement about their work, while 67% of vCHW and 75% of TBAs, agreed with this statement (Table 3.5).

Table 3.5: FLW beliefs

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
"I have too many activities as a health worker." % agreement	94.29	85.71	64.91
"If I have the training, I can provide service which is better than what I am doing now" % agreement	100	100	78.95
"I do not have enough support from a supervisor in my health tasks." % agreement	40.00	55.71	35.09
"I have written materials I can refer to if I need more information." % agreement	88.57	67.14	7.14 n=56
"When I need advice about a health problem, I feel there is someone I can ask." % agreement	82.86	98.57	59.65 S
"The main duties of health extension workers are family planning and vaccination." % agreement	51.43	66.67 n=69	74.55 n=55

Maternal and Newborn Health Practices

Key Maternal and Newborn Health Practices Results
• Significantly more HEWs (54%) reported receiving Clean and Safe Birth training compared to vCHWs and TBAs • All HEWs reported providing antenatal care compared to 20% of TBAs • TBAs reported attending statistically more births than HEWs (p=.028) • While only 7.3% of vCHWs compared to 71% of HEWs reported attending labor and birth, the number of monthly births attended by vCHWs was not statistically different from HEWs • Only a third of TBAs provide postpartum care and 37% provide newborn care • Significantly more HEWs than TBAs felt their main duty was focused on mothers and babies (p<.001)

The following demographics pertaining to maternal and newborn health among FLW can be found in Table Four. Significantly more HEW (54% compared to 25% of vCHWs (p=.003) and 16% of TBAs (p<.001)) reported having received a Clean and Safe Birth Training. The same percentage of HEWs (54%) agreed with the statement "I have had training to provide care to mothers and babies," while slightly more vCHWs (30%) and less TBAs (11%) agreed with the statement compared to the percentage who reported Clean and Safe Birth Training (Table 3.6).

All HEWs, reported providing antenatal care. Fewer vCHWs (81%) provided antenatal care and the mean age among those who did was 39.6 years old (SE=1.31). Only 20% of TBAs provided antenatal care and their mean age was 41.2 years old (SE=3.55). Among HEWs, 71% provided labor and birth care with the mean age of providers being 23.5 years old (SE=.79). Only 7.3% of vCHWs reported providing labor and birth care while all TBAs reported providing care during labor and birth. Among those FLW who reported attending labor and birth, the mean number of babies delivered by HEWs per month was 1.9 (SD=.97), was significantly lower than the 2.9 (SD=2.36) babies delivered per month by TBAs (p=.028). Among the six vCHWs who reported attending labor and births, the mean number of babies delivered per month was comparable to HEWs at 1.7 (SD=1.51). Postpartum care was provided by 100% of HEWs while less vCHWs (69%) and even less TBAs (33%), provided postpartum care. Newborn care was provided by 97% of HEWs compared to 71% of vCHWs and 37% of TBAs(Table 3.6).

Significantly more HEWs than TBAs (80% and 61% respectively, p<.001) agreed with the statement, "My main duty focuses on mothers and babies." The FLW with the

highest percentage of agreement with this statement was vCHWs with 87%. All HEWs felt people ask for their help if there is a problem with mothers and babies compared to 97% of vCHWs and 70% of TBAs (Table 3.6).

Table 3.6: General MNH Demographics

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
Clean and Safe Birth Training, %	54.29	24.64 n=69	16.07 n=56
"I have had training to provide care to mothers and babies." % agreement	54.29	30.00	10.53
Type of Care Provided			
Antenatal, %	100	81.43	19.64
Mean age among those providing antenatal care mean (SE)	23.23 (.60)	39.56 (1.31)	41.20 (3.55)
Labor and Birth percent	71.43	7.25	100.00
Mean age among those providing labor and birth care mean (SE)	23.52 (.79)	47.00 (4.17)	42.05 (1.29)
Postpartum, %	100	68.57	33.33
Mean age among those providing postpartum care mean (SE)	23.23 (.60)	38.63 (1.42)	43.67 (2.53)
Newborn percent	97.14	71.43	36.84
Mean age among those providing newborn care mean (SE)	23.17 (.62)	40.61 (1.29)	41.00 (2.61)
Number of babies delivered/month among those providing labor and birth care mean (SD)	1.85 (.97) n=26	1.67 (1.51) n=6	2.93 (2.36) n=46
"My main duty focuses on mothers and babies." % agreement	80.00	86.96 n=69	61.40
"People ask for my help if there is a problem with mothers and babies." % agreement	100	97.14	70.18

Perceptions of Duties, Knowledge, and Trust among FLWs: Antenatal Care

Key Antenatal Perception Results
• Significantly less HEWs and TBAs than vCHWs saw vCHWs as having the duty to provide antenatal care • Significantly more FLW living close to an all weather road saw TBAs as having the duty of providing antenatal care (p=.029) • Only 14% of TBAs and about a quarter of HEWs and vCHWs feel TBAs have the

knowledge and skills to provide antenatal care
- Significantly fewer TBAs trust HEWs to provide antenatal care compared to HEWs and vCHWs (p<.001)
- Significantly more FLW living far from an all weather road reported trusting HEWs, vCHWs, and TBAs to provide antenatal care.

The following data about FLW attitudes towards antenatal care duties can be found in Table Five. All HEWs believed it was the duty of HEWs to provide antenatal care, compared to 90% of vCHWs and 77% of TBAs who saw HEWs as having this duty. The highest percentage of FLWs who saw vCHWs as having the duty of providing antenatal care was other vCHWs (75%). Significantly less HEWs, 47%, and TBAs, 8.9%, saw vCHWs as having the duty of providing antenatal care. There was no statistically significant difference seen among the responses to FLWs about whether it was the duty of TBAs to provide antenatal care (41% of HEWs, 24% of vCHWs, vs 30% of TBAs) (Table 3.7).

An FLWs' distance from an all weather road did not significantly affect their perceptions of whether HEWs had the duty of providing kebeles with antenatal care. Fewer FLW (42%) living close to an all weather road reported that vCHWs had the duty of providing antenatal care compared to those living farther (53%), however this was not statistically significant. A significant difference was seen among FLWs perceptions of TBAs in providing antenatal care based on location. More FLWs living close to an all weather road (36%) saw TBAs as having the duty of providing antenatal care compared to only 20% of those living far away (p=.029)(Table 3.7).

All HEWs and 97% of vCHWs reported that HEWs have the knowledge and skills to provide antenatal care compared to significantly less TBAs (75%). Among vCHWs, 36% reported that vCHWs have the knowledge and skills to provide antenatal care to the kebele

while significantly less, HEWs (20%, p=.027) and TBAs (5.3%, p<.001), reported that vCHWs have this knowledge. Only 26% of HEWs, 24% of vCHWs, and 14% of TBAs reported that TBAs have the knowledge and skills to provide antenatal care (Table 3.7).

Distance from an all weather road did not significantly affect FLW perceptions of HEWs having the knowledge and skills to provide antenatal care. Among FLW who live close to an all weather road, 15% reported that vCHWs have the knowledge and skills to provide antenatal care while significantly more, 33% of those living far from an all-weather road reported the same views (p=.007). It was also reported that 17% of those living close to an all-weather road and 28% of those living farther believed that TBAs have the knowledge and skills to provide antenatal care (Table 3.7).

Significantly fewer (68%) TBAs reported trusting HEWs to provide antenatal care compared to all HEWs and nearly all vCHWs (97%) who reported trusting HEWs (p<.001). Significantly fewer TBAs (3.5%) than vCHWs (39%) and HEWs (26%) (p=.001 and p<.001 respectively) also reported trusting vCHWs to provide antenatal care. Among FLWs, 16% of TBAs, 20% of vCHWs, and 34% of HEWs reported trusting TBAs to provide antenatal care (Table 3.7).

Significantly more FLW, 95%, who lived far from an all-weather road reported trusting HEWs to provide antenatal care compared with 83% of those living close to an all weather road (p=.026). Trust of vCHWs to provide antenatal care also significantly increased with distance from an all weather road. It was reported that 15% of FLW living close and 33% of FLW living far trusted vCHWs to provide antenatal care (p<.001). When asked if FLWs trust TBAs to provide antenatal care in their kebele, significantly less FLWs

(16%) who live close to an all-weather road trusted TBAs to provide antenatal care compared to 31% of FLW who live far (p=.022) (Table 3.7).

Table 3.7: Antenatal Care Duties

	HEWs	vCHWs	TBAs	≤5 km from road	>5 km from road
	n=35	n=70	n=57	n=162	n=162
Whose duty is it to provide antenatal care?					
HEWs, %	100	90.00	76.79	87.00	88.33
vCHWs, %	47.06	75.71	8.93	42.00	53.33
TBAs, %	41.18	24.29	30.36	36.00	20.00
Who has the knowledge and skills to provide antenatal care?					
HEWs, %	100	97.14	75.44 S	87.13	95.08
vCHWs, %	20.00	35.71	5.26 S	14.85	32.79
TBAs, %	25.71	24.29	14.04	16.83	27.87
Who do you trust to provide antenatal care					
HEWs, %	100	97.14	68.42 S	83.17	95.08
vCHWs, %	25.71	38.57	3.51 S	13.86	39.34
TBAs, %	34.29	20.00	15.79	15.84	31.15

Personal Attitudes Towards and Knowledge of Antenatal Care

Key Results of FLW Attitudes Towards and Knowledge of Antenatal Care
• Significantly fewer TBAs (p<.001) felt it was their duty to provide antenatal care • Only 30% of TBAs felt they had the knowledge and skills to provide antenatal care and they also had the lowest reported confidence in doing so • All HEWs and nearly all vCHWs reported that all pregnant women should seek antenatal care and birth preparation compared to less than a quarter of TBAs

The following data on personal attitudes towards and knowledge of antenatal care can be found in Table Six. All HEWs, 86% of vCHWs, and significantly fewer TBAs (86%, p<.001) felt that it was their personal duty to provide antenatal care. said it was their duty

while 85.71% of vCHWs and only 27.27% of TBAs felt it was their duty. When FLW were asked if they strongly agree, agree, disagree, or strongly disagree with the statement "It is important for me to provide care to women in pregnancy," the responses were quantified on a one to four scale with one being strongly agree and four being strongly disagree. The mean response of HEWs was 1.22 (SD=.43) and of vCHWs was 1.46 (SD=.56), which both correlated with "strongly agree," while the mean response of TBAs was 2.34 (SD=.98) (Table 3.8).

When FLWs were asked if they had the knowledge and skills to provide antenatal care, 88% of HEWs, 64% of vCHWs, and only 30% of TBAs said yes. FLW were also asked to rate their confidence in providing antenatal care on a scale of one to ten, ten being most confident. HEWs, with a mean of 7.26 (SD=1.57), had a significantly higher mean confidence score than both vCHWs whose mean confidence was 5.87 (SD=2.29, p=.018) and TBAs whose mean confidence was 4.14 (SD=2.60, p=.002) (Table 3.8).

Table 3.8: Antenatal Care Demoraphics

	HEWs	**vCHWs**	**TBAs**
	n=35	**n=70**	**n=57**
Personal duty to provide antenatal care, %	100	85.71	27.27
Importance of providing antenatal care mean (SD) 1= strongly agree 4=strongly disagree	1.22 (.43)	1.46 (.56)	2.34 (.98)
Knowledge and skills to provide antenatal care, %	88.24 n=34	63.63 n=66	30.43 n=46
Confidence in providing antenatal care mean (SD) 1= very unconfident 10=very confident	7.26 (1.57)	5.87 (2.29)	4.14 (2.60)
"A woman should tell a health worker when she knows she is pregnant." % agreement	100	100	82.14 n=56
"A woman and family should not prepare for a problem ahead of time because the birth may be peaceful." % agreement	0	4.29	19.64 n=56
"There is no reason for a healthy pregnant woman to go for checkups by health workers." % agreement	0	12.86	59.65

One hundred percent of HEWs and vCHWs agreed with the statement, "A woman should tell a health worker when she knows she is pregnant," compared to significantly less TBAs (82%, p<.001). It was reported that zero HEWs (p=.005) and 4.3% (p=.006) of vCHWs agreed with the statement, "A woman and family should not prepare for a problem ahead of time because the birth may be peaceful," compared to 20% of TBAs. Among HEWs, none agreed with the statement, "There is no reason for a healthy pregnant woman to go for checkups by health workers," compared to significantly more vCHWs (12.86%, p=.027) and TBAs (60%, p<.001) (Table 3.8).

Perceptions of Duties, Knowledge, and Trust among FLWs: Labor/Birth Care

Key Labor and Birth Perception Results
• FLWs perceptions of duty, knowledge and skills, and trust in providing labor and birth care were highest among HEWs and lowest among vCHWs • Significantly less TBAs (65%) felt it was the duty of the HEW to provide labor and birth care • 47% of HEWs and vCHWs thought it was the duty of TBAs • Significantly more FLW living far from an all weather road thought it was the duty of TBAs to provide labor and birth care (p=.007) • Perceptions of knowledge and skills of all types of FLW were higher among those FLW living far from an all weather road • FLWs living far from an all weather road reported high levels of trusting TBAs to provide labor and birth care (p=.005)

The following data involving perceptions of labor and birth care can be found in Table Seven. One hundred percent of HEWs and 91% of vCHWs reported that it is the duty of HEWs to provide labor and birth care to the kebele compared to significantly less TBAs (65%). Forty seven percent of HEWs and vCHWs reported that TBAs have the duty to provide labor and birth care compared to 71% of TBAs. Among vCHWs, 34% reported that it was their duty to provide labor and birth care, which is in contrast to the 27% of HEWs and 10% of TBAs who said they did. Distance from an all weather road did not significantly

affect the perception of labor and birth care duties in the kebele with the exception of TBAs. Significantly more FLW living far from an all-weather road reported that TBAs have the duty of providing labor and birth care (p=.007) (Table 3.9).

General perceptions of who has the knowledge and skills to provide labor and birth care followed the same trends seen with the perception of duty to provide labor and birth care. The majority of HEWs (97%) and vCHWs (93%) reported that HEWs have the knowledge and skills to provide labor and birth care, compared to 59% of TBAs. While significantly less TBAs reported HEWs as having this knowledge and skills, about the same percentage of TBAs reported that TBAs in general have this knowledge and skills. Only about 24% of vCHWs reported that vCHWs have these knowledge and skills followed by less than 18% of HEWs and less than 2% of TBAs. Perceptions of the knowledge and skills of HEWs, vCHWs, and TBAs significantly increased if the FLW lived far from an all-weather road (p=.036, p=.044, p=.007 respectively) (Table 3.9).

Perceptions of who FLW trusted to provide labor and birth care followed similar patterns seen with the previous labor and birth indictors. All HEWs, 88% of vCHWs, and 65% of TBAs trusted HEWs to provide labor and birth care. Trust of TBAs did not significantly differ among FLWs, however less TBAs trusted TBAs in general to provide labor and birth care (54%) compared to TBAs who saw TBAs in general as having the duty of providing labor and birth care (71%, p<.001). Few FLWs; 14% of HEWs, 20% of vCHWs, and 5% of TBAs, trusted vCHWs to provide labor and birth care. Trust of HEWs and vCHWs by FLWs did not significantly increase based on distance from an all-weather road. Trust of TBAs did significantly increase among FLWs who lived far from an all-weather road compared to those who lived close (36% and 58% respectively, p=.005) (Table 3.9).

Table 3.9: Labor and Birth Duties

	HEWs	vCHWs	TBAs	≤5 km from road	>5 km from road
	n=35	n=70	n=57	n=162	n=162
Whose duty is it to provide labor and birth care?					
HEWs, %1&2 -3 <.001	100 n=34	91.18 n=68	64.71 n=51	81.72	88.33 p=.272
vCHWs, %	26.47 n=34	33.82 n=68	9.80 n=51	19.35	31.67 p=.082
TBAs, %	47.06 n=34	47.06 n=68	70.59 n=51	46.24	68.33 p=.007
Who has the knowledge and skills to provide labor and birth care?					
HEWs, %	97.06	92.75	58.93	76.77	90.00 p=.036
vCHWs, %	17.65	23.19	1.79	10.10	21.67 p=.044
TBAs, %	41.18	36.23	57.14	36.36	58.33 p=.007
Who do you trust to provide labor and birth care					
HEWs, %	100	88.41 n=69	64.91	78.22	90.00 p=.057
vCHWs, %	14.29	20.29 n=69	5.26	9.90	20.00 p=.071
TBAs, %	45.71	34.78 n=69	54.39	35.64	58.33 p=.005

Personal Knowledge and Attitudes Towards Labor and Birth Care

Key Personal Labor and Birth Knowledge and Attitudes Results

- Only 39% of vCHWs reported that it was their personal duty to provide labor and birth care, however there was no significant difference in perceived importance of this duty when compared to the 81% of TBAs who felt it was their duty.
- In general HEWs reported more confidence, importance, and knowledge surrounding labor and birth followed by TBAs and then vCHWs
- Over half (55%) of HEWs felt that didn't have the practical experience to attend labor and birth and only 60% said they could do it alone.
- Nearly a quarter of vCHWs and TBAs felt PPH was caused by a bad spirit 26% of TBAs believe maternal death happens by chance
- The majority of HEWs did not endorse homebirths, and felt health workers should be called to delivery compared to few TBAs. Only around half of vCHWs supported these beliefs
- Nearly all FLWs report that TBAs are called to help in delivery

The following data on personal duties can be found in Table Eight. All HEWs and 81% of TBAs felt it was their duty to provide labor and birth care compared to only 39% of vCHWs. While significantly fewer vCHWs felt it was their duty to provide labor and birth care, there was no significant difference between how important TBAs and vCHWs felt it was to provide labor and birth care. HEWs, reported that providing labor and birth care was significantly more important to them (1.29) than both vCHWs and TBAs reported (p=.0005). Nearly all HEWs (97%) and TBAs (90%) felt that they had the knowledge and skills to provide labor and birth care compared to significantly fewer vCHWs (34%, p<.001). Confidence in providing labor and birth care was also the significantly higher among HEWs and TBAs who had a mean confidence of 6.97 and 6.72 respectively compared to only 4.13 by vCHWs (p.022) (Table 3.10).

