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Maternal and Child Survival Program

How Communities and Health Extension Workers Provide Care to Low-Birthweight Babies in the Amhara and Oromia Regions, Ethiopia

Qualitative Study Report

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MCSP is a global USAID initiative to introduce and support high-impact health interventions in 25 priority countries to help prevent child and maternal deaths. MCSP supports programming in maternal, newborn, child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment. MCSP will tackle these issues through approaches that also focus on household and community mobilization, gender integration, and digital health, among others.

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Abbreviations

ANC	antenatal care
CBNC	Community-Based Newborn Care
DTL	Development Team Leader
FGD	focus group discussion
FMOH	Federal Ministry of Health
GALIDRAA	Greet, Ask, Listen, Identify, Discuss, Recommend, Agree, and Set Follow-Up Appointment
HC	health center
HDA	health development army
HEP	health extension program
HEW	health extension worker
HP	health post
iCCM	integrated community case management
IDI	in-depth interview
KMC	kangaroo mother care
LBW	low birth weight
MCSP	Maternal and Child Survival Program
MNCH	maternal, newborn, and child health
NEGA	Newborns in Ethiopia Gaining Attention
NICU	neonatal intensive care unit
NMRs	newborn mortality rates
PDA	personal digital assistant
PHCU	primary health care unit
PNC	postnatal care
PWC	Pregnant Women's Conference

Executive Summary

The Maternal and Child Survival Program (MCSP) is the flagship program of the United States Agency for International Development, which aims to end preventable child and maternal deaths within a generation. In Ethiopia, MCSP has supported the government of Ethiopia to roll out Community-Based Newborn Care (CBNC)—locally known as MCSP Newborns in Ethiopia Gaining Attention (NEGA); this program has now been implemented in 135 selected *woredas (*districts) in four regions in Ethiopia: Amhara; Oromia; Southern Nations, Nationalities, and Peoples' Region; and Tigray. MCSP-NEGA aims to contribute to the national goal of reducing neonatal morbidity and mortality rates through implementation of high-impact interventions, demand creation for maternal and newborn services, and strengthening of support systems. The major causes of neonatal mortality are complications during birth, prematurity, low birth weight (LBW), and infections. MSCP-NEGA trained health extension workers (HEWs) to identify and provide care to LBW or preterm babies to prevent their deaths.[1]

Data from the program's DHIS and Health Management Information System showed that not many LBW or preterm babies were being identified by HEWs in the community or at health facilities. As a result, a need existed to better understand LBW and preterm issues in the community. Therefore, a mixed-methods study was conducted to learn the knowledge, practices, and attitudes of communities and community health workers toward LBW, preterm, or small babies and their care. The study also aimed to understand how the care given to LBW, preterm, or small babies differed from the care given to babies born with normal weights. The study included mothers and fathers of LBW or preterm babies who were born within 6 months prior to the study in the Arsi Zone (Amhara Region) and North Wollo Zone (Oromia Region). HEWs, Health Development Armies (HDAs), and key community figures who lived in the same communities as these mothers and fathers were also included in the study. This engagement of a wide range of stakeholders helped identify community- and facility-level barriers and enablers associated with the care of LBW babies—including the cultural attitudes, norms, and practices in the communities.

Mothers of LBW babies were identified using delivery records, outpatient department records of children under 5 years of age, and neonatal intensive care unit (NICU) registers at Weldiya and Asella Hospitals in North Wollo and Arsi Zones, respectively. All babies weighing less than 2,500g at birth, in the 6 months prior to the data extraction date, were identified and recorded by their *woredas*. Five *woredas* with the highest number of LBW babies (particularly LBW babies weighing under 2,000g at birth) were selected: two in North Wollo and three in Arsi. Twenty-two *kebeles* (village or cluster of villages—*kebele* is the lowest administrative unit in Ethiopia) with the highest number of LBW, babies were selected from five *woredas*: 10 from North Wollo and 12 from Arsi. Thirty-two mothers of LBW babies (16 per zone, of which 15 were selected from hospital records and one through community identification) and 30 HEWs and HDAs (15 in Arsi and 15 in North Wollo) participated in the study. In-depth interviews (IDIs) were conducted with mothers, HEWs, and HDAs. Performance of HEWs in providing kangaroo mother care (KMC) services, including counseling, was also assessed through observation. Lastly, focus group discussions (FGDs) were held with key community members and fathers of LBW babies. Below are key findings from the study.

Identification of LBW Babies

Majority of mothers reported not having been informed that their babies were LBW or preterm. As a result, mothers, as well as HEWs, were unable to provide the proper care for LBW babies at home. HEWs emphasized the lack of referral linkages and communication with health facilities where these mothers delivered or received care as main barriers to both identifying and caring for LBW babies. Additionally, facility visits by caretakers and home visits by HEWs for postnatal care (PNC) were limited in number—especially in the first week after delivery—thereby making it difficult for babies born at home to be weighed to determine their need for extra care. Approximately half of the HDAs interviewed in Arsi stated they did

[1] *MSCP* Ethiopia CBNC/NEGA Year 3 Work plan (October 2016–January 2018)

not know how to identify LBW babies and had not encountered an LBW, preterm, or small baby during their work. They attribute this deficiency to lack of training on LBW-specific issues.

Care for LBW Babies

Once discharged from the hospital, the mother is the main person that cares for the LBW or preterm baby, whereas the father or husband focuses on household financial matters and procuring grains and other materials needed during this time. This division of duty was found to be a major challenge in caring for LBW babies. When asked why they did not practice KMC, the majority of mothers responded that it was not feasible for them to do KMC all day when they also had other responsibilities in the household, such as cooking, cleaning, and looking after other children. Mothers interviewed in both regions also reported their dissatisfaction with the care they received at the hospital where they delivered their babies; reasons cited by mothers included cost, negligence, and disrespect or discrimination based on socioeconomic status. Several mothers expressed their reluctance to go to a hospital in the future to deliver, which has grave implications for the care of future LBW or preterm babies.

HEWs had clear understanding of the care LBW or preterm babies needed. They cited skin-to-skin contact and exclusive breastfeeding for the first 6 months as two care practices LBW or preterm babies need for survival. They mentioned the geographic vastness of the *kebeles* that they cover and their many responsibilities as barriers to reaching LBW or preterm babies. All HEWs interviewed reported having received initial CBNC training but that they could benefit from additional refresher courses. HDAs mentioned a lack of training on LBW or preterm care issues as the main barrier to supporting LBW or preterm babies and their families. Even without a formal training on the topic, HDAs had good knowledge on the type of care LBW or preterm babies should be given, which included keeping the baby warm and exclusive breastfeeding.

Community Attitudes, Beliefs, and Perceptions of LBW Babies

Community members and fathers in both North Wollo and Arsi Zones stated that they do not stigmatize mothers or couples who have LBW or preterm babies. However, community perceptions on the cause of and care for LBW babies could influence mothers who are unwilling to accept counseling for LBW babies and who do not want people to know if they have given birth to LBW babies. Community members and fathers also perceived that a baby's LBW or preterm status is due to poor maternal nutrition, heavy workload, and lack of key vaccinations during pregnancy.

Community members and fathers perceived that the key care needs of LBW or preterm babies include keeping them warm and exclusively breastfeeding them during the first 6 months. Majority of community members in Arsi Zone believed that LBW or preterm babies born at 7 months are more likely to survive compared to those born at 8 months. Only one person mentioned this belief in the North Wollo Zone, and the majority stated that all LBW or preterm babies have a 50% chance for survival and a 50% chance for death.

Recommendations

The following key recommendations could be implemented to improve identification and care of LBW or preterm babies in health facilities and communities:

- **Identification**—To ensure that all LBW or preterm babies are identified by HEWs and that mothers know the LBW or preterm status of their babies, post-delivery counseling given by health facility staff members needs to improve so that mothers are informed of their babies birth weight—whether they are LBW or not—and the type of care needed. Mechanisms for referral and counter-referral—i.e., referral from a higher-level facility to a lower-level facility for follow-up—mechanisms between HEWs and hospitals or health centers (HCs) for LBW or preterm babies should be strengthened to assure that there is adequate tracking of these babies and support given to these babies. Additionally, HEWs and HDAs should have and use appropriate KMC job aids. To alleviate the heavy workload of HEWs, the capacity of HDAs to conduct early PNC home visits to identify LBW or preterm babies should be strengthened.

To identify and reach more LBW or preterm babies through early PNC home visits, HEWs require additional support for transportation to far-reaching rural areas of the *kebeles*.

- **Care**—To increase the practice of skin-to-skin contact immediately after birth, mothers should be supported at all health facilities to make this a routine practice with their babies in the first hour of life and to continue this practice for a required period if their babies are LBW or preterm. Facility providers must also properly counsel mothers of LBW or preterm babies on their babies' weight and caring for their newborns. Facility providers must emphasize to mothers the importance of practicing prolonged skin-to-skin contact for their babies' survival.
- The monthly *kebele*-level pregnant women's conference (PWC) is an ideal setting to counsel mothers and fathers on the care and management of LBW or preterm babies. Doing so will require mobilizing husbands to attend the conference with their wives to better understand how they can assure the survival of their LBW or preterm babies. Involvement of men in baby care will alleviate some of the care burden that often falls entirely on mothers after they leave the health facility.
- HEWs would benefit from mentoring on the management and care of LBW or preterm babies. HEWs and HDAs should have access to counseling materials at all times, and job aids must be updated with information about caring for LBW or preterm babies. In addition, HDAs represent an untapped potential to provide basic management and care to LBW or preterm babies within the communities in which they live.
- **Attitudes, beliefs, and practices**—To ensure that a community's attitudes, beliefs, and practices are beneficial to the care of LBW or preterm babies, community awareness activities for mothers and fathers should be conducted to convey harms of some traditional practices. A key message could be that when identified early and provided appropriate care (including skin-to-skin care and adequate breast milk); most LBW or preterm babies will survive. In addition, appropriate KMC content should be included in the national Family Health Guide to improve knowledge of proper care practices and reduce unintended stigma.