Table 3.10: Labor and Birth Demographics

	HEWs	**vCHWs**	**TBAs**
	n=35	**n=70**	**n=57**
Personal duty to provide labor and birth care, %	100	38.57	80.70
Importance of providing labor and birth care mean (SD) 1= strongly agree 4=strongly disagree	1.29 (.52)	1.94 (.87)	1.70 (.78)
Knowledge and skills to provide labor and birth care, %	97.14	33.82	90.38
Confidence in providing labor and birth care mean (SD) 1= very unconfident 10=very confident	6.97 (1.68)	4.13 (2.60)	6.72 (2.22)

Over half of all HEWs and about half of all vCHWs felt that they had the knowledge but not the practical experience to attend a delivery compared to only a third of TBAs. Significantly more TBAs (89%) felt that they were able to attend birth alone compared to 60% of HEWs and only 10% of vCHWs (p=.001 and p<.001 respectively). Over 90% of all FLWs agree that TBAs are called to help with deliveries (Table Nine).

When asked about postpartum hemorrhage (PPH), only 13% of vCHWs and 25% of TBAs and HEWs felt that they had the knowledge and experience to manage PPH. While no HEWs support this statement, over 20% of vCHWs and TBAs agreed that "There is nothing to be done about excessive bleeding after birth because it is caused by serakian." Serakian is the local name for a bad spirit rumoured to cause PPH (Table 3.11).

Table 3.11: Labor and Birth Normative Beliefs – part one

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
"I have the knowledge, but I don't have the practical experience to attend to delivery." % agreement	54.29	48.57	33.33
"I am able to attend a delivery alone." % agreement	60.00	10.00	89.47
"I feel I have sufficient knowledge and experience to manage serakian" % agreement	20.59	12.86	24.56
"There is nothing to be done about excessive bleeding after birth because it is caused by serakian." % agreement	0	21.43	21.05
"There is little to be done to save a mother or child. If one dies during delivery it is a matter of chance." % agreement	5.71	17.14	26.32
"People call traditional birth attendants to help in delivery." % agreement	91.43	91.43	96.43

The following information about FLW normative beliefs surrounding labor and birth can be found in Table Ten. Nearly all TBAs (93%) believed a woman should deliver in the home unless the labor is serious compared to just 6% of HEWs. It is also widely believed, by 82% of TBAs and 40% of vCHWs, that unless the labor is serious, there is no reason to call a health worker compared to only 3% of HEWs who believe this. Only 65% of TBAs, compared with 91% of HEWs and 84% of vCHWs, believed that a health worker would come to deliver a baby at night (Table 3.12).

When asked about umbilical cord practices, all HEWs supported evidence based practices that show that the umbilical cord should be tied on both the mother's and baby's

side compared to 71% of vCHWs and 74% of TBAs. All HEWs were against the practice of pulling on the umbilical cord to detach the placenta while 13% of vCHWs and 30% of TBAs supported this practice (Table 3.12).

Table 3.12: Labor and Birth Normative Beliefs – part two

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
"A woman should deliver in the home unless the labor is serious." % agreement	5.71	57.97	92.98
"If labor is not serious, there is no reason to call a health worker." % agreement	2.86	40.00	82.46
"When labor begins, a health worker should be called to the home." % agreement	100	90.00	78.57
"A health worker will come to deliver a baby at nighttime." % agreement	91.43	84.29	64.91
"The seng cord should be tied both on the mother's part and the baby's part." % agreement	100	71.43	73.68
"If the seng has trouble detaching, it should be pulled out in the home." % agreement	0	12.86	30.36

Perceptions of Duties, Knowledge, and Trust among FLWs: Postpartum Care

Key Postpartum Care Perception Results
• More FLWs in general reported that HEWs had the duty, knowledge and skills, and are trusted to provide postpartum care • More HEWs and TBAs reported that TBAs had the knowledge, skills, and are trusted to provide postpartum care than vCHWs • More vCHWs felt that vCHWs in general, compared to TBAs, had the duty, knowledge and skills, and are trusted to provide postpartum care • More FLWs living far from an all weather road felt HEWs had the duty, vCHWs had the knowledge and skills, and HEWs and TBAs could be trusted to provide postpartum care

Most FLW believe that it is the duty of HEWs to provide postpartum care, however there were significantly different views about whether or not it was the duty of vCHWs. About 68% of vCHWs, 37% of HEWs, and about 2% of TBAs said that vCHWs had this duty ($p<.001$). About a third of FLW saw TBAs as having the duty of providing postpartum care. TBAs appear largely unsupportive of any FLW having the duty of providing postpartum

care with 57% in favor of HEWs, 29% in favor of TBAs, and just 2% in support of vCHWs. Significantly more FLW living far from an all weather road reported HEWs as having the duty of providing postpartum care compared to those living close (p=.017) (Table 3.13).

Table 3.13: Postpartum Care Duties

	HEWs	vCHWs	TBAs	≤5 km from road	>5 km from road
	n=35	n=70	n=57	n=162	n=162
Whose duty is it to provide postpartum care?					
HEWs, %	100	92.65 n=68	57.14 S n=56	76.24	91.38 p=.017
vCHWs, %	37.14	68.12 n=69	1.79 S n=56	35.64	42.37 p=.398
TBAs, %	37.14	26.09 n=68	28.57 n=56	28.71	30.51 p=.810
Who has the knowledge and skills to provide postpartum care?					
HEWs, %	100	97.10	68.42	84.16	93.33 p=.088
vCHWs, %	17.14	49.28	1.75	18.81	36.67 p=.012
TBAs, %	28.57	21.74	19.30	19.80	26.67 p= .312
Who do you trust to provide postpartum care					
HEWs, %	97.14	92.75	58.93	76.24	91.53 p=.015
vCHWs, %	25.71	40. 58	5.36	15.84	40.68 P<.001
TBAs, %	31.43	13.04	17.86	14.85	25.42 p=.098

Slightly more FLW reported that HEWs had the knowledge and skills to provide postpartum care than reported them as having the duty to provide it. However, among all FLW, even fewer reported that vCHWs and TBAs had the knowledge and skills to provide postpartum care. This included 19% fewer vCHWs and 10% fewer TBAs reporting that

their respective health positions had the knowledge and skills to provide postpartum care. The perceptions towards vCHWs did increase significantly among FLW who lived far from an all weather road (p=.012) (Table 3.13).

Perceptions about whom FLW trusted to provide postpartum care followed trends similar to who they felt had the duty to provide postpartum care. The percentage of vCHWs and TBAs reporting that they trusted their respective health career in general to provide postpartum care continued to decrease when compared to their perceptions of duty as well as knowledge and skills. Trust towards HEWs and vCHWs in providing postpartum care significantly increased along FLW living far from an all-weather road (p=.015 and p<.001 respectively) (Table 3.13).

Personal Knowledge and Attitudes Towards Postpartum Care

Key Personal Knowledge and Attitudes Towards Postpartum Care Results
• All HEWs and nearly all vCHWs felt they had the personal duty to provide postpartum care while only 40% of TBAs felt this duty • HEWs and vCHWs reported more perceived knowledge and skills as well as confidence in providing postpartum care than TBAs did

While all HEWs and most vCHWs felt it was their duty to provide postpartum care, only 40% of TBAs felt this way. These figures were similar to FLWs self reported knowledge and skills to provide postpartum care. On average, TBAs did feel it was important for them to provide postpartum care, however HEWs and vCHWs reported that it was significantly more important to them to provide postpartum care (p<.001). Personal confidence in providing postpartum care also varied significantly among all FLWs (p=.007). HEWs reported that they were moderately confidence with a mean confidence rating of 7.69, compared to vCHWs who had a mean confidence rating of 5.67. TBAs reported that

they were slightly unconfident in providing postpartum care with a mean confidence rating of 4.35 (Table 3.14).

Table 3.14: Postpartum Care Demographics

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
Personal duty to provide postpartum care, %	100	82.61	40.38
Importance of providing postpartum care mean (SD) 1= strongly agree 4=strongly disagree	1.23 (.49)	1.51 (.53)	2.09 (.97)
Knowledge and skills to provide postpartum care, %	100	72.06	42.86
Confidence in providing postpartum care mean (SD) 1= very unconfident 10=very confident	7.69 (1.78)	5.67 (2.13)	4.35 (2.84)

Perceptions of Duties, Knowledge, and Trust among FLWs: Newborn Care

Key Results of FLW Perceptions of Newborn Care
• The most FLW report that HEWs have the duty, knowledge and skills, and are trusted to provide newborn care. • Perceptions of knowledge, skills, and trust decrease for TBAs and vCHWs when compared with the percentage of FLWs who see them as having the duty to provide newborn care, while perceptions of HEWs in these areas actually increased. • Significantly more FLWs living far from an all weather road reported increased rates of trust, duty, and knowledge and skills for nearly all FLWs.

The majority of FLWs reported that HEWs have the duty of providing newborn care, as with postpartum care. Two thirds of vCHWs reported that it is the duty of vCHWs to provide newborn care, while only 43% of HEWs and 9% of TBAs reported the same. Significantly more FLW who live far from an all-weather road, reported that HEWs and vCHWs have the duty of providing newborn care (p=.005 and p=.011, respectively). Less than a quarter of FLW reported that providing newborn care is a duty of TBAs (Table 3.15).

Table 3.15: Newborn Care Duties

	HEWs	vCHWs	TBAs	≤5 km from road	>5 km from road
	n=35	n=70	n=57	n=162	n=162
Whose duty is it to provide newborn care?					
HEWs, %	100	88.41	56.36 S	73.00	91.53 p=.005
vCHWs, %	42.86	66.67	8.93 S	33.66	54.24 p=.011
TBAs, %	31.43	18.84	23.21	20.79	27.12 p=.360
Who has the knowledge and skills to provide newborn care?					
HEWs, %	100	92.75	62.50	20.00	39.72 p=.088
vCHWs, %	8.57	46.38	1.79	31.67	53.66 p=.012
TBAs, %	22.86	14.49	14.29	35.20	44.44 p=.312
Who do you trust to provide newborn care					
HEWs, %	100	92.75	60.71	77.23	93.22 p=.009
vCHWs, %	20.00	39.13	1.79	10.89	40.68 p<.001
TBAs, %	25.71	18.84	10.71	10.89	28.81 p=.004

The majority of FLWs also reported that HEWs have the knowledge and skills to provide newborn care. While 43% of HEWs thought vCHWs had the duty of providing newborn care, only 9% of HEWs believe vCHWs have the knowledge and skills to do so. A similar trend was seen in the views of TBAs surrounding newborn care. Significantly more FLW living far from an all-weather road also reported that vCHWs have the knowledge and skills to provide newborn care. Fewer FLW also reported that TBAs have the knowledge

and skills to provide newborn care compared to those who saw them as having the duty to provide it (Table 3.15).

The vast majority of FLWs also reported trusting HEWs to provide newborn care. Less than a quarter of FLWs however trusted either vCHWs or TBAs to provide newborn care. Notably, while about 67% of vCHWs reported that it was the duty of vCHWs to provide newborn care only 39% trusted vCHWs to do so. The same trend was seen with TBAs, wherein 23% of TBAs reported that providing newborn care was the duty of TBAs while just 11% reported trusting TBAs to do so. FLWs living far from an all-weather road reported significantly higher levels of trust for HEWs, vCHWs, and TBAs ($p=.009$, $p<.001$, $p.004$ respectively) (Table 3.15).

Personal Knowledge and Attitudes Towards Newborn Care

Key Personal Knowledge and Attitudes Towards Newborn Care Results
• More HEWs and vCHWs felt it was their duty and that they had the knowledge and skills to provide newborn care than TBAs • HEWs and vCHWs also felt more confident in providing newborn care than TBAs. • The vast majority of HEWs did not support any harmful newborn practices while a large number of TBAs and fewer vCHWs endorsed them.

All HEWs and 78% of vCHWs felt they have the personal duty to provide newborn care compared to 32% of TBAs. Approximately the same percentage of HEWs, vCHWs, and TBAs felt they had the knowledge and skills to provide newborn care. The perceived importance of providing newborn care correlated to these responses with TBAs reporting that providing newborn care was significantly less important to them than HEWs and vCHWs. HEWs reported on average feeling substantially confident with a mean of 8.17 out

of ten while vCHWs reported feeling fairly confident with a mean of 6.41 and TBAs reported feeling unconfident with a mean of 3.86 (Table 3.16).

Table 3.16: Newborn Care Demographics

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
Personal duty to provide newborn care, %	100	78.26	32.14
Importance of providing newborn care mean (SD) 1= strongly agree 4=strongly disagree	1.2 (.47)	1.52 (.53)	2.35 (.89)
Knowledge and skills to provide newborn care, %	100	73.13	37.74
Confidence in providing newborn care mean (SD) 1= very unconfident 10=very confident	8.17 (1.77)	6.41 (2.35)	3.86 (2.96)

Table 3.17 Newborn Normative Beliefs

	HEWs	vCHWs	TBAs
	n=35	n=70	n=57
N9 "The baby should be washed immediately after birth." % agreement	14.29	75.36 n=69	61.40
N22 "A baby's cord should be plastered with butter." % agreement	0	22.86	53.57 n=56
N23 "The first milk is unclean and should not be given to the baby." % agreement	0	37.14	64.29 n=56
N20 "Mothers should provide water or cow's milk to new babies if it is available." % agreement	0	11.43	16.07 n=56
N11 "A baby should be given butter after birth." % agreement	2.94 n=34	8.57	36.84

All HEWs in general had a very high knowledge about proper evidence-based newborn care and unless otherwise stated no HEWs supported any of the following newborn care techniques. Seventy five percent of vCHWs, 61% of TBAs , and 14% of HEWs believed that a baby should be washed immediately after birth. About 54% of TBAs and 23% of vCHWs believed that the stump of the baby's umbilical cord should be plastered with butter. In regards to breastfeeding, 64% of TBAs and 37% of vCHWs felt that the colostrum is unclean and should not be given to the newborn. When asked about given

newborns certain liquids after birth, 16% of TBAs and 11% of vCHWs felt that a mother should give their newborn water or cow's milk if it was available. About 37% of TBAs, 9% of vCHWs, and 3% of HEWs felt that a newborn should be fed butter after birth (Table 3.17).

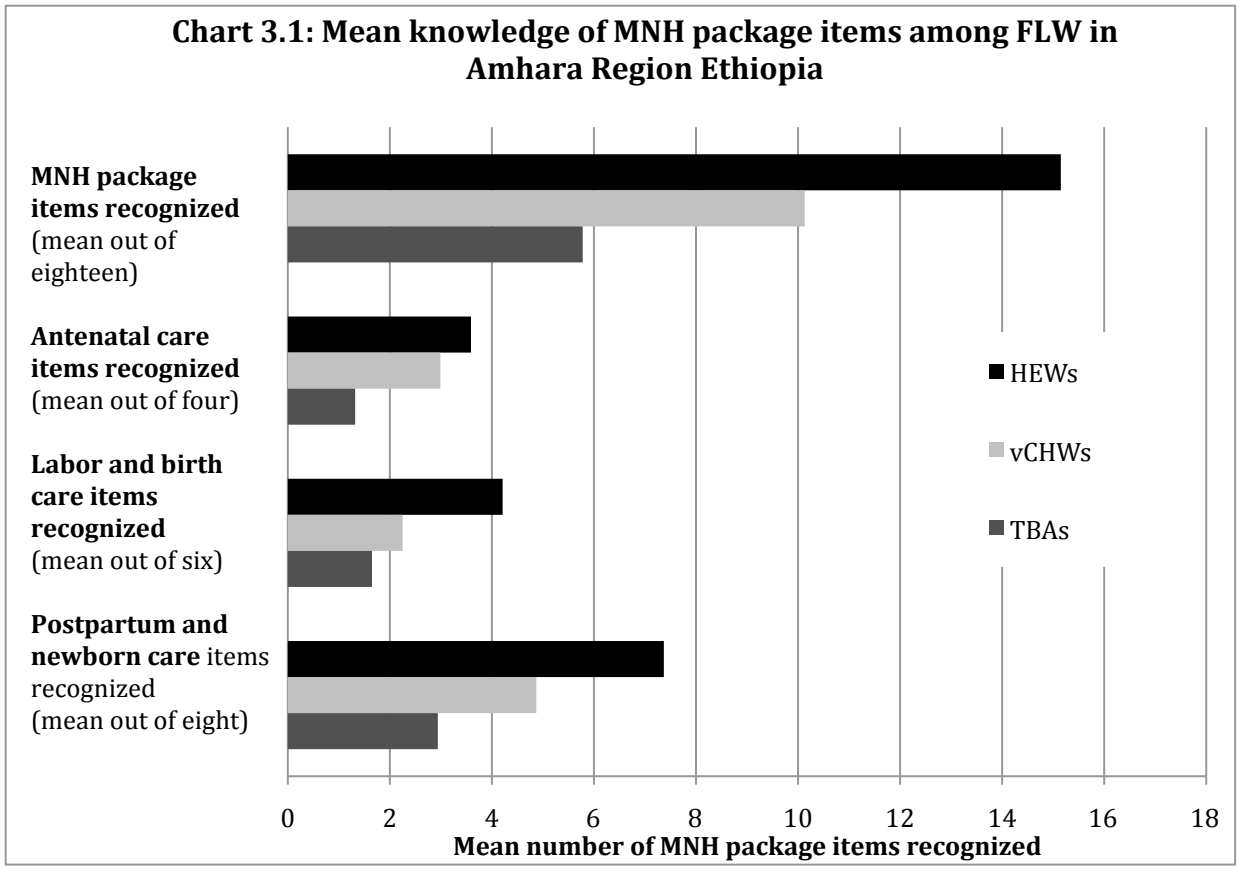
Knowledge of MNH Package Items Among All FLW

Key Results of FLW Knowledge of MNH Package Items
• In general, HEWs have highest knowledge of MNH package items followed by vCHWs and then TBAs • HEWs recognized a mean of about fifteen out of eighteen MNH package items, vCHWs recognized a mean of ten, and TBAs recognized a mean of six • HEWS and TBAs have the lowest knowledge of labor and birth practices • vCHWs had highest knowledge of antenatal package items

Knowledge in this context is defined as simply having knowledge that these MNH health practices exist and not necessarily knowledge of how to perform them. Overall, HEWs have the greatest knowledge of all MNH package items with the exception of the same percentage of vCHWs having heard of counseling a postpartum woman to rest for at least 12 days. TBAs have the lowest levels of knowledge of all MNH package items with the exception of a larger percentage of TBAs having heard of safely delivering the placenta (Chart 3.2).

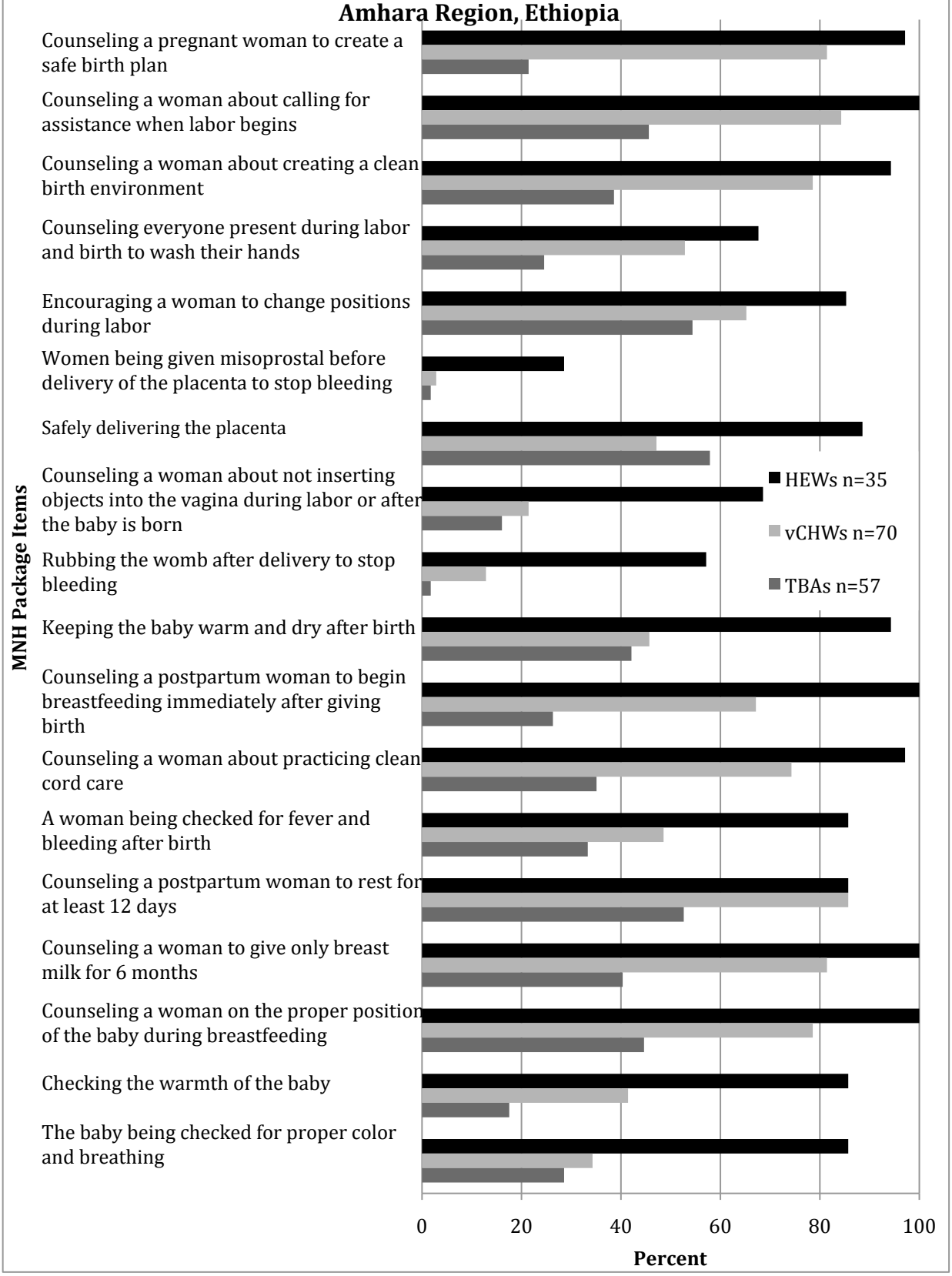
At least half of HEWs had knowledge of each MNH package item with the exception of only 29% having heard of giving a woman misoprostal before delivery of the placenta to stop bleeding. Chart Two shows that HEWs recognized a mean of about fifteen out of eighteen MNH package items. Knowledge of antenatal MNH care items was highest with a mean of 3.59 items known out of four, followed by the knowledge of postpartum and

newborn care practices with a mean of 7.37 out of 8. HEW knowledge of labor and birth MNH practices was lowest with a mean of only 4.21 out of six (Chart 3.1, Table 3.18).



Knowledge of MNH practices by vCHWs was lower than that of HEWs on all but one MNH item by at least fifteen percent. Chart 3.2 shows that vCHWs recognized significantly fewer MNH items than HEWs, knowing a mean of about ten out of eighteen package items. While knowledge of antenatal care practices was comparable to that of HEWs, vCHWs only recognized a mean of about five out of the eight postpartum and newborn care items and only about two out of the six labor and birth care items (Chart 3.1). Less than 25% of vCHWs had heard of giving a woman misoprostal before delivery of the placenta to stop bleeding, counseling a woman not to insert objects into her vagina during delivery, or rubbing the womb after delivery to stop bleeding (Chart 3.2, Table 3.19).

Chart 3.2: Percent of FLWs who recognized MNH package items in Amhara Region, Ethiopia



The lowest level of knowledge of MNH practices was seen among TBAs. The mean number of MNH package items recognized by TBAs was about six out of eighteen. TBAs recognized the fewest labor and birth care practices with a mean of about two out of six. TBAs on average knew only about three out of eight newborn and postpartum care items and knew a mean of just over one antenatal care item out of four (Chart 3.1). Only one TBA had knowledge of giving a woman misoprostal before delivery of the placenta to stop bleeding and rubbing the womb after delivery to stop bleeding. The largest portion of TBAs had knowledge of safely delivering the placenta, encouraging a woman to change positions during labor, and counseling a postpartum woman to rest for at least twelve days (Chart 3.2, Table 3.18).

Table 3.18: MNH Package Recognition

	HEWs	**vCHWs**	**TBAs**
	n=35	**n=70**	**n=57**
Mean number of MNH package items recognized mean out of 18 (SD)	15.15 (2.62)	10.13 (4.37)	5.78 (3.92)
Mean number of antenatal care items recognized mean out of four (SD)	3.59 (.61)	2.99 (1.18)	1.32 (1.25)
Mean number of labor and birth care items recognized Mean out of six (SD)	4.21 (1.37)	2.25 (1.48)	1.65 (1.20)
Mean number of postpartum and newborn care items recognized Mean out of eight (SD)agreement	7.37 (1.14)	4.87 (2.23)	2.94 (2.22)

Table 3.19: HEW KAP of the Maternal Health Package

	HEWs		
	Heard of it n=35	Able to do it	Did it at last visit
Counseling a pregnant woman to create a safe birth plan	97.14	100 n=34	97.06 n=34
Counseling a woman about calling for assistance when labor begins	100	100 n=35	94.29 n=35
Counseling a woman about creating a clean birth environment	94.29	100 n=33	96.88 n=33
Counseling everyone present during labor and birth to wash their hands	67.65	100 n=23	95.65 n=23
Encouraging a woman to change positions during labor	85.29	100 n=29	86.29 n=29
Women being given misoprostal before delivery of the placenta to stop bleeding	28.57	40 n=10	0 n=4
Safely delivering the placenta	88.57	64.52 n=31	95.00 n=20
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	68.57	95.83 n=23	82.61 n=61
Rubbing the womb after delivery to stop bleeding	57.14	85 n=20	94.12 n=17
Keeping the baby warm and dry after birth	94.29	93.94 n=33	83.33 n=30
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	100	94.29 n=35	81.82 n=33
Counseling a woman about practicing clean cord care	97.14	100 n=34	82.35 n=34
A woman being checked for fever and bleeding after birth	85.71	96.67 n=30	75.86 n=29
Counseling a postpartum woman to rest for at least 12 days	85.71	100 n=30	96.55 n=29
Counseling a woman to give only breast milk for 6 months	100	100 n=35	97.14 n=35
Counseling a woman on the proper position of the baby during breastfeeding	100	100 n=35	97.14 n=35
Checking the warmth of the baby	85.71	63.33 n=30	57.89 n=19
The baby being checked for proper color and breathing	85.71	73.33 n=30	72.73 n=22

Table 3.20: vCHW KAP of the Maternal Health Package

	vCHWs		
	Heard of it n=70	Able to do it	Did it at last visit
Counseling a pregnant woman to create a safe birth plan	81.43	61.40 n=57	97.06 n=34
Counseling a woman about calling for assistance when labor begins	84.29	86.44 n=59	94.34 n=53

Counseling a woman about creating a clean birth environment	78.57	74.55 n=55	92.68 n=41
Counseling everyone present during labor and birth to wash their hands	52.86	83.78 n=37	93.55 n=31
Encouraging a woman to change positions during labor	65.22	62.22 n=45	60.71 n=28
Women being given misoprostal before delivery of the placenta to stop bleeding	2.86	0 n=2	n/a
Safely delivering the placenta	47.14	12.12 n=33	50.00 n=4
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	21.43	53.33 n=15	75.00 n=8
Rubbing the womb after delivery to stop bleeding	12.86	22.22 n=9	50.00 n=2
Keeping the baby warm and dry after birth	45.71	21.88 n=32	57.14 n=7
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	67.14	80.85 n=47	31.58 n=38
Counseling a woman about practicing clean cord care	74.29	80.77 n=52	30.95 n=42
A woman being checked for fever and bleeding after birth	48.57	32.35 n=34	36.36 n=11
Counseling a postpartum woman to rest for at least 12 days	85.71	83.33 n=60	90.00 n=50
Counseling a woman to give only breast milk for 6 months	81.43	84.21 n=57	97.96 n=49
Counseling a woman on the proper position of the baby during breastfeeding	78.57	78.18 n=55	90.70 n=43
Checking the warmth of the baby	41.43	10.34 n=29	33.33 n=3
The baby being checked for proper color and breathing	34.29	25.00 n=24	66.67 n=6

Table 3.21: TBAs KAP of the Maternal Health Package

	TBAs		
	Heard of it n=57	Able to do it	Did it at last visit
Counseling a pregnant woman to create a safe birth plan	21.43	58.33 n=12	85.71 n=7
Counseling a woman about calling for assistance when labor begins	45.61	65.38 n=26	100 n=17
Counseling a woman about creating a clean birth environment	38.60	63.64 n=22	100 n=14
Counseling everyone present during labor and birth to wash their hands	24.56	42.86 n=14	83.33 n=6

Encouraging a woman to change positions during labor	54.39	80.65 n=31	96.00 n=25
Women being given misoprostal before delivery of the placenta to stop bleeding	1.75	0 n=1	n/a
Safely delivering the placenta	57.89	68.75 n=32	100 n=22
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	16.07	55.56 n=9	100 n=5
Rubbing the womb after delivery to stop bleeding	1.75	100 n=1	100 n=1
Keeping the baby warm and dry after birth	42.11	87.50 n=24	100 n=21
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	26.32	86.67 n=15	92.31 n=13
Counseling a woman about practicing clean cord care	35.09	90.00 n=20	94.44 n=18
A woman being checked for fever and bleeding after birth	33.33	63.16 n=19	100 n=11
Counseling a postpartum woman to rest for at least 12 days	52.63	80.00 n=30	92.00 n=25
Counseling a woman to give only breast milk for 6 months	40.35	39.13 n=23	77.78 n=9
Counseling a woman on the proper position of the baby during breastfeeding	44.64	72.00 n=25	94.44 n=18
Checking the warmth of the baby	17.54	10.00 n=10	100 n=1
The baby being checked for proper color and breathing	28.57	62.50 n=16	100 n=10

Differences in Knowledge of MNH Package Items by MNH Training

Chart 3.3 shows that knowledge of all MNH package items was higher among those FLW who had received a clean and safe birth training than among those who had not. This difference was significant among all MNH health care items with the exception of encouraging a woman to change positions during labor. Among those who had clean and safe birth training, over forty percent more FLW reported having heard of keeping the baby warm and dry after birth and checking the warmth of the baby compared to those who did

not. Large differences were also seen in knowledge of counseling everyone present to wash their hands during labor and birth, counseling a woman about not inserting objects into her vagina during labor or after the baby is born, and checking the baby for proper color and breathing among those FLW who had received a clean and safe birth training (Chart 3.3, Table 3.22).

Chart 3.3: Differences in knowledge of MNH package items between FLW trained and not trained in clean and safe birth

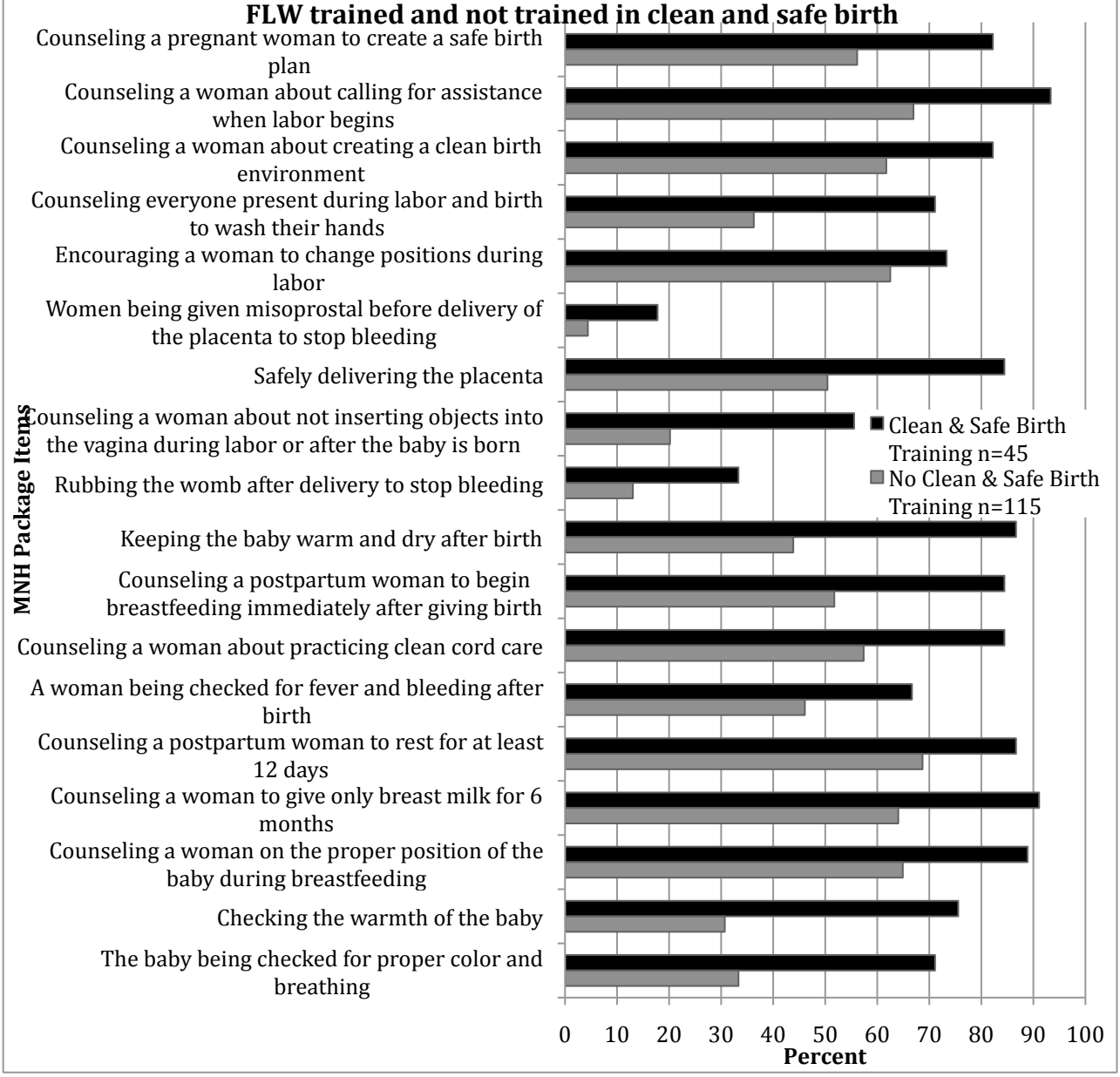


Table 3.22: Knowledge of MNH package by Clean and Safe Birth Training

% who heard of the following:	Clean & Safe Birth Training n=45	No Clean & Safe Birth Training n=115	P value
Counseling a pregnant woman to create a safe birth plan	82.22	56.14	.002
Counseling a woman about calling for assistance when labor begins	93.33	66.96	.001
Counseling a woman about creating a clean birth environment	82.22	61.74	.013
Counseling everyone present during labor and birth to wash their hands	71.11	36.28	<.001
Encouraging a woman to change positions during labor	73.33	62.50	.196
Women being given misoprostal before delivery of the placenta to stop bleeding	17.78	4.39	.006
Safely delivering the placenta	84.44	50.43	<.001
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	55.56	20.18	<.001
Rubbing the womb after delivery to stop bleeding	33.33	13.04	.003
Keeping the baby warm and dry after birth	86.67	43.86	<.001
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	84.44	51.75	<.001
Counseling a woman about practicing clean cord care	84.44	57.39	.001
A woman being checked for fever and bleeding after birth	66.67	46.09	.019
Counseling a postpartum woman to rest for at least 12 days	86.67	68.70	.020
Counseling a woman to give only breast milk for 6 months	91.11	64.04	.001
Counseling a woman on the proper position of the baby during breastfeeding	88.89	64.91	.003
Checking the warmth of the baby	75.56	30.70	<.001
The baby being checked for proper color and breathing	71.11	33.33	<.001

Differences in Knowledge of MNH Package Items by Location

Chart 3.4 and Table 3.23 shows that knowledge of MNH package items was higher for all but three MNH package items among those FLW who lived far from an all weather road. These differences were significant for the MNH practices of counseling a woman about calling for assistance when labor begins and safely delivering the placenta. There was also a greater than 10% increase in the number of FLW with knowledge of counseling

a postpartum woman to begin breastfeeding immediately after birth, counseling a woman to give only breast milk for six months, and counseling a woman on the proper position of the baby during breastfeeding. There was no significant difference in the number of FLW who received clean and safe birth training by location from the road (Chart 3.4, Table 3.23).