I. Introduction

I.I. Background

To scale up the delivery of essential health interventions, the Ethiopian government implemented the Health Extension Program (HEP) in 2003. The goal of this program is to reach rural communities across Ethiopia to provide improved and more equitable access to health services. The HEP workforce is mostly women, except in pastoral communities. HEP women and men are recruited from the communities in which they will work. They must be at least 18 years old, have at least a tenth-grade education, and speak the local language.

Health extension workers (HEWs) are trained in managing health posts (HPs), promoting preventive health actions, and conducting home visits. Following the training, each HEW is paired with another and assigned to a *kebele* (village or cluster of villages—*kebele* is the lowest administrative unit in Ethiopia) with about 1,000 households, on average. Each *kebele* has one HP, which is the HEWs' operational center in addition to the households. HEWs focus on 17 different packages of health interventions in four major areas: hygiene and environmental sanitation, disease prevention and control, family health services, and health education and communication.

Because of the HEP, the need for deeper support at the community level led to the formation of the Health Development Army (HDA). The HDA is made up of community volunteers who are trained by HEWs on community mobilization and communicating key health messages to their networks. These messages focus on maternal, newborn, and child health (MNCH) and include health promotion activities to set up separate cooking spaces and to build latrines.

The Maternal and Child Survival Program (MCSP) is the flagship program of the United States Agency for International Development, and it aims to end preventable child and maternal deaths within a generation. In Ethiopia, MCSP supported the Federal Ministry of Health (FMOH) to implement its Community-Based Newborn Care (CBNC) program—locally known as Newborns in Ethiopia Gaining Attention (NEGA). MCSP-NEGA aims to reduce neonatal morbidity and mortality through the implementation of high-impact interventions, through demand creation for newborn services, and by strengthening of support systems. The program has been implemented in 135 selected *woredas* (districts) in four regions in Ethiopia: Amhara; Oromia; Southern Nations, Nationalities, and Peoples' Region; and Tigray. MCSP-NEGA follows the national CBNC package and continuum-of-care approach and builds the capacity of public health staff members at the regional, zonal, *woreda*, and primary health care unit (PHCU) levels. The CBNC package includes early identification of pregnancy at the community level; provision of antenatal care (ANC), postnatal care (PNC), and counseling; promotion of institutional delivery; provision of immediate newborn care; recognition of danger signs; prevention and management of infections and diseases at the community level; management of preterm or low-birth weight (LBW) neonates; promotion of kangaroo mother care (KMC);promotion of optimal breastfeeding; immunization; and the management of asphyxia. Interventions are delivered by HEWs, with support from HDAs. Through the delivery of the aforementioned interventions, MCSP-NEGA aims to contribute to the reduction of neonatal mortality and enable Ethiopia to achieve its Sustainable Development Goals.

I.2. Program Context

According to the 2016 Ethiopian Demographic and Health Survey, mortality of children under 5 years of age (under 5) was 67 deaths per 1,000 live births.[2] Ethiopia has significantly reduced its under-5 mortality rate from 204 deaths per 1,000 live births in 1990 to 67 per 1,000 in 2016, thereby achieving Millennium Development Goal 4 ahead of schedule.[3] Disaggregation of mortality data shows that the reduction in mortality rates is not uniform across all age groups. The neonatal mortality rate (NMR) has not seen

[2] Ethiopian Demographic and Health Survey, 2016

[3] United Nations Interagency Group for Child Mortality Estimation, Levels and Trends in Child Mortality, 2015

commensurate reductions, falling by only 42% from 54 deaths per 1,000 live births in 1990 to 28 deaths per 1,000 live births in 2013. As of 2017, the NMR was approximately 29 deaths per 1,000 live births, accounting for 47% of Ethiopia's child mortality rates.[4,5]

Complications during birth, prematurity or preterm and LBW, and infections are the major causes of neonatal mortality. LBW babies weigh less than 2,500g at the time of birth. Identification and management, including the referral of LBW babies from communities to health facilities, is part of the CBNC package. As part of the CBNC training, MCSP-NEGA taught HEWs to identify and provide care for LBW and preterm babies.[6]According to the baseline study conducted by MCSP-NEGA, only 17% of the mothers interviewed could report their babies' weight, and 25% of the mothers perceived their babies were smaller than average.[7] The EDHS 2016 estimates LBW prevalence at 13%.[8] However, through its program information system, MCSP-NEGA observed that very few LBW babies were being identified by HEWs in the community or at health centers. Through informal discussions with HEWs and providers based in the health centers, the MCSP –NEGA team has learnt that it is highly likely for a good proportion of the pregnant women with high-risk pregnancy to be receiving care at hospitals.

In response to this gap, MCSP assessed how communities, HEWs, HDAs, caretakers of LBW babies, and other community members identify and provide care for LBW babies in Amhara and Oromia Regions of Ethiopia. An exploratory study was conducted using document reviews, in-depth interviews (IDIs), focus group discussions (FGDs), and observation of skills to assess the knowledge, practices, and attitudes of communities and HEWs toward LBW or preterm babies. The study's primary objective was to assess whether LBW babies (under 2,500g) are identified and appropriately cared for by HEWs, HDA leaders, mothers, and community members in Amhara and Oromia Regions. The secondary objectives of the study were the following:

- Understand approaches used by HEWs, HDA leaders, and community members to identify LBW babies, and identify associated enabling factors and challenges.
- Assess the type of support given to mothers of LBW babies by community-based HEWs and HDA leaders and the factors that influence this support.
- Assess the attitudes toward care practices for LBW babies by their mothers and key community members.

MCSP's assessment aimed to shed light on the knowledge, practices, and attitudes of communities and HEWs toward LBW and preterm babies. The study sought to understand how care for LBW or preterm babies differed from the care for normal-weight babies. The study's engagement of a wide range of stakeholders—including mothers, fathers, community members, and health care providers—helped to identify community- and facility-level barriers and enablers associated with the care of LBW babies and to identify cultural attitudes, norms, and practices that exist within communities. The study's findings will contribute to improved care for this vulnerable group of newborns by enhancing current knowledge and identifying implementation challenges and potential solutions. The explorative nature of the study opens up areas for further investigation. The findings may be a useful resource for other organizations, researchers, and individuals working in programs focused on LBW babies in Ethiopia and other similar settings.

[4] Ministry of Health, National Strategy for Newborn and Child Health, 2015/16 to 2019/20
[5] MSCP-Ethiopia CBNC Program Summary, March 2017
[6] MSCP-Ethiopia CBNC NEGA Year 3 Work plan (October 2016–January 2018)
[7] Save the Children Ethiopia, Baseline Survey Report, MSCP-NEGA
[8] This needs to be interpreted cautiously as it is based on response of 14% of mothers who knew their babies' birth weight.

2. Methodology

2.1. Study Area

The assessment study was conducted in two purposively selected MCSP target zones: North Wollo Zone in the Amhara Region and Arsi Zone in the Oromia Region. The two zones were selected because they are among the first where the MCSP-NEGA project was implemented. Moreover, Arsi was purposively selected to overlap with another KMC- and LBW-related study conducted there[9] to ensure that comprehensive and stronger evidence is generated on LBW care to better inform decision makers.

North Wollo is located 508 km north of Addis Ababa, the capital of Ethiopia, whereas Arsi is located 175 km south of Addis Ababa. There are nine rural *woredas* in North Wollo and 24 rural *woredas* in Arsi; MCSP-NEGA works in these 33 rural *woredas*. With regard to public health infrastructure, North Wollo has three district hospitals, of which two were recently upgraded from health centers (HCs). Arsi has one zonal teaching hospital and four district hospitals, of which two have been operational for the last 5 years and the other two for the last year. These recently upgraded hospitals in both zones are not yet fully operating as primary hospitals. Additionally, 63 HCs and 271 HPs serve the North Wollo Zone, and 97 HCs and 505 HPs serve the Arsi Zone. The two selected hospitals for this study are zonal hospitals in North Wollo and Arsi. **Table 1** shows the public health infrastructure in the two zones.

Table 1. Health facilities in the study

	North Wollo Zone	Arsi Zone
Location	508 km north of Addis Ababa	175 km south of Addis Ababa
Number of rural *woredas*	9	24
Number of district hospitals	3	4
Selected hospital	Weldiya Hospital	Asella Hospital
Number of health centers	63	97
Number of health posts	271	505

2.1. Study Participants

The assessment study collected data from mothers of LBW babies identified as such at the hospital level, husbands of these mothers, HEWs and HDA leaders serving in the communities where LBW babies live, and key community members.

Table 2 summarizes the number and type of study participants and the method of data collection.

[9] A KMC-LBW study is being undertaken in collaboration between the four big regional health bureaus and universities, coordinated by the World Health Organization. The overlap was considered strategic given that the MCSP-NEGA LBW study primarily focuses on community-level attitudes and care practices, while the other study primarily focuses on facility-level practices. The other study is focused on developing a facility model of care for LBW babies and would not influence the results of this study.

Table 2. Study participants

Participant type	Method of data collection	Number of participants or groups
Mothers of low-birth weight (LBW) babies	In-depth interviews	32 mothers*
Health extension workers (HEWs)		30 HEWs
Health Development Army (HDAs)		30 HDAs
Key community members	Focus group discussions (FGDs)	4 FGDs total: 2 per region with 8–10 participants per group
Fathers of LBW babies		2 FGDs total: 1 per region with 8 participants per group
HEWs	Observation of skills	30 HEWs

* Thirty mothers of LBW babies were planned to be interviewed. An additional two mothers of LBW babies were identified in the community and included in this group, bringing the total to 32 mothers.