Chart 3.4: Differences in FLW knowledge of MNH package items based on location from an all-weather road in Amhara Region Ethiopia.

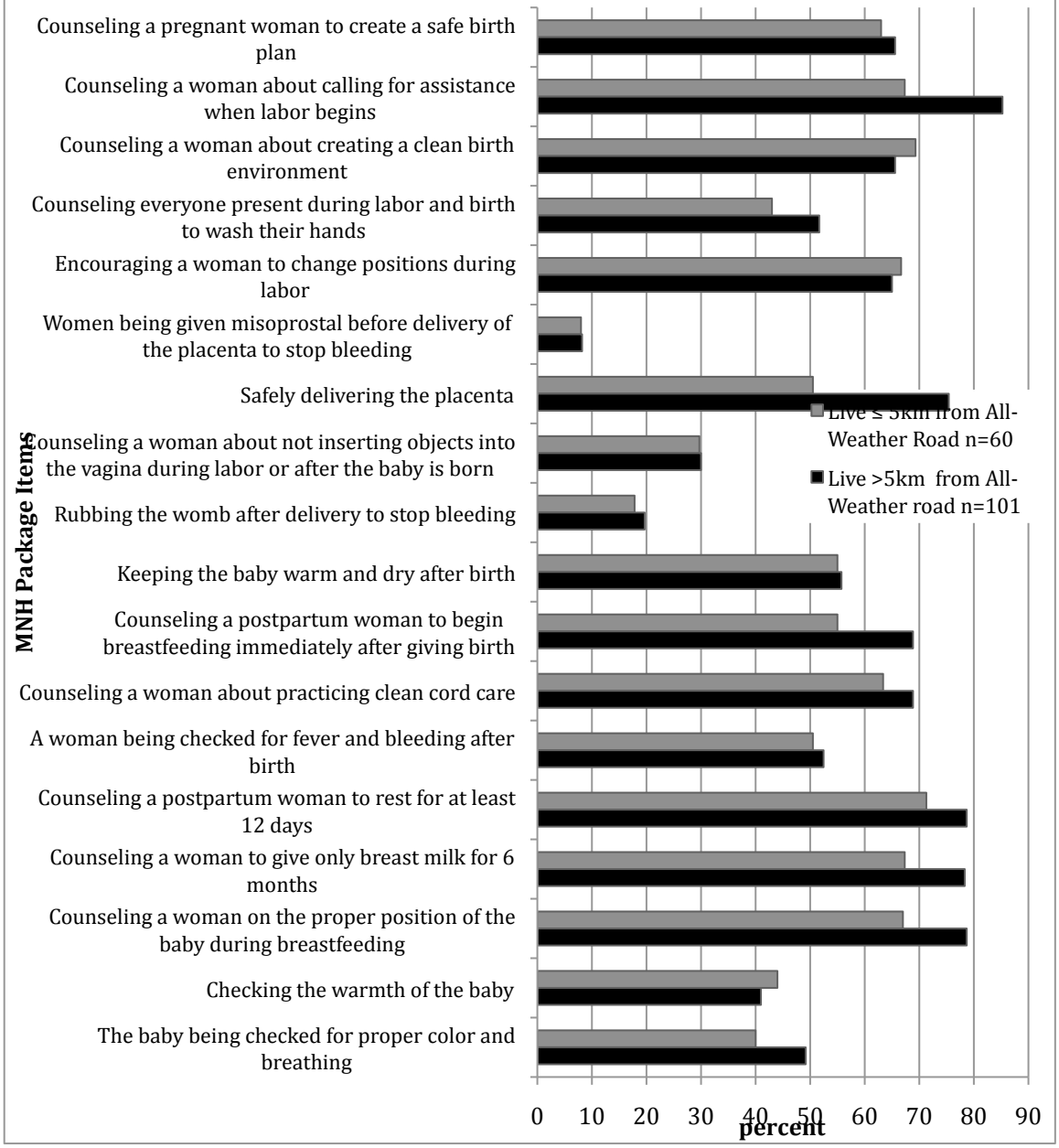


Table 3.23 Knowledge of MNH Package Items by Road Distance

% who heard of the following:	Live ≤ 5km from All-Weather Road n=101	Live >5km from All-Weather road n=60	P value
Counseling a pregnant woman to create a safe birth plan	63.00	65.57	.741
Counseling a woman about calling for assistance when labor begins	67.33	85.25	.012
Counseling a woman about creating a clean birth environment	69.31	65.57	.622
Counseling everyone present during labor and birth to wash their hands	43.00	51.67	.287
Encouraging a woman to change positions during labor	66.67	65.00	.830
Women being given misoprostal before delivery of the placenta to stop bleeding	8.00	8.20	.965
Safely delivering the placenta	50.50	75.41	.002
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	29.70	30.00	.968
Rubbing the womb after delivery to stop bleeding	17.82	19.67	.769
Keeping the baby warm and dry after birth	55.00	55.74	.927
Counseling a postpartum woman to begin breastfeeding immediately after giving birth	55.00	68.85	.081
Counseling a woman about practicing clean cord care	63.37	68.85	.477
A woman being checked for fever and bleeding after birth	50.50	52.46	.809
Counseling a postpartum woman to rest for at least 12 days	71.29	78.69	.298
Counseling a woman to give only breast milk for 6 months	67.33	78.33	.135
Counseling a woman on the proper position of the baby during breastfeeding	67.00	78.69	.111
Checking the warmth of the baby	44.00	40.98	.708
The baby being checked for proper color and breathing	40.00	49.18	.254

FLW Perceptions of the Duty to Perform MNH Package Items

Key FLW Perceptions of the Duty to Perform MNH Package Items
• The majority of HEWs and vCHWs supported HEWs as having the duty to provide all of the MNH package items while less than half of TBAs supported HEWs as being the providers of labor and birth MNH package items • There was little support by HEWs and TBAs of vCHWs providing any of the MNH package items • TBAs felt more TBAs than other FLWs had the duty to provide labor and birth package items and more HEWs thought these were the duty of TBAs compared to vCHWs

When FLW who had knowledge of a specific MNH item were asked whose duty it was to provide that task to the community, most FLW supported HEWs having the duty of providing each MNH practice to the community. Table Twenty Two shows that while the most HEWs report HEWs as having the duty of providing each MNH practice, over 90% of vCHWs support HEWs with these duties with the exception of safely delivering the placenta and rubbing the womb after delivery to stop bleeding, which 76% and 67% of vCHWs supported respectively. Support of HEWs by TBAs in having the duty of providing these health tasks was varied, however at least 60% of TBAs supported HEWs in providing MNH counseling, antenatal, postpartum, and newborn care. In contrast however, less than 45% of TBAs supported HEWs as having the duty of providing labor and birth practices such as safely delivering the placenta, practicing clean cord care, and checking the mother for fever and bleeding directly after birth (Table 3.24).

Table 3.24: MNH Duties

Whose duty is it to provide the following MNH services?	HEWs	vCHWs	TBAs
Counseling a pregnant woman to create a safe birth plan	n=34	n=57	n=14
HEWs, %	**91.18**	100	78.57
vCHWs, %	35.29	**50.88**	7.69
TBAs, %	23.53	16.07	**30.77**

Counseling a woman about calling for assistance when labor begins	n=35	n=61	n=25
HEWs, %	**97.14**	91.80	60.00
vCHWs, %	42.86	**60.66**	4.00
TBAs, %	34.29	21.31	**36.00**
Counseling a woman about creating a clean birth environment	n=33	n=55	n=22
HEWs, %	**100**	96.36	72.73
vCHWs, %	36.36	**63.64**	4.55
TBAs, %	27.27	20.00	**45.45**
Counseling everyone present during labor and birth to wash their hands	n=23	n=37	n=14
HEWs, %	**100**	97.30	85.71
vCHWs, %	21.74	**70.27**	7.14
TBAs, %	21.74	27.03	**50.00**
Encouraging a woman to change positions during labor	n=29	n=46	n=31
HEWs, %	**100**	93.48	41.94
vCHWs, %	13.79	**50.00**	0
TBAs, %	34.48	26.09	**70.97**
Women being given misoprostal before delivery of the placenta to stop bleeding	n=11	n=2	n=0
HEWs, %	**45.45**	100	
vCHWs, %	0	**50.00**	
TBAs, %	0	0	
Safely delivering the placenta	n=31	n=33	n=33
HEWs, %	**93.55**	75.76	36.36
vCHWs, %	3.33	**30.30**	3.03
TBAs, %	32.26	63.64	**65.62**
Counseling a woman about not inserting objects into the vagina during labor or after the baby is born	n=24	n=15	n=9
HEWs, %	**95.83**	100	44.44
vCHWs, %	4.17	**73.33**	0
TBAs, %	20.83	20.00	**44.44**
Rubbing the womb after delivery to stop bleeding	n=20	n=9	n=1
HEWs, %	**100**	66.67	0
vCHWs, %	5.00	**11.11**	0
TBAs, %	40	33.33	100
Keeping the baby warm and dry after birth	n=33	n=32	**n=24**
HEWs, %	**93.94**	75.00	41.67
vCHWs, %	0	**28.12**	0
TBAs, %	39.39	34.38	**75.00**

Counseling a postpartum woman to begin breastfeeding immediately after giving birth	n=35	n=47	n=15
HEWs, %	**97.14**	89.36	73.33
vCHWs, %	40.00	**65.96**	6.67
TBAs, %	37.14	27.66	**80.00**
Counseling a woman about practicing clean cord care	n=34	n=52	n=20
HEWs, %	**97.06**	98.08	35.00
vCHWs, %	17.65	**53.85**	4.76
TBAs, %	38.24	26.92	**76.19**
A woman being checked for fever and bleeding after birth	n=30	n=34	n=18
HEWs, %	**96.67**	94.12	27.78
vCHWs, %	16.67	**38.24**	0
TBAs, %	43.33	26.47	**66.67**
Counseling a postpartum woman to rest for at least 12 days	n=30	n=60	n=31
HEWs, %	**96.67**	96.67	58.06
vCHWs, %	26.67	**65.00**	6.45
TBAs, %	30	16.67	**35.48**
Counseling a woman to give only breast milk for 6 months	n=35	n=59	n=23
HEWs, %	**97.14**	93.22	95.65
vCHWs, %	34.29	**64.41**	8.70
TBAs, %	25.71	13.56	**30.43**
Counseling a woman on the proper position of the baby during breastfeeding	n=35	n=55	n=25
HEWs, %	**97.14**	94.55	68.00
vCHWs, %	25.71	**58.18**	4.00
TBAs, %	28.57	14.55	**60.00**
Checking the warmth of the baby	n=30	n=29	n=10
HEWs, %	**83.33**	96.55	80.00
vCHWs, %	0	**27.59**	0
TBAs, %	0	10.34	**10.00**
The baby being checked for proper color and breathing	n=29	n=24	n=16
HEWs, %	**89.66**	95.83	56.25
vCHWs, %	3.45	**33.33**	0
TBAs, %	37.93	16.67	**56.25**

Over half of vCHWs saw vCHWs as having the duty of providing items in the MNH package with the exception of items related to newborn care, rubbing the woman's womb, and checking the woman for fever and bleeding where support ranged from eleven to thirty eight percent for these practices. Few HEWs felt vCHWs had the duty of performing any of these MNH practices. HEWs showed the highest support for vCHWs performing counseling items that would be discussed with a woman prior to birth such as creating a safe birth plan, calling for assistance when labor begins, and beginning breast feeding immediately after giving birth. No more than nine percent of TBAs saw vCHWs as having the duty of providing any of these MNH services (Table 3.24).

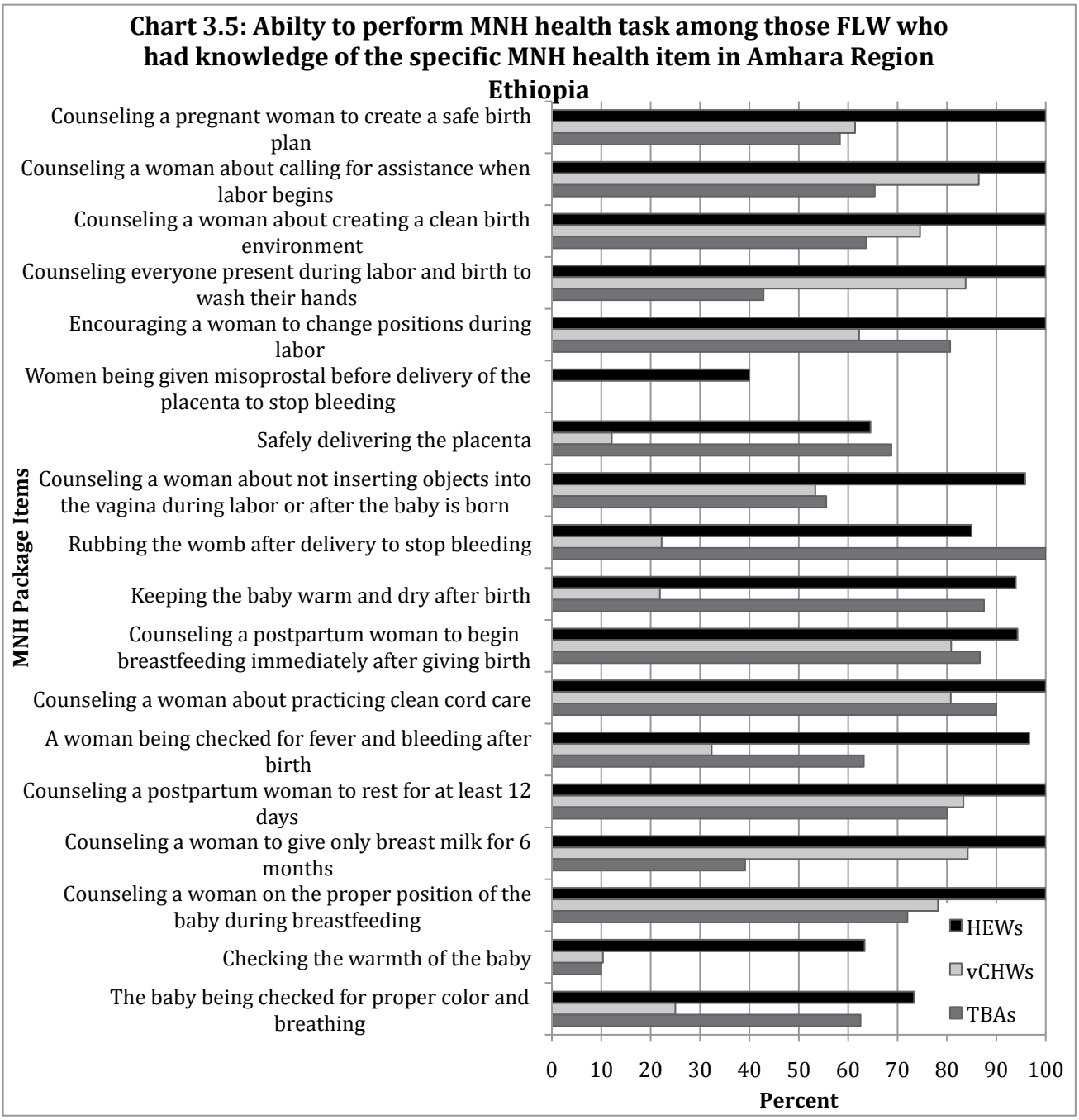
More HEWs saw TBAs as having the duty of providing labor and birth as well as newborn care items than vCHWs. Generally, about a third of HEWs supported TBAs in having the duty to provide each MNH service and fewer vCHWs saw TBAs as having the duty to provide these services. TBAs reported more HEWs than TBAs as having the duty of providing MNH services for all MNH services except labor and birth items. For labor and birth MNH package items almost twice as many TBAs supported TBAs as having these duties compared to HEWs (Table 3.24).

Ability of Knowledgeable FLWs to Perform MNH Health Tasks

Among all FLW who said they had knowledge of MNH practices, HEWs reported the highest percentage of being able to actually perform the MNH skill for all but two of the MNH practices. A larger percentage of TBAs reported being able to safely deliver the placenta and rub the womb after delivery to stop bleeding, however about 94% and 100% of HEWs respectively reported that it was the duty of HEWs to perform these tasks. Over 90% of HEWs who had knowledge of a given MNH practice were able to perform it with the

exception of giving a woman misoprostal, safely delivering the placenta, checking the warmth of the baby, and checking the baby for proper color and positioning. Only 40% of HEWs reported being able to give a woman misoprostal before the delivery of the placenta (Table Tables 3.19, 3.20, 3.21, and Chart 3.5).

The ability to perform MNH tasks that they had knowledge of varied greatly between vCHWs and TBAs. More vCHWs than TBAs who had heard of counseling about MNH antenatal, postpartum, and newborn practices were able to perform them with the exception of 7% more TBAs than vCHWs who reported being able to counsel a woman to breastfeed immediately after birth. Significantly more TBAs who had knowledge of labor and birth practices such as safely delivering the placenta, rubbing the womb, and keeping the baby warm and dry reported being able to perform them as compared to vCHWs. The ability to perform postpartum and newborn clinical techniques such as checking a woman for fever and bleeding and checking the newborn for proper color and breathing were significantly higher among TBAs who had knowledge of these items as compared to vCHWs. Only about 10% of vCHWs and TBAs reported being able to perform the clinical technique of checking the warmth of the baby as compared to 63% of HEWs (Table Tables 3.19, 3.20, 3.21, and Chart 3.5).

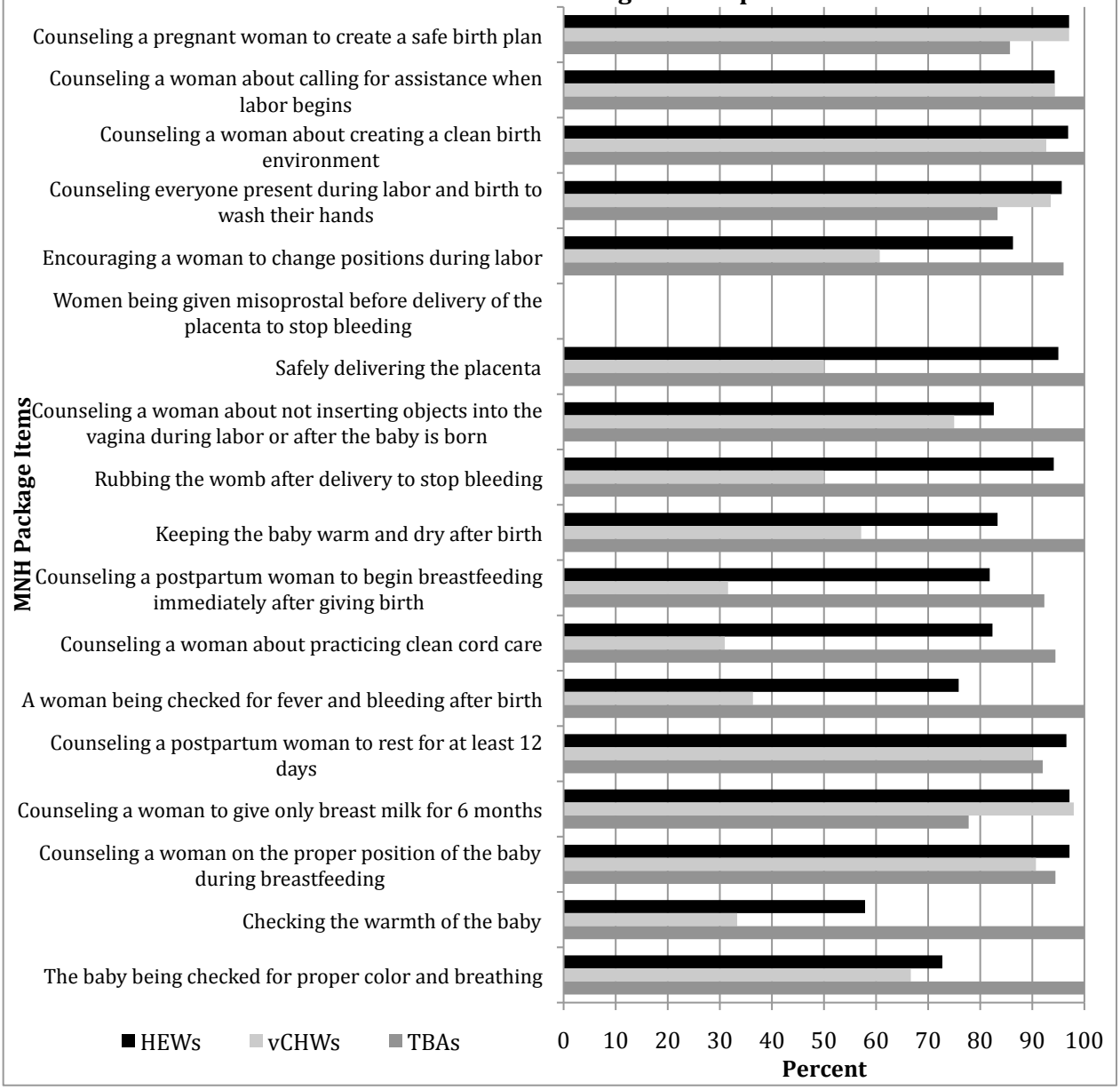


Practice of Skills At Last MNH Visit Among FLW with Ability to Perform Skill

When FLW who reported being able to perform an MNH service were asked if they had performed the task at their last applicable MNH visit, more TBAs reported performing the labor, birth, postpartum, and newborn tasks than HEWs. This difference was significant for the MNH practice of keeping the baby warm and dry after birth. Significantly less

vCHWs reported performing clinical labor, birth, postpartum, and newborn services at their last MNH visit. The percentage of vCHWs who performed MNH counseling services at their last visit was similar to other FLWs with the exception of counseling a postpartum woman to begin breastfeeding immediately and counseling a woman about clean cord care, which were much lower (Tables 3.19, 3.20, 3.21, and Chart 3.6).

Chart 3.6: Percent of FLW who performed MNH health tasks at last MNH visit among those FLW who reported the ability to perform the health task in Amhara Region Ethiopia.



Teamwork Among FLW

Over 90% of HEWs and vCHWs see themselves as part of a team in providing MNH services to the kebele compared to just under a quarter of TBAs. HEWs report the highest mean number of interactions with other HEWs per month, 9.38, which is 15 times higher than the number of interactions TBAs reported with HEWs. The fewest interactions per month were between TBAs and other TBAs, averaging just .34 interactions per month (Table 3.25).

Table 3.25: FLW Teamwork

	HEWs	**vCHWs**	**TBAs**
	n=35	**n=70**	**n=57**
Does work as an FLW alone, %	20.00	8.57	75.44
Sees themselves as part of a team in providing MNH services to the kebele, %	91.43	94.29	24.07
Number of times FLW interacted with an HEW during previous month mean (SD)	9.38 (10.32)	2.81 (2.22)	.62 (1.60)
Number of times FLW interacted with a vCHW during previous month mean (SD)	2.71 (3.40)	2.61 (2.57)	.58 (2.10)
Number of times FLW interacted with a TBA during previous month mean (SD)	1.94 (2.55)	1.72 (3.34)	.34 (.92)

Chapter Four: Discussion, Conclusion, and Recommendations

Study results highlight several key findings that provide insight into the maternal and newborn health knowledge, attitudes, and practices among community health workers in Amhara region Ethiopia. HEWs are the most educated CHWs, have received more Clean and Safe Birth training than other CHWs, and have the greatest overall knowledge of eighteen maternal and newborn health practices that reduce mortality, however only 71% of HEWs attend births. Additionally, among those HEWs who are attending births, TBAs are still attending statistically more births each month. While only a tenth of the vCHWs attend

births, they have higher overall knowledge of key maternal health practices as compared to TBAs. Significantly more CHWs who live greater than five kilometers from an all weather road as compared to those living within five kilometers of an all weather road trust TBAs and see them as having the duty and the knowledge and skills to provide labor and birth care.

As outlined in the HEP, the Ethiopian FMOH sought to recruit HEWs with at least a 10th grade education[34]. This study found that HEWs had completed a mean of 11.34 years of schooling, which supports the educational goal for HEWs set forth by the FMOH. Contrary to the concern stated by the Center for National Health Development in Ethiopia (2005) that HEWs would be completing their training many years after the completion of their secondary schooling and would therefore have a more difficult time retaining the material,[34] this study found that most HEWs began their training shortly after completing their secondary schooling. Additionally, given the poor national secondary education and literacy rates, HEWs also serve as academic role models to the local communities they serve[31].

In a 2008/9 study carried out by the L10K project, only about 20% of HEWs had received a four week clean and safe birth training[35]. This study found that the portion of HEWs who reported having received a Clean and Safe Birth training has increased to over half of all HEWs. Additionally, about twenty five percent of vCHWs and fifteen percent of TBAs have also reported receiving clean and safe birth training. Study results indicate that among those FLWs who reported clean and safe birth training and among HEWs in general, knowledge of almost every item in the MNH package was significantly higher. Multiple studies have shown that when implemented effectively, targeted MNH interventions such

as those covered in clean and safe birth training and in this study's MNH package, can successfully reduce maternal and newborn mortality[41].

Previous research as shown that CHWs can be considered skilled birth attendants after just six weeks of targeted training and that their skilled attendance at delivery can reduce maternal mortality by up to 33%[16]. In a 2008/9 study of 2,448 births by the Last 10 Kilometers project, only 4% of births over the last year were attended by HEW[35]. This study found that 71% of HEWs report providing labor and birth care, however they attend on average, significantly fewer births than TBAs. Additionally over half of all HEWs report that they don't have the practical experience to attend births and forty percent feel they can't attend births alone. These findings are consistent with other data that has shown that even when CHWs are educated in labor and birth care, they often report a lack of confidence, adequate preparation, and a lack hands on training as reasons for not attending more births[21, 30, 34, 36]. In accordance with current research, our results have shown that TBAs continue to attend the most births, as they remain sought after by the community for their perceived knowledge and experience in attending births[16, 28, 35]

While little research exists about the demographics and practices of vCHWs due to the diverse nature of their recruitment and duties, our research has shown that over seven percent of vCHWs attend labor and birth and they average a similar number of births per month compared to HEWs. Studies have shown their relationship with HEWs remains informal with no set academic agenda, however vCHWs demonstrated significantly greater knowledge of nearly every MNH package item when compared with TBAs[12, 37].

Years of education and exposure to MNH training are proven determinants of MNH knowledge, however other factors also contribute to the attitudes and perspectives that

shape the use and functionality of CHWs. This study found that significantly more CHWs living greater than five kilometers from an all weather road report that they trust TBAs and see them as having the duty, knowledge, and skills to provide labor and birth care. Several factors may be affecting the views of CHWs in more rural communities. TBAs have historically had a strong cultural presence in developing nations where no other form of skilled birth attendance is available and these perspectives likely still permeate the landscape of more rural Ethiopian communities[20, 28, 29]. Additionally, due to the distance from health facilities there is a higher unmet need for MNH services in rural communities that must be met by those providers who are available, such as TBAs[28].

Although HEWs only receive one year of training that covers a multitude of topics prior to starting work, it is evident that their MNH knowledge still surpasses that of other CHWs and the general community. Clean and safe birth training also appears to have a strong influence on the MNH knowledge base of HEWs and those other CHWs who report having received it. Unfortunately, only half of HEWs and less than a quarter of vCHWs and TBAs have received additional clean and safe birth training, suggesting that the HEP has not prioritized this aspect of training.

Moreover, numerous barriers remain in place that limit the ability of HEWs to focus on improving their MNH knowledge and skills. With 15 other health packages that HEWs are responsible for providing to the community, MNH services represent only a fraction of HEWs' daily activities. While all HEWs report that it is their duty to provide labor and birth care, the majority of HEWs report that they have too many health duties and that their main duties are related to family planning and vaccination. HEWs have been charged with the lofty responsibility of improving the poor national maternal and newborn health

outcomes, however these competing responsibilities make it difficult for HEWs to fully utilize their MNH knowledge to positively affect health outcomes in their community.

Even though all HEWs report that it is their duty to provide labor and birth care, much fewer report attending births and even fewer report feeling like they can attend a birth by themselves. This lack of confidence in their ability to provide labor and birth care likely results from the lack of hands on labor and birth training. After very limited, if any, clinical exposure to labor and birth during their initial training, HEWs are expected to begin independently managing labor and delivery once they begin work at their health post. The responsibility of providing an entire community's MNH needs would be difficult even for a more highly trained practitioner.

Furthermore, even though nearly all births occur in the home, HEWs are taught how to manage births in the setting of a health facility. Practically applying the MNH skills they learned in the setting of the health post is further complicated by a stated lack of adequate supplies to attend deliveries, such as delivery couches and kits. With a lack of onsite supervision while learning to effectively attend labor and birth in addition to the local community's cultural preferences for TBAs, it is very difficult for HEWs to gain the confidence and experience needed to become the community-preferred labor and birth providers. Just as most health professions have evolved to include both clinical and didactic training to adequately prepare practitioners to provide effective services, HEWs should also receive practical clinical experience to be aptly equipped to handle the often complicated course of labor and birth.

TBAs may not have the highest level of MNH knowledge, but as the community's preferred labor and birth attendant, they are respected in the community and have a

tremendous amount of experience and familiarity in providing care. TBAs have the potential to share their experience and contacts in the community while HEWs can share their mortality reducing MNH techniques in order to affect the most women in the community. Unfortunately however, TBAs and HEWs report few monthly interactions and currently no formal relationship between TBAs and HEWs has been outlined. Sharing knowledge from HEW to TBA would also help to bridge the gap in knowledge seen among TBAs, who will very likely remain the preferred delivery provider over the next several years. Addressing the cultural barriers between traditional and skilled birth attendants is pivotal for reshaping the relationship between MNH providers and improving overall MNH outcomes.

Geographic location also affects the attitudes towards TBAs as labor and birth providers. While this research shows that TBAs report less knowledge of mortality reducing MNH practices, those CHWs living farther from an all weather road report significantly more accepting perspectives of TBAs and their ability to provide labor and birth care. Ethiopia is considered almost entirely rural, however, it is important to differentiate that even within these rural populations, perspectives and preferences towards MNH care vary. By understanding these differences, training programs and MNH initiatives can be better designed for acceptance by the local CHWs and community. For example, communities with more positive views of TBAs may be better targets for integrative MNH initiatives between HEWs, TBAs, and vCHWs that more effectively improve maternal and newborn mortality.

vCHWs appear to be the most underutilized cadre of CHWs, given the relatively high level of knowledge they reported compared to the amount of clinical MNH care they

provide. There is currently no standardized training program or even official title that all vCHWs have, however, they report significantly greater knowledge than TBAs of nearly every mortality reducing MNH practice. One would expect that considering their high level of reported knowledge in conjunction with a dearth of MNH care in the community, that vCHWs would provide a substantial amount of MNH services. This study however showed that among those vCHWs with knowledge of the MNH skills, much fewer of the vCHWs reported that they could actually perform those tasks. With a lack of clinical training and even a formal description of their duties, their potential remains untapped within the local community. Much like HEWs, given their current knowledge base, vCHWs would benefit from clinical MNH training. Without such MNH training and job supervision, it is unreasonable to expect that vCHWs would be able to fill the role of skilled MNH providers in the community.

The problem of high maternal and newborn mortality in Ethiopia is multifactorial. While a significant contributor is a lack of skilled providers and accessible health facilities, another large factor is a lack of education within the community about the importance of seeking medical attention for every pregnancy and how to recognize danger signs. Without the clinical training to provide MNH care, vCHWs can still contribute much needed community education and support to the MNH services being provided by their HEWs. The high level of reported knowledge of MNH practices can be shared with community members during home visits and community meetings in order to reduce the burden on HEWs in providing both education and care. vCHWs can also use their knowledge to recognize women in the community who are in need of medical attention. HEWs are supposed to spend about half of their time in the community, so they aren't always easily

reached. Since vCHWs are more numerous than HEWs and always present in the community, they can serve as pivotal points of communication between the community and the health post in order to better facilitate medical services.

There were several limitations to this research. The first is that these quantitative surveys were administered orally by data collectors due to concerns for literacy and thus relied on the self reporting of CHWs. This introduces the potential for bias such as social desirability due to the respondents desire to portray themselves most positively. Without being able to witness the CHWs performing MNH services it can't be determined with certainty that the CHWs can and have actually preformed the MNH services they were questioned about. The design of the survey also lends itself to the introduction of social desirability bias because the majority of questions refer to MNH, so respondents would be more likely to over-report their MNH attitudes and practices.

Another limitation is that survey translation and data collection was carried out by educated enumerators with higher levels of literacy than the survey respondents. While all of the all of the CHWs spoke Amharic, rural communties have variable slang and dialects that may affect comprehension of the survey questions as well as the responses. In order to limit this bias, survey translation into Amharic was carried out with multiple native Amharic speaking individuals and utilized specific local phrases and words that were recorded during pilot testing in the survey catchment area.

Due to the relatively few number of CHWs in each community, random sampling could not be carried out. Instead, the survey sought to sample each of the two HEWs in each community and utilized stratified purposeful sampling of TBAs and vCHWs. In several

communities, only was HEW was available for sampling, which means that half of the HEW data for that community was not captured.

Recommendations for FLWs to Improve MNH Outcomes

HEWs	vCHWs	TBAs
Mandatory clean and safe birth training	Mandatory clean and safe birth training	Mandatory clean and safe birth training
Improved hands on clinical training		
Monthly meetings with HEWs, vCHWs, and TBAs to discuss community MNH	Monthly meetings with HEWs, vCHWs, and TBAs to discuss community MNH	Monthly meetings with HEWs, vCHWs, and TBAs to discuss community MNH
Monthly to quarterly meetings with local Health Center to discuss referrals and promote continued training		
Quarterly supervision including observation of clinical skills but woreda supervisors		
Further research into the impact of FLW MNH services on the community	Further research into the impact of FLW MNH services on the community	Further research into the impact of FLW MNH services on the community
Defined MNH duties that should be provided as an HEW	Defined MNH duties that should be provided as a vCHW	
Development of a clear partnership between HEWs and interested MNH that addresses MNH needs	Development of a clear partnership between HEWs and interested MNH that addresses MNH needs	
	Serve as community MNH educators through home visits and MNH discussion groups	
Partner with TBAs and attend births with them to gain clinical experience		Partner with HEWs and allow them to attend births
Establish a community birth and pregnancy registry in order to monitor and improve MNH outcomes	Establish a community birth and pregnancy registry in order to monitor and improve MNH outcomes	Establish a community birth and pregnancy registry in order to monitor and improve MNH outcomes

Full analysis of data based on geographic location was also limited in this study due to a lack of GPS coordinates to accurately measure distances. Distances were based on the estimated distance of the HP from an all weather road and not specifically from where each CHW resided. Future research should utilize GPS measurements to improve the accuracy of geographic references.