2.2. Sampling Procedure

LBW babies who received care at the hospital level were targeted for this study as HC delivery registers generally did not have LBW babies recorded. While this represents a select group of women, it was determined to be the appropriate sampling procedure fitting the purpose of the study and available resources.

Two hospitals (Weldiya Hospital and Asella Hospital), one from each zone, were purposively selected for the study as they have neonatal intensive care units (NICUs) serving LBW and preterm babies and were more likely to yield adequate cases. In addition, as the two longest-serving hospitals in these zones, these hospitals serve large catchment areas.

Using data extraction sheets, hospital registers were reviewed; all LBW and preterm babies who met the inclusion criteria in the delivery ward, outpatient department for under-5 children, and NICUs were identified from both hospitals. LBW and preterm babies identified from hospital registers—babies who were born within the 6 months prior to the data extraction date—were then classified by *woreda*. *Woredas* with high numbers of LBW and preterm babies (particularly babies under 2,000g) were prioritized as part of the sampling procedure. After finding the highest concentration of LBW or preterm babies per *woreda*, two *woredas* were selected in North Wollo, and three *woredas* were selected in Arsi. Within the two *woredas* in North Wollo, 10 *kebeles* were selected for caretaker interviews—based on the clustering of LBW and preterm babies in the *kebeles*; selected *kebeles* had the highest concentration of LBW and preterm babies. In Arsi, within the three selected *woredas*, 12 *kebeles* were selected; these *kebeles* had the highest concentration of LBW and preterm. By tracing LBW babies selected to their *kebeles* and, ultimately, their households through family folders kept at the HP, mothers of these babies were contacted for interviews.

Additionally, two babies (one from each zone) perceived as 'small than average at birth' were identified by the study participants and included in the study. One of the babies was born at a HC and the other at a private clinic.

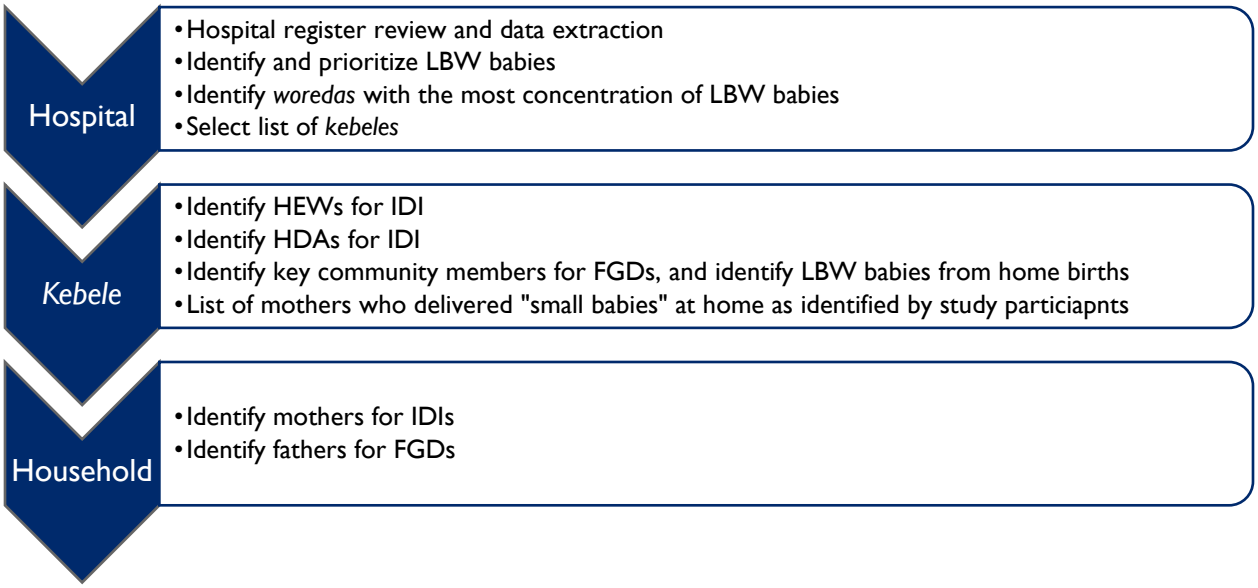
The study included the following participants:

- 15 LBW babies treated in each hospital, in each study zone, in the 6 months prior to the survey—for a total of 30 LBW babies as index cases
- Two babies perceived as "very small size at birth" by the study participants—one in North Wollo and one in Arsi
- Mothers and fathers of these 32 babies

- 30 HEWs (15 in North Wollo and 15 in Arsi) and 30 HDAs (15 in North Wollo and 15 in Arsi) working in the *kebeles* of the 32 babies
- Key community members from the *kebeles* where LBW babies were identified—*kebele* cabinet members, elderly women, Development Team Leaders (DTLs), managers of traditional savings associations, and local police.

Figure 1 illustrates the techniques and steps used for sampling.

Figure 1: Sampling procedure



The sampling procedure of tracing mothers from hospital registers to their households presented several challenges. Gathering the necessary information from hospital registers presented the first challenge. Patient information at the hospitals were not kept in the same place, meaning that mothers' names and their addresses were kept in different files, requiring extensive triangulation to gather the information necessary to locate them. In addition, there were a number of mothers listed as having an LBW baby for whom an address was not recorded in the files.

Once a comprehensive list of mothers and their addresses was compiled, locating these mothers presented a second challenge. It quickly became evident to the field research teams that there were a large number of mothers listed under wrong names and addresses. As a result, the field research teams spent an extensive amount of time with HEWs in each *kebele* to triangulate the names on their list with the family folders maintained in the HP to find the correct name and address for these mothers.

Despite these challenges, the field teams were proactive in using mitigating strategies discussed during their training and were able to triangulate and find all of the LBW babies identified in the registers. In addition to training, the help and support the HEWs provided in each *kebele* they visited were instrumental in facilitating the successful completion of participant selection and interviews.

2.3. Sample Size

The sample size was based on the assumption that the selected number of participants would yield information saturation on themes related to the objectives of this qualitative study. It was determined that conducting more than 30 IDIs with each respective respondent group would not yield any new information.

As shown in **Table 2** above, 32 IDIs with mothers of LBW babies were undertaken: 16 in Arsi Zone and 16 in North Wollo Zone. Additionally, 30 IDIs with HEWs and 30 IDIs with HDAs were undertaken, half in Arsi and the other half in North Wollo (15 HEWs and 15 HDA leaders in North Wollo, 15 HDAs and 15 HEW in Arsi). Four FGDs were conducted with key community member leaders (two in North Wollo and two in Arsi), and two FGDs were conducted with fathers of LBW or preterm babies (one in North Wollo and one in Arsi). Lastly, 30 observations of HEW skills were undertaken (15 in Arsi and 15 in North Wollo).

2.4. Inclusion and Exclusion Criteria

Mothers of LBW babies (defined as below 2,500 g at birth) who reside in rural areas and who were discharged from a hospital after giving birth in the 6 months prior to the study were included in the assessment. Mothers of babies who died while in the hospital and mothers who were already inpatients on the day of data extraction were not included. In addition, mothers of babies identified as giving birth to 'smaller than average baby at birth' by participants were included.

Mothers of LBW babies who were identified during data extraction, but the babies were found to have died after hospital discharge in the 6 months prior to the assessment, were included in the study. Special attention was given to those mothers to support them during their grief. HEW, HDA leaders, and community members—identified in the *kebeles* where mothers of the LBW babies resided—were included in the study.

2.5. Training and Pilot Test

Four field researchers were hired to complete the field data collection. In each region, a team of two researchers was deployed: one facilitator and a note taker or assistant. Field researchers were chosen based on their knowledge of LBW babies and HEP in Ethiopia, their medical backgrounds, and their experience conducting FGDs and IDIs in their respective language.

2.5.1. Training

Training encompassed a total of 6days:3days of training, 2days for field-testing the questionnaire and discussion guides, and 1day for feedback and finalization of the tools. Training allowed the field team to discuss the context and background of the study, review each tool in detail, practice how to use the data extraction sheets, conduct mock interviews, and practice writing expanded field notes. Field researchers were also trained on the use of personal digital assistants (PDAs) for observing skills of HEWs. The qualitative field researchers were also actively engaged in assisting to revise the translated tools.

2.5.2. Pilot Test

The 3days of classroom training was followed by field pilot testing, which allowed for fine-tuning of the tools. Under the supervision of the research firm's staff members, the data collection team visited communities around Debre Zeyit for the 2-day pilot testing; they interviewed mothers, HDAs, HEWs, and they conducted FGDs. On the last day of training, necessary logistical adjustments were made to maximize the quality and efficiency of data collection activities, in accordance with lessons learned from the pilot test.

2.6. Data Collection Methods and Tools

Qualitative techniques were primarily used for data collection, including document reviews, IDIs, and FGDs. Quantitative data collection consisted of observing the skills of HEWs; information was collected using PDAs.

2.6.1. Document Review

Documents reviewed were project reports, health facility records, and reporting forms. Extraction sheets were used to collect relevant LBW information from registers in delivery wards and NICUs in the two

hospitals. The collected hospital records contained information pertaining to the date of birth, weight, and sex of LBW babies who met the inclusion criteria of the study.

2.6.2. In-Depth Interviews (IDIs)

An IDI was the primary data collection method used with mothers, HEWs, and HDAs. Structured interview guides were used during interviews with these three groups of participants. One-on-one IDIs with mothers, HEWs, and HDAs were conducted between the researcher and note taker and the respondent. All IDIs were conducted in local languages (Amharic and Oromiffa); the researcher led discussions based on the tools, and the note taker recorded the discussion.

Unless otherwise requested by the interviewee, interviews were conducted in homes (for the mothers) or at places of work (for the HEWs and HDA leaders). Field teams gathered all information needed in one visit to minimize interview times. Interviews in North Wollo Zone were conducted in Amharic, and interviews in Arsi Zone were conducted in Oromiffa. With permission from interviewees, the audio of all interviews were recorded.

2.6.3. Focus Group Discussions (FGDs)

FGDs were conducted with community leaders and fathers of LBW babies. FGDs were arranged with two participant groups: one consisting of a diverse group of community members and another with the fathers. During FGDs with both fathers and community members, the note taker captured the general atmosphere of the discussion (for example, if all participants agreed or disagreed on some points).

During FGDs, the field researcher guided the process using FGD guides and also encouraged participants to elaborate on the points they made in order to gather rich contextual data on the community members' beliefs, norms, and attitudes. In all FGDs, the field researcher assessed to what extent opinions were representative of the whole group or of just one person. The field researcher encouraged participation of all FGD members, rather than relying solely on answers of the most vocal participants. The audio of FGDs were recorded (after obtaining consent), with corresponding notes taken by the note taker or assistant.

2.6.4. Observation of Skills

Observations of HEWs' counseling skills on the care of small babies were conducted using a role-playing script, observation checklist, and equipment such as Preemie Natalie of different weights, cups for feeding, cloth or scarf, caps, blanket or shawl, and a breast model (Mama Breast).

The role-play used case scenarios; one of the data collectors played the role of a mother of an LBW baby and another observer assessed each HEW's counseling skills against the checklist. Case scenarios were read to HEWs, who were then asked to counsel the "mother" using the scenario information provided.

These observations gathered data to measure the quality and appropriateness of how HEWs counseled mothers of LBW babies against the established protocols and chart booklets (which the HEWs were able to refer to during the counseling).

Observation of HEWs' skills was conducted through quantitative methods using PDA technology. Quantitative data were then processed and analyzed as shown in the findings section below.

2.7. Data analysis

The data analysis process began with a debriefing workshop for the field research team and data analysis team, followed by a preliminary findings presentation—prepared by the data analysis team—to the MCSP-NEGA team.

During the qualitative debriefing workshop, the field research team presented its findings and reviewed responses to questions in both the IDIs and FGD tools. This allowed the data analysis team to identify major patterns and themes that emerged from both regions.

In addition to the workshops, the analysis team reviewed expanded field notes for each interview, as provided by the research team, to populate identified themes. FGDs with community members were analyzed for actions they took for LBW babies at home and the role of husbands in the care of an LBW, preterm, or small baby. These FGDs also aided in understanding the various terms the community uses to describe LBW and preterm babies. IDIs with mothers were analyzed to understand their knowledge of care required for LBW babies and the support they received from HEWs, HDAs, and the community. IDIs with HEWs and HDAs were analyzed to further understand their knowledge of care practices for LBW babies, how they identify LBW babies, and what counseling they provide to mothers of LBW babies. Finally, observations of HEWs' counseling were quantified to determine the quality and appropriateness of the counseling provided to mothers of LBW babies.

The data analysis team presented preliminary findings to MCSP-NEGA technical staff members; the findings revealed differences in performance and approaches across the two zones. After incorporating the MCSP-NEGA technical team's comments and feedback, the findings were then compiled into this report.

2.8. Ethical Considerations

Prior to the start of the study, the study protocol was reviewed for ethical clearance and approved both internationally by Western Institutional Review Board and locally by the Amhara and Oromia Regional Health Bureaus of Ethiopia.

As it is the responsibility of the study team to minimize the discomfort, inconvenience, and risk to the study participants, all researchers were briefed on international standards for the ethical treatment of participants during a training. Each study participant was briefed on the purpose and content of the study in a nonthreatening and culturally acceptable manner and was provided an opportunity to ask questions. Field team members also secured written (for HEWs) or verbal (all other participants) informed consent for the study before its start. The field research team also fostered a nonjudgmental and impartial environment while conducting data collection and interacting with respondents. Furthermore, the confidentiality of all participants has been maintained throughout this study; all data have been de-identified during the data analysis period and only the assigned data analysis team has access to any personal identifying data.

3. Results

In this section, the findings from the qualitative interviews are presented, followed by the data collected during the observation of HEWs' skills. The discussion of qualitative results is divided into thematic areas consisting of identification of LBW babies by health professionals, care and support for LBW babies and their mothers by healthcare providers and community members, and attitudes toward LBW babies among the communities interviewed. These findings are obtained from the IDIs conducted with HEWs, HDAs, and mothers and from the FGDs with community members and fathers of LBW babies. The quantitative results present data collected during HP assessments and skills observation conducted with 30 HEWs interviewed across both regions.

3.1. Respondent Characteristics

A total of 32 mothers who delivered LBW babies within the 6 months prior to data collection were included in the study. In addition, 30 HEWs, 30 HDAs, fathers, and community members from the same *kebeles* in which the mothers resided were included in the study.

3.1.1. Mothers' Characteristics

Table 3 presents selected background characteristics of the mothers by region. In the North Wollo Zone, 62.5% of the mothers interviewed were between the ages of 25–29 years. In the Arsi Zone, 56.3% of the mothers interviewed were also between the ages of 25–29 years. All mothers interviewed in both regions were married. In North Wollo, 62.5% of the women had received no education, 25% had attended primary education, and 12.5% had secondary education. In Arsi, 12.5% of the women had received no education, 37.5% had attended primary education, and 50% had secondary education. More respondents in Arsi had received primary and secondary education than the respondents in North Wollo.

Table 3.Characteristics of mothers (N = 32) of LBW babies born between February and July 2017 in Oromia and Amhara Regions, Ethiopia

Background characteristics	Regions	
	North Wollo Zone, Amhara (n = 16)	Arsi Zone, Oromia (n = 16)
Age		
20–24 years	2(12.5%)	3(18.8%)
25–29 years	10(62.5%)	9(56.3%)
30–34 years	2(12.5%)	2(12.5%)
35–39 years	2(12.5%)	2(12.5%)
Marital status		
Married	16(100%)	16(100%)
Education		
No education	10(62.5%)	2(12.5%)
Primary education	4(25%)	6(37.5%)
Secondary education	2(12.5%)	8(50%)
Birth weight of index LBW baby (n = 15 in each Zone)[10]		
Less than 1,500g	0	6 (40%)
1,500–1,999g	3 (20%)	3 (20%)

[10] Of the 15 babies selected at the hospital level (N=15)

Background characteristics	Regions	
	North Wollo Zone, Amhara (n = 16)	Arsi Zone, Oromia (n = 16)
2,000–2,499g	12 (80%)	6 (40%)

3.1.2. Characteristics of LBW Babies Selected

Tables 4 and 5 present background characteristics of the LBW babies selected from Asella and Weldiya Hospital, respectively. Multiple births are denoted in the sex and weight columns—with more than one sex and weight listed. In Arsi Zone, LBW babies were born between the months of February and July. Of the 16 babies included in the study, nine were female and seven were male; there were three sets of multiple births. Two of the selected LBW babies were deceased at the time of the IDI with the mother. The weight category of the selected babies in Arsi ranged from 1,000 g to 2,400 g.

In North Wollo Zone, the selected LBW babies were born between the months of February and July. Of the 16 babies included in the study, 11 were male and six were female (one set of twins were male and female); there were two sets of multiple births. Three of the selected LBW babies were deceased at the time of the IDI with the mother. The weight category of the selected babies in North Wollo ranged from 1,700 g to 2,400 g.

Table 4.Characteristics of LBW babies selected for the study (N = 16) in Arsi Zone, Oromia Region, Ethiopia

Arsi Zone, Oromia Region (N = 16)				
No.	Sex	Weight (g)	*Woreda*	Status
				Living or deceased
1	F, F, and F	1,600, 1,500, and 1,300	A	Living
2	F	1,300	A	Living
3	F	1,400	A	Living
4	M	2,400	A	Living
5	F	1,500	B	Living
6	F	2,000	A	Living
7	M	2,100	C	Living
8	F	1,700	A	Living
9	M, M, M, and F	1,800, 1,000, 700, and 500	B	Living
10	M	2,200	A	Living
11	M	2,400	A	Deceased
12	F	Between1,500 and 2,500	C	Living
13	M	<1000	B	Deceased
14	F	1,000–1,500	A	Living
15	M and M	2,300 and 2,300	A	Living
16	F	Community recommended as a "very small" baby	A	Living

Note: female (F), male (M)

Table 5.Characteristics of LBW babies selected for the study (N = 16) in North Wollo Zone, Amhara Region, Ethiopia

North Wollo Zone, Amhara Region (N = 16)				
No.	**Sex**	**Weight (g)**	***Woreda***	**Status**
				Living or deceased
1	M	2,400	A	Living
2	M	2,400	A	Living
3	M	2,200	A	Living
4	M	2,300	A	Living
5	M	2,000	A	Living
6	F	2,400	A	Living
7	F	2,400	A	Living
8	M	2,000	A	Deceased
9	M	2,200	B	Living
10	M and F	2,300	A	One deceased, one living
11	M	2,000	B	Living
12	F	2,000	A	Living
13	F	1,800	A	Deceased
14	F	1,800	A	Living
15	M and M	2,000 and 1,700	A	Living
16	M	Community recommended as a "very small" baby	A	Living

Note: female (F), male (M)

3.1.3. Characteristics of Health Extension Workers (HEWs)

Table 6 presents selected background characteristics of HEWs by region. Eighty percent of the HEWs interviewed in Arsi Zone were between 25 and 29 years of age. In North Wollo Zone, 60% of the HEWs interviewed were between the ages of 30 and 34 years. The majority of HEWs in North Wollo (66.7%) were level III HEWs, while the other 33.3% were found to be level IV. In Arsi, 53.3% of HEWs interviewed were level III, and 46.7% were level IV.