This study demonstrates the potential impact that further research and targeted interventions can have on improving MNH outcomes in Ethiopia. In order to best leverage the knowledge and abilities of HEWs and vCHWs the FMOH should better define their MNH duties and job expectations. Without clearly defined responsibilities and outcomes it remains challenging to appropriately assess their ability to achieve national MNH morbidity and mortality goals. This study also shows that all FLWs are in need of further MNH training. Further clinical training and supervision is imperative to improving the confidence and ability of HEWs to actually provide MNH care, while TBAs and vCHWs would best benefit from didactic MNH instruction to bridge their knowledge gap. With additional training, vCHWs can better serve as portals of MNH knowledge for their community through direct community education and the ability to recognize those community members in need of referral to HEWs or health centers.

One of the most important recommendations from this study is to programmatically establish better communication and teamwork among HEWs, TBAs, and vCHWs. Currently there is no requirement or formal endorsement of monthly or even quarterly discussions between FLWs. By defining these relationships and encouraging their collaboration, HEWs can more easily address their many health duties and can benefit from the clinical experience and cultural standing of TBAs within the local community.

Lastly, while this study examines the knowledge, attitudes, and practices of FLWs, additional research is needed to determine the actual impact of FLWs on community MNH health outcomes. Measuring these MNH parameters in the context of FLWs is important, however, without understanding how they affect the health of the community they are serving it is difficult to truly measure their efficacy and success. It is also important, given the overlapping responsibilities of FLWs, to determine how each FLW impacts community health in order to best target areas for improvement and expansion.

While a growing body of research has emerged in support of the utility and efficacy of CHWs in improving community health outcomes, the majority of this data has focused on examining individual CHW groups and their general scope of practice. Several studies have explored the impact of MNH-specific CHWs, however this study explored three different CHW groups, each with a variety of duties, in order to better understand their MNH knowledge, attitudes, and practices within the community. With one of the highest maternal mortality rates in the world, the Ethiopian FMOH designed the Health Extension Program in part to address this disparity. This research has shown that HEWs support the goals of the Health Extension Program and show promise as skilled MNH health providers in their community, especially in the area of antenatal care. Additionally, this research has shown that while HEWs demonstrate significantly more knowledge of morbidity and mortality reducing MNH practices compared to the culturally prominent TBAs, they lack practical experience and provide significantly less labor and birth care than TBAs. This research has also identified vCHWs as an incredibly diverse group of CHWs with a level of knowledge that, if utilized effectively, can directly support and encourage the efforts of HEWs in providing MNH care. Further research is needed to identify the impact of CHWs on

the MNH outcomes of the communities they serve. This information is vital in order to evaluate their effect on MNH morbidity and mortality and design more effective community health programs that bridge the current gaps in accessible and effective maternal and newborn healthcare.

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Appendix 1: Survey

ETHIOPIAN FRONTLINE HEALTH WORKER SURVEY
MaNHEP Project, Emory University
2010

Interviewer name_____

Definition

Frontline Health Workers (FHW) – health workers in rural Ethiopia providing maternal and newborn health services at the community level; they include Health Extension Workers (HEW), volunteer Community Health Workers (vCHW), and Traditional Birth Attendants (TBA).

Survey Consent

My name is [_____] and I am working with a team from Emory University to gather information from frontline health workers (FHW). Our work is being supported by the Gates Foundation. We are conducting a survey to gather information about how frontline health workers, including Health Extension Workers (HEW), volunteer Community Health Workers (vCHW), and Traditional Birth Attendants (TBA), communicate and work together in providing care to mothers and babies. We also want to learn your ideas regarding teamwork, confidence, and trust as well as your knowledge and practice of various clinical skills and how all of these might affect your ability to provide care to mothers and babies. Your participation in the survey is completely voluntary. You do not have to answer any questions that you are uncomfortable with and you may stop participation at any time. We anticipate that the survey will take less than 1 hour to complete. The information you give us is confidential and will not be shared with other health workers in your area. The more honest you can be in answering our questions, the more helpful the information will be in improving the care of mothers and babies in the future.

INTERVIEWER READ: "Would you like to give your consent to participate in the survey?" Yes
No
Date of interview (Day, Month, Year): [_ _ - _ _ - _ _ _ _]
Time the interview begins in military time: [_ _ _ _]
Participant's First Name: _____ [name]
Region: _____ [region]
Woreda: _____ [woreda]
Kebele: _____ [kebele]

INTERVIEWER INSTRUCTIONS:
Do not read the category "don't know or "do not remember" that are listed in the questionnaire. Mark responses as "don't know" or "do not remember" only if this is the respondent's answer to a question.
INTERVIEWER READ: "Now we will begin the survey. First, I will ask you questions about your background."

Section 1: Respondent's Background	
B1 How old are you? **(WRITE NUMBER IN SPACE)**	[_ _] Don't know.....99
B2 What is your gender? **(CIRCLE RESPONSE)** **(IF MALE SKIP TO B4)**	Female.....01 Male.....02

B3 How many pregnancies have you had? **(WRITE NUMBER IN SPACE)**	[_ _]
B4 How many living children do you have? **(WRITE NUMBER IN SPACE)**	[_ _]
B5 What is your marital status? **(CIRCLE RESPONSE)**	Single……..01 Married……..02 Divorced/Widowed……..03
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you questions about your duties and education."	
Section 2: Respondent's Work as A FHW	
W1 What type of health worker are you? **(READ LIST)** **(ONLY ONE ANSWER IS POSSIBLE)** **(CIRCLE RESPONSE)**	Health Extension Worker.....01 Volunteer Community Health Worker Community Health Assistant.....02 Community Based Reproductive Health Assistant.....03 Community Health Promoter……..04 Traditional Birth Attendant.....05
W2 How many years of schooling have you had? **(WRITE NUMBER IN SPACE)**	[_ _]
W3 What type of education or training did you have to become a (type of health worker)? **(READ LIST)** **(CIRCLE RESPONSE)** **(IF OTHER, WRITE IN RESPONSE)**	Informal Training (Apprenticeship).....01 Formal Educational Program.....02 Both informal & formal education.....03 No training.....04 Other (**SPECIFY**:_____).....88
W4 Have you ever received a clean and safe birth training? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
W5 How many years have you worked as a (type of health worker)? **(WRITE NUMBER IN SPACE)** **(IF LESS THAN 1 YEAR, CIRCLE 88)**	[_ _] Less than one year.....88
W6 How many hours each week do you spend in your duty as a (type of health worker)? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W7 Do you receive monetary payments for your work as a (type of health worker)? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO W11)**	Yes.....01 No.....00 Don't Know.....99
W8 How much money do you receive for your work as a (type of health worker)? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W9 When do you receive this amount? **(CIRCLE RESPONSE)**	Per week……..01 Per month……..02 Per year……..03 Other (**SPECIFY**:_____).....88
W10 Who pays you for your work as a (type of health worker)? **(READ LIST)** **(CIRCLE RESPONSE)**	Government ……..01 Community……..02 Other (**SPECIFY**:_____).....88

W11 Do you give care to women in pregnancy? **(CIRCLE ANSWER) (IF NO, SKIP TO W19)**	Yes.....01 No.....00 Don't Know.....99
W12 How many women in pregnancy do you give care to a month? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W13 Do you have the supplies you need to give care to women in pregnancy? **(CIRCLE ANSWER)**	Yes.....01 No.....00 Don't Know.....99
W14 What supplies do you have to give care to women in pregnancy? **(READ LIST)** **(MORE THAN 1 ANSWER IS POSSIBLE)** **(CIRCLE RESPONSE)**	Misoprostol……[W14Miso]……..01 Gloves……[W14Gloves]……..02 Fetoscope……[W14Feto]……03 Tape Measure……[W14Tape]……..04 Charting Materials……[W14Chart]……05 Vitamins……[W14Vita]……..07 Iron supplementation…[W14Iron]……..08 Malaria medication……[W14Malaria]……09 Blood pressure cuff……[W14Cuff]……10 Stethescope……[W14Steth]……11 Adult weighing scale……[W14A_Scale]….12 Insecticide treated bed net……[W14Net]….13 Tetanus Toxiod vaccine…[W14Tetanus]…14
W15 Do you receive compensation from the family for giving care to a woman in pregnancy? **(CIRCLE ANSWER) (IF NO, SKIP TO W19)**	Yes.....01 No.....00 Don't Know.....99
W16 Is the compensation monetary? **(CIRCLE ANSWER) (IF NO, SKIP TO W18)**	Yes.....01 No.....00 Don't Know.....99
W17 How much money do you receive from each family? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W18 What else do you receive as compensation for giving care to a woman in pregnancy? **(WRITE ANSWER IN SPACE)**	**SPECIFY**:_____.....88
W19 Do you deliver babies? **(CIRCLE ANSWER)** **(IF NO, SKIP TO W28)**	Yes.....01 No.....00 Don't Know.....99
W20 How many babies are born in your kebele each month? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W21 How many babies do you deliver each month? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W22 Do you have the supplies you need to provide care to women during labor and birth? **(CIRCLE ANSWER)**	Yes.....01 No.....00 Don't Know.....99

W23 What supplies do you have to provide care to women during labor and birth? **(READ LIST)** **(MORE THAN 1 ANSWER IS POSSIBLE)** **(CIRCLE RESPONSE)**	Clock partograph……[W23parto]…….01 Water……[W23water] ……02 Soap……[W23soap]…….03 Gloves……[W23gloves]…….04 Charting materials… [W23chart]……05 Cord ties and cord cutting tools……[W23cord]……06 Apron……[W23apron]……07 Container to dispose of placenta……[W23c_placenta]……08 Cloth to cover baby's head...[W23chead]….09 Cloth to dry and clean baby…[W23cdry]….10 Clothes to warmbaby……[W23cwarm]……11 Timepiece……[W23time]…….12 Flashlight……[W23flash]……13 Basin……[W23basin]……14 Oxytocin……[W23oxy]……15 Ergomethrin……[W23ergo]……16 Bleach and three containers for disinfection process……[W23bleach]……17 Emergency supply of sugar and salt……[W23saltsug]……18 Blood pressure cuff……[W23cuff]……19 Suction device……[W23suction]……20 Ambu Bag……[W23ambu]……21
W24 Do you receive compensation from the family for providing care to women during labor and birth? **(CIRCLE ANSWER) (IF NO, SKIP TO W28)**	Yes……01 No……00 Don't Know……99
W25 Is the compensation monetary? **(CIRCLE ANSWER)** **(IF NO, SKIP TO W27)**	Yes……01 No……00 Don't Know……99
W26 How much money do you receive from each family for providing care to women during labor and birth? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W27 What else do you receive as compensation for providing care to women during labor and birth? **(WRITE ANSWER IN SPACE)**	**SPECIFY**:_____……1
W28 Do you give postpartum care to mothers? **(CIRCLE ANSWER) (IF NO, SKIP TO W37)**	Yes……01 No……00 Don't Know……99
W29 How many mothers do you give postpartum care to each month? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W30 For each woman that you care for, when are all the times you usually give postpartum care? **(READ RESPONSES)** **(MORE THAN 1 RESPONSE IS POSSIBLE)** **(CIRCLE ANSWERS)**	Immediately after birth…[W30abirth]……01 In the first 2 days……[W30f2day]……02 From 2 to 7 days……[W30f27day]……03 From 7 days to 1

	month...[W30f7daym].....04 Greater than 1 month.....[W30gtmonth].....05
W31 Do you have the supplies you need to give postpartum care to mothers? **(CIRCLE ANSWER)**	Yes.....01 No.....00 Don't Know.....99
W32 What supplies do you have available to give postpartum care to mothers? **(READ LIST)** **(MORE THAN 1 ANSWER IS POSSIBLE)** **(CIRCLE RESPONSE)**	Thermometer……[W32therm]……..01 Gloves……..[W32gloves]……..02 Charting materials……[W32chart]…….03 Family planning methods….[W32FPlan]….04 Blood pressure cuff……[W32cuff]……..05 Condoms……[W32condom]……..06 Flashlight……[W32flash]……..07
W33 Do you receive compensation from the family for giving postpartum care to mothers? **(CIRCLE ANSWER) (IF NO, SKIP TO W37)**	Yes.....01 No.....00 Don't Know.....99
W34 Is the compensation monetary? **(CIRCLE ANSWER)** **(IF NO, SKIP TO W36)**	Yes.....01 No.....00 Don't Know.....99
W35 How much money do you receive from each family for giving postpartum care to mothers? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W36 What else do you receive as compensation for giving postpartum care for mothers? **(WRITE ANSWER IN SPACE)**	**SPECIFY**:_____.....1
W37 Do you give newborn care? **(CIRCLE ANSWER)** **(IF NO, SKIP TO G1)**	Yes.....01 No.....00 Don't Know.....99
W38 How many times do you give newborn care each month? **(WRITE NUMBER IN SPACE)**	[_ _ _]
W39 When do you give the newborn care? **(READ RESPONSES)** **(CIRCLE ANSWER)**	Immediately after birth….[W39abirth]……01 In the first 2 days.....[W39f2day].....02 From 2 to 7 days.....[W39f27day].....03 From 7 days to 1 month...[W39f7daym].....04 Greater than 1 month.....[W39gtmonth].....05
W40 Do you have the supplies you need to give newborn care? **(CIRCLE ANSWER)**	Yes.....01 No.....00 Don't Know.....99
W41 What supplies do you have to give newborn care? **(READ LIST)** **(MORE THAN 1 ANSWER IS POSSIBLE)** **(CIRCLE RESPONSE)**	Family Health Card……[W41FHC].....01 Thermometer……[W41Therm]……02 Baby scale……[W41b_scale]….03 Charting materials……[W41chart]…….04
W42 Do you receive compensation from the family for	Yes.....01

giving newborn care? **(CIRCLE ANSWER) (IF NO, SKIP TO G1)**	No.....00 Don't Know.....99
W43 Is the compensation monetary? **(CIRCLE ANSWER) (IF NO, SKIP TO W45)**	Yes.....01 No.....00 Don't Know.....99
W44 How much money do you receive from each family for giving newborn care? **(WRITE NUMBER IN SPACE)** **(SKIP TO G1)**	[_ _ _]
W45 What else do you receive as compensation for giving newborn care? **(WRITE ANSWER IN SPACE)**	**SPECIFY**:_____.....1
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you about the challenges you face as a (Type of health worker) that make it difficult to provide good health services to the community. (Type of health workers) have said that the following problems make it difficult to provide good health services to the community."	
Section 3: Challenges	
C1 Do you agree or disagree with the following statement: " My farming duties interfere with my health duties." **(CIRCLE ANSWER)**	Agree.....00 Disagree.....01
C2 Do you agree or disagree with the following statement: "My household chores interfere with my health duties." **(CIRCLE ANSWER)**	Agree.....00 Disagree.....01
C3 Do you agree or disagree with the following statement: "Taking care of my children interferes with my health duties." **(CIRCLE ANSWER)**	Agree.....00 Disagree.....01
C4 Do you agree or disagree with the following statement: "I have difficulty providing health services because I don't have the materials I need." **(CIRCLE ANSWER)**	Agree.....00 Disagree.....01
C5 Do you agree or disagree with the following statement: "I have difficulty providing health services because the distance between the houses in my kebele is too great" **(CIRCLE ANSWER)**	Agree.....00 Disagree.....01
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you questions regarding your feelings about the health duties you perform."	
Section 4: Specific Confidence	
SC1 Do you agree or disagree with the following statement: "I have had training to provide care to mothers and babies." **(CIRCLE ANSWER)**	Agree.....01 Disagree.....00
SC2 Do you agree or disagree with the following statement: "I have a role in a health committee in my kebele." **(CIRCLE ANSWER)**	Agree.....01 Disagree.....00
SC3 Do you agree or disagree with the following statement: "I have the knowledge, but I don't have the practical experience to attend to delivery." **(CIRCLE ANSWER)**	Agree.....01 Disagree.....00
SC4 Do you agree or disagree with the following statement: "I know when to say no for the health services I can't do." **(CIRCLE ANSWER)**	Agree.....01 Disagree.....00
SC5 Do you agree or disagree with the following statement:	Agree.....01