Table 6: Characteristics of HEWs interviewed (N = 30) in Oromia and Amhara Regions, Ethiopia

Background characteristics	Regions	
	North Wollo Zone, Amhara (n = 15)	Arsi Zone, Oromia (n = 15)
Age		
20–24 years	0	1(6.7%)
25–29 years	0	12(80%)
30–34 years	9(60%)	2(13.3%)
35–39 years	5(33.3%)	0
40+ years	1(6.7%)	0
HEW level		
Level III	10(66.7%)	8(53.3%)
Level IV	5(33.3%)	7(46.7%)

Note: health extension worker (HEW)

3.1.4. Characteristics of Health Development Armies (HDAs)

Table 7 presents selected background characteristics of HDAs by region. The majority of HDAs in both Arsi (46.7%) and North Wollo (53.3%) Zones were above the age of 40. Twenty-six percent of HDAs in Arsi had received no education, while 60% and 13.3% had completed primary and secondary education, respectively. In North Wollo, all HDAs interviewed had some level of literacy. Thirty-three percent had completed primary education, while a larger proportion (66.6%) had completed secondary education and higher. HDAs in North Wollo were found to have received more education than HDAs interviewed in Arsi.

Around 66% of HDAs interviewed in Arsi have been serving as HDAs for up to 6 years. Furthermore, 53.3% of HDAs interviewed in this region were found to be DTLs[11]. In North Wollo, the majority of respondents report serving as HDA leaders between 4 to 9 years, and approximately 74% are DTLs.

Table 7: Characteristics of HDAs interviewed (N = 30) in Oromia and Amhara Regions, Ethiopia

Background characteristics	Regions	
	North Wollo Zone, Amhara (n = 15)	Arsi Zone, Oromia (n = 15)
Age		
20–24 years	0	1(6.7%)
25–29 years	1(6.7%)	1(6.7%)
30–34 years	1(6.7%)	3 (20%)
35–39 years	5(33.3%)	3(20%)
40+ years	8(53.3%)	7(46.7%)

[11] In the HDA network, the DTLs are a level higher than the HDA leaders; they serve as leaders of 5-6 HDA one to five network leaders that has 25-30 members under it. The DTLs often have some education and may have been active in health related community work in the past.

Background characteristics	Regions	
	North Wollo Zone, Amhara (n = 15)	Arsi Zone, Oromia (n = 15)
Education		
No education	0	4(26.7%)
Primary education	5(33.3%)	9(60%)
Secondary education and higher	10(66.6%)	2(13.3%)
Years serving as HDA		
1–3 years	3(20%)	5(33.3%)
4–6 years	6(40%)	5(33.3%)
7–9 years	6(40%)	2(13.3%)
10+ years	0	3(20%)
Type of HDA		
1:5 Leader	2(13.3%)	8(53.3%)
1:30 Leader	11(73.3%)	5(33.3%)
Both 1:5 and 1:30 Leader	2(13.3%)	1(6.7%)
Women's representative	0	1(6.7%)

3.1.5. Characteristics of Key Community Leaders and Fathers

FGDs were conducted with key community members (*kebele* cabinet members, elderly women, DTL), managers of traditional savings associations, and local police).and fathers of the selected LBW babies. In North Wollo Zone, two FGDs were conducted with key community members, with eight and 10 participants, respectively. The average age of these participants was 37 years. Majority of participants were married women who had completed primary education. One FGD with fathers was conducted in North Wollo. The average age of participants was 33 years. All eight of the fathers in the FGD were married, and the majority had completed primary education.

Similarly, in Arsi Zone, two FGDs were conducted with key community member, with eight and 10 participants, respectively. The average age of these participants was 44 years. The majority of participants were married men who had completed secondary education. In the Arsi FGD with fathers, the average age of the participants was 30 years, and all eight fathers who participated were married and had completed secondary education.

3.2. Qualitative Findings

3.2.1. Identification of Low-Birth weight (LBW) Babies

To develop a conceptual understanding of care for LBW babies, we explored the knowledge of HDAs and HEWs about LBW babies—both their general knowledge and their knowledge on practical and theoretical identification of LBW babies—and the approaches and tools HEWs and HDAs use to identify pregnant women in the community.

3.2.1.1. General Knowledge of HDAs and HEWs on LBW Babies

HEWs and HDAs often described LBWs, preterm, and small babies subjectively. The majority referred to these babies as "small, with grayish and wrinkled skin and appearing malnourished." Several HEWs and HDAs attributed the cause of LBW, preterm, and small babies to an imbalanced diet, underlying conditions in the mother, or insufficient rest for the mother during pregnancy. They stated that LBW babies are prone to

malnutrition; diseases such as pneumonia, diarrhea, and measles; and mental sluggishness. Many also reported that LBW babies have an increased risk for death.

Interestingly, several HDAs from both regions believe that a baby born prematurely in the 7th month of gestation is more likely to survive, and one who is born in the 8thmonth is more likely to die. This is attributed to the belief that a baby born 2months early, at 7 months, has completed one milestone of pregnancy, resulting in favorable outcomes. In contrast, a baby born one month early, at 8months, has not completed the final milestone of pregnancy, resulting in unfavorable outcomes.

Nearly all HEWs and HDAs recognized that such LBW babies need special care to gain weight and strength. Majority of HEWs and HDAs in both regions recognized that such babies require frequent and exclusive breastfeeding, that mother's nutrition improve to aid breastfeeding, maintenance of body heat, and maintenance of personal and environmental hygiene to prevent infection.

In contrast to HDAs, HEWs were more knowledgeable about procedures for maintaining the baby's body temperature. Most HEWs recognized that LBW or preterm babies need to be given skin-to-skin contact for heat. However, only one HDA in North Wollo Zone mentioned skin-to-skin care or KMC.

HEWs and HDAs were asked if they had received training on LBW, preterm, and small babies. All HEWs mentioned that they had received CBNC training that strengthened their knowledge on the causes, risks, management, and care of LBW, preterm, and small babies. Conversely, several HDAs reported that they had not been trained on the recognition and management of LBW or preterm babies. Majority of HEWs also attested to this lack of training for HDAs.

3.2.1.2. Knowledge of How to Identify LBW Babies

Both HEWs and HDAs were asked if they knew how to identify LBW, preterm, or small babies. The section below explores theoretical knowledge to identify LBW babies among both groups of respondents.

3.2.1.3. HEWs' Knowledge of How to Identify LBW Babies

HEWs listed the following as the most common methods used for identifying LBW babies: weighing the baby, observing the baby, directly asking the mother how much her baby weighed at birth, or asking the mother how far along she was in her pregnancy and when she had the baby.

Majority of HEWs mentioned more than one method to identify LBW, preterm, or small babies. In Arsi Zone, majority of the HEWs (12 out of 15) reported that they would weigh the baby during a PNC visit to learn the baby's LBW status.

> *"History from the mother is actually what we depend on…if she knows her last menstrual period…and there is ultrasound, it makes it easy, and we weigh the baby to know how small the baby is."—HEW, Arsi Zone*

Around one-half of the HEWs (eight) reported that they could also tell if babies are LBW or preterm through observation. These HEWs reported that LBWs are physically different from normal babies and that they are small, have grayish skin, and their hair appears to be patchy. Six HEWs also said they would ask the mother if the baby is LBW, preterm, or small as a method of identification.

Approximately one-half of the HEWs in Arsi Zone were able to make a distinction between LBW and preterm babies. These HEWs reported that they would identify preterm babies by asking the mother for the gestational age and using the expected date of delivery to calculate if she had the baby prematurely. They also made the distinction that preterm babies lack alertness and energy and are not able to latch to the mother's breast during breastfeeding. As for LBW babies, specific mentions were made about these babies requiring heat and KMC.

In North Wollo Zone, 12HEWs reported their understanding that identification of LBW babies can be made at birth by weighing the baby. Four of these HEWs specified a baby weighing less than 2,500 g is classified as LBW. As for preterm babies, 12HEWs in North Wollo said they crosscheck the expected date of delivery noted during ANC against the actual date of birth to make the LBW classification. Some HEWs also mentioned that they get this information from the mother. Three HEWs in North Wollo also stated that they could recognize LBW and preterm babies by their appearance. They stated that LBW and preterm babies look smaller than normal-weight or term babies—they do not latch on the breast, have trouble opening their eyes, and look emaciated.

3.2.1.4. HDAs' Knowledge of How to Identify LBW Babies

Some HDAs reported that they could identify a baby as LBW or preterm by asking the mother or through observation. In Arsi Zone, three HDAs reported that they would-be able to identify a baby as LBW, preterm, or small by asking the mother for the baby's gestational age; two HDAs said they would be able to make the LBW or preterm identification by looking at the baby's appearance.

In contrast to HEWs, majority of the HDAs in Arsi Zone reported that they were not able to identify such babies. Approximately half the HDAs interviewed in Arsi stated they did not know how to identify LBW babies and had not encountered an LBW, preterm, or small baby during their work experience. Four HDAs also explained that they did not identify LBW babies because it is the HEWs who inform them if the baby is LBW or preterm.

In North Wollo Zone, 10 of the 15 HDAs interviewed reported that they would be able to identify LBW or preterm babies by their appearance and that these babies are smaller in appearance. Five HDAs said that LBW and preterm babies would have difficulty latching on to the breast because they have low energy. Three HDAs also reported that LBW and preterm babies have grayish skin, low energy, and do not cry as much as babies of normal weights. One HDA emphasized that preterm babies are prone to various types of infections and while LBW babies are also at risk, LBW babies far better than preterm babies at fighting off infections.