"I am eager to work my health activities." **(CIRCLE ANSWER)**	Disagree……..00
SC6 Do you agree or disagree with the following statement: "I have too many activities as a health worker." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC7 Do you agree or disagree with the following statement: "Sometimes when I perform my health duties, I have fear in my face." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC8 Do you agree or disagree with the following statement: "I feel I have sufficient knowledge and experience to manage **serakian" (CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC9 Do you agree or disagree with the following statement: "I do not have enough support from a supervisor in my health tasks." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC10 Do you agree or disagree with the following statement: "I communicate with kebele leaders about my work." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC11 Do you agree or disagree with the following statement: "If I have the training, I can provide service which is better than what I am doing now" **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC12 Do you agree or disagree with the following statement: "I forget things from my training because it was long ago." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC13 Do you agree or disagree with the following statement: "I am able to attend a delivery alone." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC14 Do you agree or disagree with the following statement: "People ask for my help if there is a problem with mothers and babies." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC15 Do you agree or disagree with the following statement: "People in the community tell me that I helped them get better." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC16 Do you agree or disagree with the following statement: "When I face a difficult labor, I have someone who will come and help me." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC17 Do you agree or disagree with the following statement: "If I have the training, I have the capability of becoming a nurse." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC18 Do you agree or disagree with the following statement: "I have written materials I can refer to if I need more information." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC19 Do you agree or disagree with the following statement: "My main duty focuses on mothers and babies." **(CIRCLE ANSWER)**	Agree……..01 Disagree……..00
SC20 Do you agree or disagree with the following statement: "There is nothing to be done about excessive bleeding after birth because it is caused by **serakian.**" **(CIRCLE ANSWER)**	Agree……..00 Disagree……..01
SC21 Do you agree or disagree with the following statement: "When I need advice about a health problem, I feel there is	Agree……..01 Disagree……..00

someone I can ask." **(CIRCLE ANSWER)**	
SC22 Do you agree or disagree with the following statement: "There is little to be done to save a mother or child. If one dies during delivery it is a matter of chance." **(CIRCLE ANSWER)**	Agree……..00 Disagree……..01
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you questions about confidence, knowledge, and trust."	
Section 5: General Confidence and Trust	
G1 Which of the following incentives would make you feel more confident in providing care to mothers and babies? **(READ RESPONSES) (CIRCLE RESPONSES) (MORE THAN ONE ANSWER IS POSSIBLE)**	Certification……[G1Cert]……01 Uniform……[G1Uni]……02 Oversight ……[G1OverS]……03 Regular performance evaluations……[G1RPE]……04 Other……[G1Other]……88
G2a Is it your duty to provide care to women in pregnancy in the kebele? **(CIRCLE RESPONSE)**	Yes……01 No……02 Don't Know……99
G2b Tell me how much you agree with this statement "It is important for me to provide care to women in pregnancy." **(CIRCLE RESPONSE)**	Strongly Agree……01 Agree……02 Disagree……03 Strongly Disagree……04 Don't Know……99
G2c Do you have the knowledge and skills to provide care to women in pregnancy? **(CIRCLE RESPONSE)**	Yes……01 No……00 Don't Know……99
G2e Please look at the ladder and point to how confident you feel in your ability to provide care to women in pregnancy. The top of the ladder means you are very confident and the bottom of the ladder means you feel very unconfident in the skill. **(CIRCLE RESPONSE)** 0 1 2 3 4 5 6 7 8 9 10 Very Unconfident Moderately Confident Very Confident	
G2f Whose duty is it to provide care to women in pregnancy in the kebele? **(CIRCLE ALL RESPONSES THAT APPLY) (IF OTHER WRITE IN RESPONSE)**	Health Extension Worker……[G2fdutyHEW]……01 Volunteer Community Health Worker……[G2fdutyvCHW]……02 Traditional Birth Attendant……[G2fdutyTBA]……03 Other: Specify_____[G2fdutyOther]…88 Don't Know ……[G2fdutyDK]……99
G2g Who has the knowledge and skills to provide care to women in pregnancy? **(CIRCLE ALL RESPONSES THAT APPLY) (IF OTHER PLEASE SPECIFY)**	Health Extension Worker……[G2gknowHEW]……01 Volunteer Community Health Worker……[G2gknowCHW]……02 Traditional Birth Attendant……[G2gknowTBA]……03 Family members……[G2gknowFM]……04 Other: Specify_____[G2gknowOther].05 None of the above……[G2gknowNoA]……06

	Don't Know ……[G2gknowDK].....99
G2h Who do you trust to provide care to women in pregnancy? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G2htrustHEW].....01 Volunteer Community Health Worker.....[G2htrustCHW]……..02 Traditional Birth Attendant.....[G2htrustTBA]……..03 Family members.....[G2htrustFM].....04 Other: Specify_____[G2htrustOther]….05 None of the above.....[G2htrustNoA].....06 Don't Know ……[G2htrustDK].....99
G3a Is it your duty to provide care to women in labor and birth in the kebele? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G3b Tell me how much you agree with this statement "It is important for me provide care to women in labor and birth." **(READ LIST)** **(CIRCLE RESPONSE)**	Strongly Agree.....01 Agree.....02 Disagree.....03 Strongly Disagree.....04 Don't Know.....99
G3c Do you have the knowledge and skills to provide care to women in labor and birth? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G3e Please look at the ladder and point to how confident you feel in your ability to provide care to women in labor and birth. The top of the ladder means you are very confident and the bottom of the ladder means you feel very unconfident in the skill. **(CIRCLE RESPONSE)** 0 1 2 3 4 5 6 7 8 9 10 Very Unconfident Moderately Confident Very Confident	
G3f Whose duty is it to provide care to women in labor and birth in the kebele? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER WRITE IN RESPONSE)**	Health Extension Worker.....[G3fdutyHEW].....01 Volunteer Community Health Worker.....[G3fdutyvCHW].....02 Traditional Birth Attendant……..[G3fdutyTBA].....03 Other: Specify_____[G3fdutyOther]….88 Don't Know ……[G3fdutyDK].....99
G3g Who has the knowledge and skills to provide care to women in labor and birth? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G3gknowHEW].....01 Volunteer Community Health Worker.....[G3gknowCHW].....02 Traditional Birth Attendant.....[G3gknowTBA]....03 Family members.....[G3gknowFM].....04 Other: Specify_____[G3gknowOther]__05 None of the above.....[G3gknowNoA] ….06 Don't Know ……[G3gknowDK].....99
G3h Who do you trust to provide care to women in labor and	Health Extension

birth? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER PLEASE SPECIFY)**	Worker.....[G3htrustHEW].....01 Volunteer Community Health Worker.....[G3htrustCHW].....02 Traditional Birth Attendant.....[G3htrustTBA].....03 Family members.....[G3htrustFM].....04 Other: Specify_____[G3htrustOther]..05 None of the above.....[G3htrustNoA].....06 Don't Know ……..[G3htrustDK].....99
G4a Is it your duty to provide postpartum care to women in the kebele? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G4b Tell me how much you agree with this statement "It is important for me to provide postpartum care to women." **(READ LIST)** **(CIRCLE RESPONSE)**	Strongly Agree.....01 Agree.....02 Disagree.....03 Strongly Disagree.....04 Don't Know.....99
G4c Do you have the knowledge and skills to provide postpartum care to women? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G4e Please look at the ladder and point to how confident you feel in your ability to provide postpartum care to women. The top of the ladder means you are very confident and the bottom of the ladder means you feel very unconfident in the skill. **(CIRCLE RESPONSE)** 0 1 2 3 4 5 6 7 8 9 10 Very Unconfident Moderately Confident Very Confident	
G4f Whose duty is it to provide postpartum care to women in the kebele? **(MORE THAN 1 ANSWER IS POSSIBLE)** **(IF OTHER WRITE IN RESPONSE)**	Health Extension Worker.....[G4fdutyHEW.....01 Volunteer Community Health Worker.....[G4fdutyvCHW].....02 Traditional Birth Attendant.....[G4fdutyTBA].. .....03 Other: Specify_____[G4fdutyOther]__88 Don't Know ……..[G4fdutyDK].....99
G4g Who has the knowledge and skills to provide postpartum care to women? **(MORE THAN 1 ANSWER IS POSSIBLE)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G4gknowHEW].....01 Volunteer Community Health Worker.....[G4gknowCHW].....02 Traditional Birth Attendant.....[G4gknowTBA].....03 Family members.....[G4gknowFM].....04 Other: Specify_____[G4gknowOther]__05 None of the above.....[G4gknowNoA] ..06 Don't Know ……..[G4gknowDK].....99
G4h Who do you trust to provide postpartum care to women? **(MORE THAN 1 ANSWER IS POSSIBLE)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G4htrustHEW].....01 Volunteer Community Health Worker.....[G4htrustCHW].....02

	Traditional Birth Attendant.....[G4htrustTBA].....03 Family members.....[G4htrustFM].....04 Other: Specify_____[G4htrustOther]__05 None of the above.....[G4htrustNoA] ..06 Don't Know ……..[G4htrustDK].....99
G5a Is it your duty to provide care to newborn babies in the kebele? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G5b Tell me how much you agree with this statement "It is important for me to provide care to newborn babies." **(READ LIST) (CIRCLE RESPONSE)**	Strongly Agree.....01 Agree.....02 Disagree.....03 Strongly Disagree.....04 Don't Know.....99
G5c Do you have the knowledge and skills to provide care to newborn babies? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
G5e Please look at the ladder and point to how confident you feel in your ability to provide care to newborn babies. The top of the ladder means you are very confident and the bottom of the ladder means you feel very unconfident in the skill. **(CIRCLE RESPONSE)** 0 1 2 3 4 5 6 7 8 9 10 Very Unconfident Moderately Confident Very Confident	
G5f Whose duty is it to provide care to newborn babies in the kebele? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER WRITE IN RESPONSE)**	Health Extension Worker.....[G5fdutyHEW].....01 Volunteer Community Health Worker.....[G5fdutyvCHW].....02 Traditional Birth Attendant.....[G5fdutyTBA]....03 Other: Specify_____[G5fdutyOther]__88 Don't Know ……..[G5fdutyDK].....99
G5g Who has the knowledge and skills to provide care to newborn babies? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G5gknowHEW].....01 Volunteer Community Health Worker.....[G5gknowCHW].....02 Traditional Birth Attendant.....[G5gknowTBA].....03 Family members.....[G5gknowFM].....04 Other: Specify_____[G5gknowOther]..05 None of the above.....[G5gknowNoA].....06 Don't Know ……..[G5gknowDK].....99
G5h Who do you trust to provide care to newborn babies? **(CIRCLE ALL RESPONSES THAT APPLY)** **(IF OTHER PLEASE SPECIFY)**	Health Extension Worker.....[G5htrustHEW].....01 Volunteer Community Health Worker.....[G5htrustCHW].....02 Traditional Birth Attendant.....[G5htrustTBA].. ....03 Family

	members.....[G5htrustFM].....04 Other: Specify_____[G5htrustOther]__05 None of the above.....[G5htrustNoA] ..06 Don't Know ……[G5htrustDK].....99
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you questions about the care women and babies usually receive in your community. We would like to know whether you agree or disagree with the following statements."	
Section 6: Respondent's Beliefs About Normative Care	
N1 Do you agree or disagree with the following statement: "The **seng** cord should be tied both on the mother's part and the baby's part." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N2 Do you agree or disagree with the following statement: "It is a problem that the community expects health workers to be in the health post, but they are out in the community." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N3 Do you agree or disagree with the following statement: "A woman should have the same workload before and during her pregnancy." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N4 Do you agree or disagree with the following statement: "A mother should take rest only up to 10 days after the baby is born." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N5 Do you agree or disagree with the following statement: "If the **seng** has trouble detaching, it should be pulled out in the home." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N6 Do you agree or disagree with the following statement: "After birth, the baby needs to be away from the mother while she sits over the hole to detach the **seng**." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N7 Do you agree or disagree with the following statement: "A mother who has had peaceful births in the past will have only peaceful births in the future." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N8 Do you agree or disagree with the following statement: "A health worker will come to deliver a baby at nighttime." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N9 Do you agree or disagree with the following statement: "The baby should be washed immediately after birth." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N10 Do you agree or disagree with the following statement: "If the uvula has dropped, then it is best to cut the uvula." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N11 Do you agree or disagree with the following statement: "A baby should be given butter after birth." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N12 Do you agree or disagree with the following statement: "A woman should deliver in the home unless the labor is serious." **(CIRCLE RESPONSE)**	Agree.....01 Disagree.....00
N13 Do you agree or disagree with the following statement:	Agree.....01

"When labor begins, a health worker should be called to the home." **(CIRCLE RESPONSE)**	Disagree……..00
N14 Do you agree or disagree with the following statement: "A woman should tell a health worker when she knows she is pregnant." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N15 Do you agree or disagree with the following statement: "A woman and family should not prepare for a problem ahead of time because the birth may be peaceful." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N16 Do you agree or disagree with the following statement: "A mother needs to breastfeed the new baby because it helps the detachment of the placenta." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N17 Do you agree or disagree with the following statement: "If labor is not serious, there is no reason to call a health worker." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N18 Do you agree or disagree with the following statement: "It is both women and men who could help with delivery." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N19 Do you agree or disagree with the following statement: "There is no reason for a healthy pregnant woman to go for checkups by health workers." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N20 Do you agree or disagree with the following statement: "Mothers should provide water or cow's milk to new babies if it is available." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N21 Do you agree or disagree with the following statement: "The main duties of health extension workers are family planning and vaccination. **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N22 Do you agree or disagree with the following statement: "A baby's cord should be plastered with butter." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N23 Do you agree or disagree with the following statement: "The first milk is unclean and should not be given to the baby." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
N24 Do you agree or disagree with the following statement: "It is only by chance when health workers discover that a woman is pregnant." **(CIRCLE RESPONSE)**	Agree……..01 Disagree……..00
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you questions about clinical skills. We would like to know how confident you are using these clinical skills."	
Section 7: Respondent's Skill-based Competence and Confidence	
S1a Have you heard of counseling a pregnant woman to create a safe birth plan? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S2a)**	Yes……..01 No……..00 Don't Know……..99
S1b Whose duty is it to counsel a pregnant woman to create a safe birth plan? **(CIRCLE ALL RESPONSES THAT APPLY)** **(CIRCLE RESPONSE)**	Health Extension Worker……..[S1bHEW]..01 Volunteer Community Health Worker……..[S1bvCHW]……..02 Traditional Birth Attendant…[S1bTBA]……03

	Family members.....[S1bFM].....04 Other:. Specify_____[S1bOther]....05 None of the above.....[S1bNoA].....06 Don't know……[S1bDK]…….99
S1c Are you able to counsel a pregnant woman about creating a safe birth plan? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S2a)**	Yes.....01 No.....00 Don't Know.....99
S1d In the past month how many times did you counsel a pregnant woman about creating a safe birth plan? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S1e The last time you visited a women during her pregnancy, did you counsel that woman about creating a safe birth plan? **(IF NO, SKIP TO S2a)**	Yes.....01 No.....00 Don't Know.....99
S1f Did you include the following in the counseling of how to create a safe birth plan? **(READ RESPONSES) (CIRCLE RESPONSES)** **(MORE THAN 1 ANSWER IS POSSIBLE)**	Saving money…….[S1fmoney]……..01 Locating transport……[S1ftransport]…….02 Preparing items for birth kit.....[S1fkit].....03 Deciding who will attend the birth.....[S1fwho].....04
S1g Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S2a Have you heard of counseling a woman about calling for assistance when labor begins? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S3a)**	Yes.....01 No.....00 Don't Know.....99
S2b Whose duty is it to counsel a woman about calling for assistance when labor begins? **(CIRCLE ALL RESPONSES THAT APPLY)** **(CIRCLE RESPONSE)**	Health Extension Worker.....[S2bHEW]..01 Volunteer Community Health Worker.....[S2bvCHW].....02 Traditional Birth Attendant...[S2bTBA].....03 Family members.....[S2bFM].....04 Other:. Specify_____[S2bOther]..05 None of the above.....[S2bNoA]….06 Don't know……[S2bDK]…….99
S2c Are you able to counsel a woman about calling for assistance when labor begins? **(CIRCLE RESPONSE) (IF NO, SKIP TO S3a)**	Yes.....01 No.....00 Don't Know.....99
S2d In the past month how many women did you counsel about calling for assistance when labor begins? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S2e The last time you visited a women during her pregnancy, did you counsel that woman about calling for assistance when labor begins? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S3a)**	Yes.....01 No.....00 Don't Know.....99
S2f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S3a Have you heard of counseling a woman about creating a	Yes.....01

clean birth environment? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S4a)**	No.....00 Don't Know.....99
S3b Whose duty is it to counsel a woman about creating a clean birth environment? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S3bHEW]..01 Volunteer Community Health Worker.....[S3bvCHW].....02 Traditional Birth Attendant...[S3bTBA].....03 Family members.....[S3bFM].....04 Other:. Specify_____[S3bOther]…05 None of the above.....[S3bNoA]….06 Don't know……[S3bDK]…….99
S3c Are you able to counsel a woman about creating a clean birth environment? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S4a)**	Yes.....01 No.....00 Don't Know.....99
S3d In the past month how many times did you counsel a woman about creating a clean birth environment? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S3e The last time you visited a pregnant women, did you counsel her about creating a clean birth environment? **(IF NO, SKIP TO S4a)**	Yes.....01 No.....00 Don't Know.....99
S3f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S4a Have you heard of counseling everyone present during labor and birth to wash their hands? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S5a)**	Yes.....01 No.....00 Don't Know.....99
S4b Whose duty is it to counsel everyone present during labor and birth to wash their hands? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S4bHEW]..01 Volunteer Community Health Worker.....[S4bvCHW].....02 Traditional Birth Attendant...[S4bTBA].....03 Family members.....[S4bFM].....04 Other:. Specify_____[S4bOther]…05 None of the above.....[S4bNoA].....06 Don't know……[S4bDK]…….99
S4c Are you able to counsel everyone present during labor and birth to wash their hands? **(CIRCLE RESPONSE) (IF NO, SKIP TO S5a)**	Yes.....01 No.....00 Don't Know.....99
S4d In the past month how many times did you counsel everyone present during labor and birth to wash their hands? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S4e In the past month how many times did you wash your hands before labor and delivery? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S4f The last time you attended a birth, did you counsel everyone present during labor and birth to wash their hands? **(IF NO, SKIP TO S5a)**	Yes.....01 No.....00 Don't Know.....99