Despite the information obtained on how HEWs and HDAs identify such babies, neither HEWs nor HDAs mentioned where and how such babies are identified, whether there is a system of recording this information, or how this information is communicated to other health professionals.

3.2.2. Practical Identification of LBW Babies

In the following section, we discuss whether HEWs and HDAs have experience identifying LBW babies in the communities they serve. These findings are also summarized in **Table 8**.

3.2.2.1. Practical Identification of LBW Babies by HEWs

A total of 14 out of the 30 HEWs interviewed reported that they had identified and had experience caring for LBW babies in their communities. In Arsi Zone, 10 HEWs reported that they had experience identifying LBW, preterm, and small babies. They also mentioned that once they identified LBW babies, they provided counseling to the mother on exclusive breastfeeding, KMC, consuming a balanced diet, and maintaining personal hygiene.

In the North Wollo Zone, four HEWs reported that they had identified and had experience caring for LBW babies. Of these four, three said they counseled the mother on keeping the baby warm and breastfeeding. One HEW emphasized the importance of following the weight of the baby and alternating to cup feeding if the baby continues to have difficulty latching onto the mother's breast.

In Arsi, five out of the 15 HEWs interviewed reported never having had experience with LBW babies. In North Wollo, a higher proportion of HEWs (11 out of 15) reported never having identified LBW babies or having had experience with LBW babies. The barrier to identifying LBW babies among HEWs can be linked

to several challenges associated with lack of access and information. When asked about challenges associated with identification, five HEWs in North Wollo detailed the difficulty of accessing these babies through early postnatal home visits due to the vastness of the *kebeles* they work in. These HEWs stated that they end up prioritizing home visits based on need as they simply are not able to reach every household.

> *"We are unable to detect these babies because of difficult geographical area of the kebele and large number of population (10,300) compared with other kebeles, which makes our home visit difficult, and [we are] unable to address all delivered mothers"—HEW, North Wollo Zone*

Another challenge mentioned was the lack of information HEWs receive from the HC or hospital where the babies are delivered. Three HEWs in North Wollo mentioned that LBW babies are not easily identified because they are delivered in HCs or hospitals, and information about the baby's weight is not relayed back to the HP. This is due to the lack of referral linkages between these health facilities, as well as the absence of telephone network connection. Three HEWs in North Wollo also reported that the mothers' lack of information on their pregnancy and delivery impedes making proper identification of LBW babies. They mentioned that health care workers attending the delivery do not inform the mother of her baby's weight. In addition, they also reported that mothers do not keep adequate track of their pregnancies and tend to forget when their last menstrual cycle ended, making it difficult for HEWs to identify preterm babies. In addition to HEWs' lack of access to mothers due to the vast geographic area HEWs are expected to cover, HEWs in Arsi also reported that lack of having functional equipment at the HP, such as a weighing scale, also prevented them from being able to make identifications.

> *"We have one weighing scale…also, our mobile weighing scale is not functional, so if we have such a tool we can identify easily."—HEW, Arsi Zone*

3.2.2.2. Practical Identification of LBW Babies by HDAs

Compared to HEWs, the HDAs interviewed had far less experience identifying LBW babies. Four of the 15 HDAs interviewed in Arsi Zone reported that they had experience with preterm or small babies. In North Wollo Zone, only two of the 15 HDAs reported having had experience with small babies. The HDAs with experience identifying preterm babies in Arsi stated that the main approach they used for identification was to ask the mother. One HDA said that she had a record of every pregnancy in the *kebele* where she registered and kept track of how far along the mothers were. She used this record to determine that one of the mothers giving birth was only 7months pregnant. In North Wollo, both HDAs who reported having experience with preterm babies said that they knew about the premature births because they had asked the mothers.

3.2.2.3. Pregnancy Identification and Birth Notification Approaches and Tools Used by HEWs

HEWs reported that they identify pregnant women in the community at different stages of pregnancy. Ten HEWs in Arsi Zone reported that they were informed of pregnant women by HDAs who referred them for ANC. During the ANC visit, they estimated the women's due date, which enabled HEWs to monitor and provide follow-up care until the women delivered.

Seven HEWs in Arsi reported that they also became aware of pregnant women during labor. They were contacted either by HDAs, family members, or neighbors who requested ambulance services. These HEWs also reported that community volunteers played an instrumental role in identifying and notifying them of pregnant women; however, the volunteers were not functioning in the same way across all areas.

> *"The most useful structure was the community volunteers, [not HDAs] usually they were faster and more committed than the HDA leaders. But now they are not as functional as before because there was an incentive and it has been discontinued."—HEW, Arsi Zone*

In some cases, HEWs have been made aware of women after they have delivered. Two HEWs in Arsi reported that the HC notified them of deliveries. Three HEWs interviewed in Arsi stated that a traditional birth attendant had informed them of pregnancies when the mother was in labor. Several HEWs also mentioned becoming aware of newborn babies when delivering immunization services and when conducting outreach work such as home visits.

In North Wollo Zone, three HEWs reported that they found out about pregnancies through the PWC. However, all 15HEWs in North Wollo stated that they became aware of pregnant women in the community through HDAs once the mother was in labor. One HEW reported that HDAs will physically bring the laboring mothers to the HP, and that is how she became aware of both pregnancies and deliveries in the community. Another HEW reported that pregnant women themselves called her, and that is how she was informed. Similarly, in North Wollo, two HEWs reported learning about deliveries when mothers came for vaccination on the 45thday.

> *"By the way there are some gottes (villages) which are too far, so we may hear at postpartum day 45 when they come to me for vaccine, but if she gave birth in the health facility, [then I] could hear within one day."—HEW, North Wollo Zone*

Nearly all HEWs across regions reported that they were notified of a pregnant woman or a delivery either in person or through a phone call. Very few mentioned the use of referral slips to communicate this information.

3.2.2.4. Pregnancy Identification and Birth Notification Approaches and Tools Used by HDAs

Many HDAs in both regions stated that they heard about pregnancies through mothers' self-reporting or through reports from mothers' family members or neighbors. In contrast to HEWs, HDAs have an informal role in the community. Some HDAs reported that they were not formally notified of pregnant women in the community; however, as they live within the community and engage in social gatherings with these women, they were aware of pregnancies and births.

> *"The family members will call me if there is a mother who needs an ambulance to go to the hospital or HC for delivery."—HDA, North Wollo Zone*

It was evident from findings in both regions that HDAs learned of a delivery immediately after the mother went into labor. While HEWs are expected to cover a single *kebele* with an average of 1,000 households, HDAs are responsible for covering either five or 30 households in their immediate surroundings.

> *"Since in our 1:5, we are arranged based on our social structure, so we hear everything."—HDA, Arsi Zone*

Thirteen out of the 15 HDAs interviewed in Arsi Zone reported that they learned of a delivery immediately as the mother went into labor. Due to their frequent formal and informal contact with these mothers in the community, HDAs are the first to find out about births in the community. The majority of respondents across both regions (27 out of 30 HDAs) reported that family members of the laboring mother called them as soon as the mother started complaining of labor pains. They would then relay this information to the HEW and call an ambulance for the mother.

Table 8.Key findings on pregnancy identification, birth notification, and general knowledge on LBW babies

	HEW	HDA
General knowledge on LBW babies	• Preterm and LBW babies are small, have grayish skin color, and appear malnourished • LBW babies are prone to infections and at increased risk of death Causes: • Imbalanced diet • Mother not resting during pregnancy	• Preterm and LBW babies are small, have grayish skin color, and appear malnourished • LBW babies are prone to infections and face an increased risk of death • Preterm babies born at 8 months will not survive Causes: • Imbalanced diet • Mother not resting during pregnancy
Knowledge of how to identify LBW babies	• LBW baby can be identified by weight measurement, observation, and asking the mother how much the baby weighed at birth • Preterm babies can be identified by asking for and then comparing the mother's expected delivery date against the date of birth	• LBW can be identified by observation and by asking the mother • Preterm babies can be identified by asking for and then by comparing the mother's expected delivery date against the date of birth
Practical identification of LBWs	• 14 had identified LBW babies	• Six had identified LBW babies
Pregnancy identification and birth notification	Prelabor: • HDA referral for ANC • Pregnant women's conference Postlabor: • Contacted for ambulance services by HDAs, family members, and neighbors • Community volunteers • Health center • Traditional birth attendants • When mothers bring babies for vaccinations	Prelabor: • Mothers self-reporting • Social gatherings Postlabor: • Family members

Notes: antenatal care (ANC), Health Development Army (HDA), health extension worker (HEW), low birth weight (LBW)

3.2.3Care for LBW Babies and Support for the Mothers and Caretakers

To gain a better understanding of the barriers and enablers for proper care of LBW babies, the care given to LBW and preterm babies by HEWs, HDAs, fathers, community members, and mothers was explored. Additionally, the support given to mothers by both healthcare providers and community members was explored.

3.2.3.1. Care for LBW babies by HEWs—Barriers to Care

Several HEWs reported that they are overburdened by the amount of work and responsibility they have been given. They stated that they are expected to do home visits and cover vast areas that are not easily accessible with limited means of transportation, which then does not give them the opportunity to visit all mothers and newborns in a timely fashion.

Although they expressed challenges and barriers to care, HEWs in both Arsi and North Wollo Zones conceptually have grasped the care needed for both LBW and preterm babies. In Arsi, HEWs did not make a distinction between the care needed for LBW and preterm babies. Care for both LBW and preterm babies

was identified to be exclusive breastfeeding (noted by 12 HEWs), keeping the baby warm (noted by all 15 HEWs), KMC (noted by two HEWs), and feeding expressed breast milk using a cup (noted by two HEWs).

Similar to the HEWs in Arsi, HEWs in North Wollo did not make a distinction between the care needed for preterm and LBW babies. They stated the care to be given as the following: need for warmth (nine HEWs), exclusive breastfeeding for the first 6months (11 HEWs), KMC (two HEWs), covering the baby's head and feet with a cap and socks (one HEW), and feeding expressed breast milk in a cup to those babies who cannot latch on to the breast (one HEW).

All HEWs stated the CBNC training they received has helped them to provide care for newborns in their community. Five of the 15HEWs in Arsi and seven of the 15HEWs in North Wollo stated that the CBNC training improved their knowledge and skills on the management and care needed for LBW and preterm babies. Additionally, the majority said the last training they received was 2years ago, and they could benefit from refresher training.

> *"Yes, the CBNC training improved my knowledge and skills regarding managing preterm babies who are sick and about basic care to be given for preterm/LBW babies."—HEW, North Wollo Zone*[12]

3.2.3.2. Care for LBW and Preterm Babies by HDAs

Majority of HDAs recognized that their lack of training on LBW and preterm babies was a barrier to identifying and providing care. In Arsi Zone, although none of the HDAs interviewed had experience caring for LBW or preterm babies, they understood, theoretically, the care needed for LBW and preterm babies. Unlike HEWs, HDAs differentiated between the care needed for LBW babies and preterm babies. One HDA identified the need to keep the baby warm as the specific care needed for LBW babies. HDAs noted exposure to sunlight for warmth and heat as the care needed for preterm babies. Additionally, HDAs identified aspects of care needed for both LBW and preterm babies, including heat (four HDAs), breastfeeding (six HDAs), feeding the babies vegetables to make them bigger (one HDA), not exposing the baby to bad odors (one HDA), and giving the baby expressed breast milk with sugar (one HDA).

> *"Unless preterm babies are put in sun heat, they will have no full body or they will be disabled totally and death will follow."—HDA, Arsi Zone*

In North Wollo Zone, HDAs only noted distinct care practices needed for preterm babies: skin-to-skin contact (one HDA), breastfeeding (one HDA), and providing heat for the baby (one HDA). Care practices for both LBW and preterm babies were also noted, including warmth for the baby (five HDAs), exclusive breastfeeding (10HDAs), vaccinations (three HDAs), and minimal contact with others (one HDA).

3.2.3.3. Mothers' Care for LBW and Preterm Babies

IDIs conducted with the mothers revealed that there were barriers at the household level that affected the care provided to LBW babies. Thirteen mothers in North Wollo Zone reported not being told by health care providers that their babies were LBW following delivery, nor were they counseled on the extra care their LBW babies required. In Arsi Zone, five mothers reported not being told that their babies were LBW; however, of the 11 mothers who were told, four stated that they were not counseled or informed of the implications of having an LBW baby. The mothers not told that their babies were LBW, however, had understood that their babies are smaller than average and may have poor chance of surviving without extra care.

Additionally, mothers in both regions stated that they do not make preparations for giving birth to LBW or preterm babies; rather, they noted making preparations for foods the mothers themselves would eat during

[12] This HEW has not had an experience with LBW or preterm babies.

postpartum. Findings in North Wollo revealed that mothers were not even willing to receive counseling or advice from HEWs about the possibility of their babies being LBW or preterm and how to prepare. HEWs in North Wollo reported that talking about LBW babies or offering advice on the topic during pregnancy was considered a bad omen by the mothers, and, as such, HEWs were reluctant to mention the subject during ANC visits. This reluctance to receive advice or counseling leads to mothers' lacking the psychological preparation when having LBW babies. Upon seeing their baby's small size, seven mothers in both North Wollo and Arsi reported their shock. They reported losing hope and thinking that their babies would not survive.

> *"I never counsel them because they say if we say it out loud, it will happen to them."—HEW, North Wollo Zone*

> *"I lost hope. I couldn't believe my eyes; I never thought she would survive."—Mother, Arsi Zone*

In Arsi, three mothers with multiple births reported undertaking financial preparation during their pregnancy; however, the other mothers with single pregnancies reported not making any financial preparations, outside of foods to be eaten postpartum.

In both North Wollo and Arsi, mothers reported their reluctance in going to a hospital for future deliveries. Reasons included the financial cost, discrimination based on socioeconomic status, lack of equal treatment by hospital staff, and the neglect they faced while at the hospital. Although both Weldiya and Asella Hospitals are public hospitals and do not charge mothers for delivery, mothers in both regions reported having been asked to pay for NICU stays. A number of mothers reported that their hospital stay was a discouraging experience that led them to the decision of not returning to the hospital for their next delivery.

3.2.3.3. KMC Care Provided by Mothers for LBW Babies

During their hospital stay, mothers are typically counseled on the importance of keeping their babies warm, hygiene, and exclusive breastfeeding. Four of the 16 mothers in Arsi Zone reported that while they were counseled on KMC and practiced it at the hospital; they discontinued KMC once they got home.

> *"I carried them for 2 hours a day—one in the front, the other on my back. I have no support except God. My sister comes and helps me sometimes when I get too much stressed; otherwise, I have nobody to do the housework and taking care of the older boys. So I didn't continue doing skin-to-skin at home because of this; otherwise, it is simple. They told me that the skin-to-skin [contact] is good for such babies, and will make the baby grow faster and stronger."—Mother, Arsi Zone*

In North Wollo Zone, only one mother, the mother of the baby identified by the community, was found to have practiced KMC, and was found to still be practicing KMC at home. She mentioned having practiced KMC for 3 months until the baby started to steadily gain weight. She said the skin-to-skin contact and other components of KMC were recommended to her by the hospital staff during post delivery counseling. Main reasons cited in both regions for not practicing KMC were inconvenience and lack of support. Mothers from both regions reported that it was not feasible for them to hold their babies in the KMC position throughout the day as they had household responsibilities and other children to care for.

IDIs with mothers revealed that they had a very strong understanding of the importance of exclusive breastfeeding, keeping the baby warm, and hygiene in caring for low birth weight or premature babies. In North Wollo, all mothers gave birth at a health facility, so the babies were breastfed immediately after birth. Benefits of exclusive breastfeeding are understood and widely practiced across regions, except in a small number of cases where the mother could not produce enough milk and had to supplement with powdered milk. Mothers in both North Wollo and Arsi also discussed the importance of washing the baby's clothes, taking the livestock out of the room where the baby sleeps, keeping up with immunization sessions, and limiting the baby's exposure to people as being important steps in the care of LBW babies.

3.2.3.4. Traditional Care Practices of Mothers for LBW Babies

In addition to these forms of care, mothers also discussed traditional forms of care practiced by their communities. Interestingly, mothers from both regions reported the practice of boiling sugar and common rue or black cumin in water and giving it to the baby in the form of cup feeding when the baby refused breast milk, as well as to treat stomach cramps.

Mothers in North Wollo Zone reported that a traditional method for keeping the baby warm was to burn the casing of *ye teff geleba* (teff seeds) in the house. While burning the teff seed casing, all windows and doors are closed, and this is used as a way to keep the entire room warm as well as the baby. Mothers in this region also reported that when the baby is 3–5 months old, they start feeding them *ye gebs kita* (balls of barley dough) and, in addition to breast milk, powdered milk sent by family members from Saudi Arabia. This is perceived as helping the baby gain strength and weight faster. While breastfeeding is commonly practiced, perceptions on the first milk vary across mothers. Three mothers in North Wollo reported not giving their baby the first milk as they believed that it is thicker than normal breast milk and would give their baby stomach cramps.

In Arsi Zone, 13 out of the 16 mothers gave their first breast milk to their newborns. The remaining three mothers stated that they did not remember whether the first milk was given or not. The mothers in Arsi also reported a tradition of burning seeds—here, the casing of *ye gebs geleba* (barley seeds)—for warmth. In addition, mothers in this region also noted that they heated their babies' clothes in the smoke before dressing their babies, and they massaged their babies with butter to improve circulation.

3.2.3.5. Support Given by Health Care Providers to Mothers of LBW Babies

When asked what kind of support they received after delivery, mothers in both regions reported the widespread lack of PNC home visits from HEWs. Mothers in North Wollo Zone reported that they received no training or counseling on KMC from HEWs. They reported that HEWs only visited mothers who lived close to the HP. This placed mothers who lived in remote areas at a greater risk as they had not received any PNC visits. Most mothers also reported that HEWs were focused on vaccinations and immunizations and had not provided any specific counseling on their LBW babies.

> *"No home visit within 1 month of delivery, but I had to go the health post on day 45 for vaccines."—Mother, North Wollo Zone*

In Arsi Zone, according to data collected from the interview with mothers, PNC home visits were found to be even less common. Mothers reported that HEWs did not conduct home visits, and the only time their babies had been seen by HEWs was when they went to the HP for vaccinations. Additionally, one mother noted that she did not have any contact with the HEW or HDA in her *kebele* because she was not from that area; this mother came to Arsi to deliver her baby at her mother's house.

> *"Even yesterday, I went to the health post to check the weight gain of my baby, but the senior HEW was not around and the new one did not have a key to open the health post. She simply saw the baby and told me that she is ok and not to go there again."—Mother, Arsi Zone*

3.2.3.6. Role of Fathers in Caring for LBW or Preterm Babies

Fathers were asked about their role in the care of newborns. Fathers in North Wollo Zone noted that the role of a father was concentrated mostly on easing the burdens of the everyday chores and work of the mother, rather than directly caring for the newborn. Fathers mentioned that their role was mainly providing for and supporting the mother financially while she takes care of the baby. One father mentioned holding the baby while the mother undertakes household chores like cooking or cleaning. Another mentioned that the role of fathers should be to alleviate the household burdens of the mother, so she may devote all of her time and energy to caring for the baby. Additionally, taking the baby for vaccinations was mentioned by two out of eight of the fathers. When asked specifically about the role of fathers in caring for LBW or preterm babies,

fathers in North Wollo did not make a distinction between the care provided to a LBW or preterm baby. Rather, they mentioned washing the baby, holding the baby, and washing the clothes of the mother and the baby.