S4g Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S5a Have you heard of encouraging a woman to change positions during labor? **(CIRCLE RESPONSE)** **(IF NO SKIP TO S6a)**	Yes.....01 No.....00 Don't Know.....99
S5b Whose duty is it to encourage a woman to change positions during labor? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S5bHEW]..01 Volunteer Community Health Worker.....[S5bvCHW].....02 Traditional Birth Attendant...[S5bTBA].....03 Family members.....[S5bFM].....04 Other:. Specify_____[S5bOther]..05 None of the above.....[S5bNoA]..06 Don't know……[S5bDK]…….99
S5c Are you able to encourage a woman to change positions during labor? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S6a)**	Yes.....01 No.....00 Don't Know.....99
S5d In the past month how many times did you encourage a woman to change positions during labor? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S5e The last time you attended a delivery, did you encourage the woman to change positions during labor? **(CIRCLE RESPONSE) (IF NO, SKIP TO S6a)**	Yes.....01 No.....00 Don't Know.....99
S5f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S6a Have you heard of women being given misoprostal before delivery of the placenta to stop bleeding? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S7a)**	Yes.....01 No.....00 Don't Know.....99
S6b Whose duty is it to give a woman misoprostal before delivery of the placenta to stop bleeding? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S6bHEW]……..01 Volunteer Community Health Worker.....[S6bvCHW]……..02 Traditional Birth Attendant...[S6bTBA].....03 Family members.....[S6bFM].....04 Other:. Specify_____[S6bOther]..05 None of the above.....[S6bNoA]....06 Don't know……[S6bDK]…….99
S6c Are you able to give a woman misoprostal before delivery of the placenta to stop bleeding? **(CIRCLE RESPONSE) (IF NO, SKIP TO S7a)**	Yes.....01 No.....00 Don't Know.....99
S6d How soon after birth do you administer misoprostol? **(READ RESPONSES) (CIRCLE RESPONSE)**	Immediately after birth of baby……01 Less than1 hour after birth……..02 1-3 hours after birth……03

	Greater than 3 hours after birth……..04
S6e What dose of misoprostol do you administer? **(WRITE NUMBER IN SPACE)**	[_ _ _] Don't know……99
S6f In the past month how many times did you give a woman misoprostal? **(WRITE NUMBER IN SPACE)**	[_ _ _]
S6g The last time you attended a delivery, did you give the woman misoprostal? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S7a)**	Yes.....01 No.....00 Don't Know.....99
S6h Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S7a Have you heard of safely delivering the placenta? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S8a)**	Yes.....01 No.....00 Don't Know.....99
S7b Whose duty is it to safely deliver the placenta **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S7bHEW]..01 Volunteer Community Health Worker.....[S7bvCHW]……..02 Traditional Birth Attendant...[S7bTBA].....03 Family members.....[S7bFM].....04 Other:. Specify_____[S7bOther]…05 None of the above.....[S7bNoA].....06 Don't know……[S7bDK]…….99
S7c Are you able to safely deliver the placenta? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S8a)**	Yes.....01 No.....00 Don't Know.....99
S7d In the past month how many times did you safely deliver the placenta? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S7e The last time you attended a delivery, did you safely deliver the placenta? **(IF NO, SKIP TO S8a)**	Yes.....01 No.....00 Don't Know.....99
S7f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S8a Have you heard of counseling a woman about not inserting objects into the vagina during labor or after the baby is born? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S9a)**	Yes.....01 No.....00 Don't Know.....99
S8b Whose duty is it to counsel a woman about not inserting objects into the vagina during labor or after the baby is born? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S8bHEW]..01 Volunteer Community Health Worker.....[S8bvCHW]……..02 Traditional Birth Attendant...[S8bTBA].....03 Family members.....[S8bFM]…….04 Other:. Specify_____[S8bOther]…05 None of the above.....[S8bNoA].....06 Don't know……[S8bDK]…….99

S8c Are you able to counsel a women about not inserting objects into the vagina during labor or after the baby is born? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S9a)**	Yes.....01 No.....00 Don't Know.....99
S8d In the past month, how many times did you counsel a woman about not inserting objects into the vagina during labor or after the baby is born? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S8e The last time you attended a delivery, did you counsel a woman about not inserting objects into the vagina during labor or after the baby is born? **(IF NO, SKIP TO S9a)**	Yes.....01 No.....00 Don't Know.....99
S8f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S9a Have you heard of rubbing the womb after delivery to stop bleeding? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S10a)**	Yes.....01 No.....00 Don't Know.....99
S9b Whose duty is it to rub the womb after delivery to stop bleeding? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S9bHEW]..01 Volunteer Community Health Worker.....[S9bvCHW]……..02 Traditional Birth Attendant...[S9bTBA].....03 Family members.....[S9bFM].....04 Other:. Specify_____[S9bOther]...05 None of the above.....[S9bNoA].....06 Don't know……[S9bDK]…….99
S9c Are you able to rub the womb after delivery to stop bleeding? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S10a)**	Yes.....01 No.....00 Don't Know.....99
S9d In the past month how many times did you rub the womb after delivery to stop bleeding? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S9e The last time you attended a delivery, did you rub the womb after delivery to stop bleeding? **(IF NO, SKIP TO S10a)**	Yes.....01 No.....00 Don't Know.....99
S9f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S10a Have you heard of keeping the baby warm and dry after birth? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S11a)**	Yes.....01 No.....00 Don't Know.....99
S10b Whose duty is it to keep the baby warm and dry after birth? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S10bHEW]……..01 Volunteer Community Health Worker.....[S10bvCHW]……..02

	Traditional Birth Attendant...[S10bTBA].....03 Family members.....[S10bFM].....04 Other:. Specify_____[S10bOther]..05 None of the above.....[S10bNoA]....06 Don't know……[S10bDK]……..99
S10c Are you able to keep the baby warm and dry after birth? **(CIRCLE RESPONSE) (IF NO, SKIP TO S11a)**	Yes.....01 No.....00 Don't Know.....99
S10d In the past month how many times did you keep the baby warm and dry after birth? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S10e The last time you attended a delivery, did you keep the baby warm and dry after birth? **(IF NO, SKIP TO S11a)**	Yes.....01 No.....00 Don't Know.....99
S10f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S11a Have you heard of counseling a postpartum woman to begin breastfeeding immediately after giving birth? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S12a)**	Yes.....01 No.....00 Don't Know.....99
S11b Whose duty is it to counsel a postpartum woman to begin breastfeeding immediately after giving birth? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S11bHEW]..01 Volunteer Community Health Worker.....[S11bvCHW]……..02 Traditional Birth Attendant...[S11bTBA]....03 Family members.....[S11bFM].....04 Other:. Specify_____[S11bOther]..05 None of the above.....[S11bNoA]……06 Don't know……[S11bDK]…….99
S11c Are you able to counsel a postpartum woman to begin breastfeeding immediately after giving birth? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S12a)**	Yes.....01 No.....00 Don't Know.....99
S11d In the past month how many times did you counsel a postpartum woman to begin breastfeeding immediately after giving birth? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S11e The last time you attended a delivery, did you counsel the woman to begin breastfeeding immediately after giving birth? **(IF NO, SKIP TO S12a)**	Yes.....01 No.....00 Don't Know.....99
S11f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S12a Have you heard of counseling a woman about practicing clean cord care? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S13a)**	Yes.....01 No.....00 Don't Know.....99

S12b Whose duty is it to counsel a woman about practicing clean cord care? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S12bHEW]..01 Volunteer Community Health Worker.....[S12bvCHW]……..02 Traditional Birth Attendant...[S12bTBA]....03 Family members.....[S12bFM].....04 Other:. Specify_____[S12bOther]..05 None of the above.....[S12bNoA]…06 Don't know……[S12bDK]…….99
S12c Are you able to counsel a women about practicing clean cord care? **(CIRCLE RESPONSE) (IF NO, SKIP TO S13a)**	Yes.....01 No.....00 Don't Know.....99
S12d In the past month how many times did you counsel a women about practicing clean cord care? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S12e The last time you did a postpartum visit, did you counsel a women about practicing clean cord care? **(IF NO, SKIP TO S13a)**	Yes.....01 No.....00 Don't Know.....99
S12f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S13a Have you heard of a woman being checked for fever and bleeding after birth? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S14a)**	Yes.....01 No.....00 Don't Know.....99
S13b Whose duty is it to check a women for fever and bleeding after birth? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S13bHEW]..01 Volunteer Community Health Worker.....[S13bvCHW]……..02 Traditional Birth Attendant...[S13bTBA]....03 Family members.....[S13bFM].....04 Other:. Specify_____[S13bOther]..05 None of the above.....[S13bNoA].....06 Don't know……[S13bDK]…….99
S13c Are you able to check a women for fever and bleeding after birth? **(CIRCLE RESPONSE) (IF NO, SKIP TO S14a)**	Yes.....01 No.....00 Don't Know.....99
S13d In the past month how many times did you check a woman for fever and bleeding after birth? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S13e The last time you did a postpartum visit, did you check a woman for fever and bleeding after birth? **(IF NO, SKIP TO S14a)**	Yes.....01 No.....00 Don't Know.....99
S13f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S14a Have you heard of counseling a postpartum woman to	Yes.....01

rest for at least 12 days? **(CIRCLE RESPONSE) (IF NO SKIP TO S15a)**	No.....00 Don't Know.....99
S14b Whose duty is it to counsel a postpartum woman to rest for at least 12 days? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S14bHEW]..01 Volunteer Community Health Worker.....[S14bvCHW]……..02 Traditional Birth Attendant...[S14bTBA]....03 Family members.....[S14bFM].....04 Other:. Specify_____[S14bOther]..05 None of the above.....[S14bNoA]…06 Don't know……[S14bDK]……..99
S14c Are you able to counsel a postpartum woman to rest for at least 12 days? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S15a)**	Yes.....01 No.....00 Don't Know.....99
S14d In the past month how many times did you counsel a postpartum woman to rest for at least 12 days? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S14e The last time you did a postpartum visit, did you counsel a postpartum woman to rest for at least 12 days? **(CIRCLE RESPONSE) (IF NO, SKIP TO S15a)**	Yes.....01 No.....00 Don't Know.....99
S14f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S15a Have you heard of counseling a woman to give only breast milk for 6 months? **(CIRCLE RESPONSE) (IF NO SKIP TO S16a)**	Yes.....01 No.....00 Don't Know.....99
S15b Whose duty is it to counsel a woman to give only breast milk for 6 months? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S15bHEW]..01 Volunteer Community Health Worker.....[S15bvCHW]……..02 Traditional Birth Attendant...[S15bTBA]....03 Family members.....[S15bFM].....04 Other:. Specify_____[S15bOther]..05 None of the above.....[S15bNoA]…06 Don't know……[S15bDK]……..99
S15c Are you able to counsel a woman to give only breast milk for 6 months? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S16a)**	Yes.....01 No.....00 Don't Know.....99
S15d In the past month how many times did you counsel a woman to give only breast milk for 6 months? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S15e The last time you did a postpartum visit, did you counsel that woman to give only breast milk for 6 months? **(CIRCLE RESPONSE) (IF NO, SKIP TO S16a)**	Yes.....01 No.....00 Don't Know.....99
S15f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00

	Don't Know.....99
S16a Have you heard of counseling a woman on the proper position of the baby during breastfeeding? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S17a)**	Yes.....01 No.....00 Don't Know.....99
S16b Whose duty is it to counsel a woman on the proper position of the baby during breastfeeding? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S16bHEW]..01 Volunteer Community Health Worker.....[S16bvCHW]……..02 Traditional Birth Attendant...[S16bTBA]....03 Family members.....[S16bFM].....04 Other:. Specify_____[S16bOther]..05 None of the above.....[S16bNoA]....06 Don't know……[S16bDK]……..99
S16c Are you able to counsel a woman on the proper position of the baby during breastfeeding? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S17a)**	Yes.....01 No.....00 Don't Know.....99
S16d In the past month how many times did you counsel a woman on the proper position of the baby during breastfeeding? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S16e The last time you did a postpartum visit, did you counsel a woman on the proper position of the baby during breastfeeding? **(IF NO, SKIP TO S17a)**	Yes.....01 No.....00 Don't Know.....99
S16f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S17a Have you heard of checking the warmth of the baby? **(CIRCLE RESPONSE)** (**IF NO SKIP TO S17a)**	Yes.....01 No.....00 Don't Know.....99
S17b Whose duty is it to the warmth of the baby? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S17bHEW]..01 Volunteer Community Health Worker.....[S17bvCHW]……..02 Traditional Birth Attendant...[S17bTBA]....03 Family members.....[S17bFM].....04 Other:. Specify_____[S17bOther]..05 None of the above.....[S17bNoA]....06 Don't know……[S17bDK]……..99
S17c Are you able to check the warmth of the baby? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO S18a)**	Yes.....01 No.....00 Don't Know.....99
S17d In the past month how many times did you check the warmth of the baby? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S17e The last time you did a postpartum visit, did you check	Yes.....01

the warmth of the baby? **(IF NO, SKIP TO S18a)**	No.....00 Don't Know.....99
S17f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
S18a Have you heard of the baby being checked for proper color and breathing? **(CIRCLE RESPONSE)** (**IF NO SKIP TO TW1)**	Yes.....01 No.....00 Don't Know.....99
S18b Whose duty is it to check the baby for the proper color and breathing? **(CIRCLE RESPONSE)** **(CIRCLE ALL RESPONSES THAT APPLY)**	Health Extension Worker.....[S18bHEW]..01 Volunteer Community Health Worker.....[S18bvCHW]……02 Traditional Birth Attendant...[S18bTBA]....03 Family members.....[S18bFM].....04 Other:. Specify_____[S18bOther]..05 None of the above.....[S18bNoA]…06 Don't know……[S18bDK]……99
S18c Are you able to check the baby for the proper color and breathing? **(CIRCLE RESPONSE)** **(IF NO, SKIP TO TW1)**	Yes.....01 No.....00 Don't Know.....99
S18d In the past month how many times did you check the baby for proper color and breathing? (**WRITE NUMBER IN SPACE)**	[_ _ _]
S18e The last time you did a postpartum visit, did you check the baby for proper color and breathing? **(IF NO, SKIP TO TW1)**	Yes.....01 No.....00 Don't Know.....99
S18f Did you feel good about your performance? **(CIRCLE RESPONSE)**	Yes.....01 No.....00 Don't Know.....99
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Now I will ask you a question about your health duties."	
Section 8: Respondent's Duty Prioritization	
D1 Of all the health duties that you perform in the community, which is the most important to you? **(DO NOT READ LIST) (WRITE CODE FOR CORRESPONDING AREA FROM TABLE BELOW IN SPACE)**	[_ _]
D2 Can you give me another duty that's important to you? **(DO NOT READ LIST) (WRITE CODE FOR CORRESPONDING AREA FROM TABLE BELOW IN SPACE) (DO NOT REPEAT CODE FROM D1)**	[_ _]
D3 Can you give me one more duty that's important to you? **(DO NOT READ LIST) (WRITE CODE FOR CORRESPONDING AREA FROM TABLE BELOW IN SPACE) (DO NOT REPEAT CODE FROM D1 OR D2)**	[_ _]
RESPONSE TABLES	

AREAS (EXAMPLES)	CODE
Sanitation (hygiene protection of disease, making hole for toilet, solid/liquid waste removal, safe water supply)	**01**
Vaccination (vaccinations for children and adults)	**02**
Family Planning (birth spacing, pills, condoms, injections, Depo-Provera, Implanon)	**03**
Work for Mothers and Babies (antenatal care, labor and delivery, postnatal care for mother and baby, counseling pregnant women)	**04**
Nutrition (breastfeeding, counseling on nutrition in pregnancy and for mothers/babies)	**05**
ITN Provision (bed net provision, prevention of Malaria)	**06**
Fuel Efficient Stoves (building chimneys, building stoves)	**07**
Separating Livestock from the House (moving animals away from living areas)	**08**
Infectious Disease Prevention and Control (HIV/AIDS, Tuberculosis)	**09**
Mobilizing the community for health services (giving messages to the community)	**10**
OTHER: Specify _____	**11**

INTERVIEWER INSTRUCTIONS:

INTERVIEWER READ: "Now we will ask you questions about working together with other health workers to provide care to mothers and babies."

Section 9: Respondent's Thoughts about Team and Teamwork

TW1 Do you agree or disagree with the following statement: "I usually do my work as a health worker alone." **(CIRCLE RESPONSE)**	Agree……01 Disagree……00
TW2 Do you see yourself as part of a team in proving care to mothers and babies in your kebele? **(CIRCLE RESPONSE) (IF NO, SKIP TO TW5)**	Yes……01 No……00 Don't Know……99
TW3 Who do you consider to be part of your team in providing care to mothers and babies in your kebele? **(READ RESPONSES)** **(CIRCLE ALL THAT APPLY)**	HEW……[TW3HEW]……01 vCHW……[TW3vCHW]……02 TBA……[TW3TBA]……03 Family member……[TW3FM]……04 Nurse……[TW3Nurse]……05 Supervisor……[TW3Super]……06 Other: Specify_____[TW3Other]…07
TW4 How strong is your teamwork in providing care to mothers and babies? **(READ RESPONSES)** **(CIRCLE RESPONSE)**	Very strong……01 Strong……02 Weak……03 Very weak……04
TW5 In the past month how many times did you interact	

with an HEW? **(WRITE NUMBER IN SPACE)**	[_ _ _]
TW6 In the past month how many times did you interact with a vCHW? **(WRITE NUMBER IN SPACE)**	[_ _ _]
TW7 Do you agree or disagree with the following statement: "People call traditional birth attendants to help in delivery." **(CIRCLE RESPONSE)**	Agree……01 Disagree……00
TW8 In the past month how many times did you interact with a TBA? **(WRITE NUMBER IN SPACE)**	[_ _ _]
TW9 Who do you ask when you have a question about giving care to mothers and babies? **(READ RESPONSES)** **(CIRCLE ALL THAT APPLY)**	HEW……[TW9HEW]……01 vCHW……[TW9vCHW]……02 TBA……[TW9TBA]……03 Family member……[TW9FM]……04 Nurse……[TW9Nurse]……05 Supervisor……[TW9Super]……06 Other: Specify_____[TW9Other]…07
INTERVIEWER INSTRUCTIONS: **INTERVIEWER READ**: "Thank you very much for participating in our survey. The information you have given us will help us to make the care for mothers and babies better."	

Time the interview ends: [_ _ _ _]