> *"I think as a father helping the mother to give her full-time in the care of neonate is indirectly helping the neonate, which means I will avail thick porridge (sometimes I may cook) and wash dirty clothes for the mother and newborn."—Father, North Wollo Zone*

Similarly, in Arsi Zone, fathers stated the role of a father was to provide the family what they need financially, giving warm clothes to the baby, massaging the baby with Vaseline, and rubbing butter on the baby's head to ward off harm. One father noted that he had limited contact with the babies because he works outside all day and believes that he is carrying germs; the father understood this to be a barrier to a hands-on approach to care. In regards to care for LBW and preterm babies, fathers in Arsi did not make a distinction between the type of care that ought to be given to LBW and preterm babies. They stated that the role of fathers was to take the baby to the hospital if it was ill, support the family financially, buy coal to keep the house warm, and carry an umbrella for the baby and mother to prevent sun exposure.

> *"Fathers are prevented from taking care of the baby, like hugging and touching him or her because it is believed that men work outside, so they might bring contamination and disease with them that might harm the babies."—Father, Arsi Zone*

In addition, fathers were asked about community rituals or actions that aid in the survival of LBW and pretermbabies. Only fathers from Arsi were able to identify specific rituals. One father mentioned that babies are rubbed with Vaseline to aid in circulation, and butter is put in the noses and mouths of babies to make them stronger.

3.2.3.7. Role of Community Members in Caring for LBW or Preterm Babies

Community members were asked about the care and treatment that ought to be provided to LBW and preterm babies in the community. In North Wollo Zone, community members reported that these babies needed to be kept warm and exclusively breastfed for the first 6months with a frequency of 10–12 times every24 hours. Other respondents reported the importance of maintaining the baby's hygiene by washing the baby twice a day, keeping her or his clothes clean, and exposing the newborn to the morning sun.
In Arsi Zone, community members reported similar methods of care. Respondents emphasized the importance of keeping the baby warm, exclusive breastfeeding for 6months, and hygiene. Respondents also emphasized the importance of the mother's hygiene, as well as anyone else who had access to the baby. Respondents discussed that the mother should wash her hands and her breasts with cold water before breastfeeding the baby. Additionally, they discussed limiting people's access to the baby as much as possible.

> *"The care given for such babies is similar to the care we give for our plants. We need to provide everything necessary starting from their birth, like heat and breastfeeding"—Community member, Arsi Zone*

Table 9 below summarizes these findings.

Table 9. Key findings on care practices for LBW and preterm babies

<table>
<tr><td rowspan="5">Care practices</td><td>Mothers</td><td colspan="3">LBW-specific care practices
• KMC
• Exclusive breastfeeding</td></tr>
<tr><td>Fathers</td><td colspan="3">General care practices
• Skin-to-skin care
• Exclusive breastfeeding
• Exposing the baby to sunlight
• Warmth
• Washing the baby</td></tr>
<tr><td>HEWs</td><td colspan="3">General care practices
• Breastfeeding
• Warmth
• KMC
• Cup feeding</td></tr>
<tr><td>HDAs</td><td>LBW-specific care practices:
• Warmth</td><td>Preterm specific care practices:
• Exposure to sunlight
• Warmth
• Skin-to-skin care
• Breastfeeding</td><td>General care practices:
• Warmth
• Breastfeeding
• Not exposing the baby to bad odors
• Expressed breast milk with sugar
• Vaccinations
• Minimal contact with others</td></tr>
<tr><td>Community members</td><td>LBW-specific care practices:
• Warmth
• Exclusive breastfeeding
• Maintaining hygiene
• Exposure to sun</td><td colspan="2">General care practices:
• Warmth
• Exclusive breastfeeding</td></tr>
<tr><td>Traditional LBW care practices</td><td colspan="2">North Wollo Zone:
• Sugar common rue mixture
• Black cumin sugar mixture
• Smoking gebs geleba(teff casings)
• Ye gebs kita (balls of barley dough)
• Powdered milk from Saudi Arabia</td><td colspan="2">Arsi Zone:
• Sugar with common rue mixture
• Black cumin sugar mixture
• Giving baby massages with butter
• Smoking gebs geleba(teff casings)
• Massaging the baby with butter
• Smoking the babies clothes</td></tr>
</table>

3.2.4. Attitudes, Beliefs, and Perceptions toward Low Birth weight (LBW) Babies Expressed by Community Members and Fathers

In order to gain insight into communities' perceptions of LBW and preterm babies, we explored the terms that are used to describe both preterm and LBW babies. In Arsi Zone, the most commonly reported terms for LBW babies are *yertuu* (small or stunted) and *hache* (skinny). The community also made a distinction between LBW and preterm babies. The following terms were reported as being used to describe preterm babies: *hanqu* (born before the due date), *ji'aofiimaleedhalatte* (a baby born before its time), *ji'ahanqise*(not completed), *xiqishuu* (small),*hanqatuu*(born before the due date),*hankudalate*(born incomplete), *saldhe* (incomplete), *hanqaatee* (a baby born 2 months early) and *saaldhessa or saaldhituu* (used to describe a deficiency of some sort).

In North Wollo Zone, terms such as *tenish leje* (small baby), *yalderese lij* (not ready), *kechacha* (skinny) and *menati* (troublemaker) are used to describe LBW babies. Preterm babies are oftentimes described by the gestational month in which they were born, with terms such as *yalekenu yetewelede lij* (a baby born before its time),*yesebat wer lij* (7-month-old baby), and *yesement wer lij* (8-month-old baby).

3.2.4.1. Perceived Causes of LBW and Preterm Babies

When asked about their knowledge of the causes of LBW babies, community FGD participants in North Wollo Zone stated that the main reasons were poor nutrition during pregnancy, missing key vaccinations, *miche* (a term commonly used to describe various types of infections), and a lack of ANC follow-up. In addition, fathers in North Wollo noted a high workload for the mother as a reason leading to LBW babies. When asked about the cause of preterm deliveries, community FGD participants stated the following: heavy work burden during the last 6months of the pregnancy, poor nutrition, and *shotelay* (being Rh negative) without proper treatment early in the pregnancy.

Similarly, community FGD participants in Arsi Zone reported that the main causes of LBW babies are a mother's unbalanced diet during her pregnancy, engagement in labor-intensive work during pregnancy, missing vaccinations, exposure to various diseases, and nonspacing of pregnancies. Fathers in Arsi reported the same causes of LBW as those listed by the community FGD participants and added another cause: mothers who had multiple births. Participants reported the following causes for preterm births: the mother engaging in challenging work during her pregnancy, being exposed to infections and diseases, having cancer or gastritis, and not eating what she is craving during pregnancy.

> *"The reason for preterm or delivering before reaching to term is if the woman engages in heavy work or duty, which pulls the baby down before its due date."—community member, Arsi Zone*

3.2.4.2. Prevention of LBW or Preterm Babies

Fathers from both regions stated that in order to prevent LBW and preterm births, they encouraged mothers to diversify and increase their food intake during pregnancy. One father in Arsi Zone stated that the *kebele* had educated the community that during pregnancy, mothers should be given vegetables and fruits in their diet in order to make both the mother and baby healthy. In North Wollo Zone, one father stated that mothers needed sufficient rest in order to prevent giving birth to an LBW or preterm baby. Additionally, respondents unanimously agreed that ANC follow-up and vaccinations are vital for keeping both the mother and baby healthy.

> *"During pregnancy, giving the mother foods composed of vegetables, wheat, barley, juice, and milk makes both the mother and baby…[be]…healthy and normal."—Father, Arsi Zone*

3.2.4.3. Perceptions of the Survival of LBW and Preterm Babies into Adulthood

When asked about the community's beliefs regarding the survival of LBW and preterm babies into adulthood, community FGD participants in Arsi Zone stated that survival was contingent on the month the baby was born. There is a belief that if the baby is born on the 7thor 9thmonth, it will survive but that if the baby is born on the 8thmonth, it will not live. When probed, the community members explained that if the baby is born on the 7thor 9thmonth, it has completed a milestone in pregnancy; however, if the baby is born on the 8thmonth, it is incomplete—and survival is not likely. A baby born at 7months is particularly favored; community members cited that these babies are thought to be geniuses and future leaders.

Additionally, one community member stated that if given proper care and attention, preterm and LBW babies would have a fair chance at surviving, whereas only one community FGD participant stated that preterm and LBW babies did not have a fair chance at survival, noting that only babies with normal weights would survive into adulthood. A male participant in the community FGD had noted his personal experience, his son was born of low birth weight, and he stated his son is now in the fourth grade and that it was his mother who had ensured the survival of his son. Similarly, fathers in Arsi had the same belief that term babies and babies born at 7 months had a chance of survival, whereas babies born at 8 months had a less likely chance of survival. Four out of eight fathers in the FGD stated that if given proper care, LBW and preterm babies had a high chance of survival into adulthood.

"The seventh month [of] pregnancy, [the baby] will grow, but not the eighth month, as it is said from our forefathers. The seventh month becomes different because the family and people around him/her give love for such babies and in return, they become different; their love and thinking is far beyond the term babies."—Community member, Arsi Zone

In North Wollo Zone, community FGD participants unanimously stated that both preterm and LBW babies have great chances of survival if appropriate care is given. One community member shared a personal experience: a neighbor had a preterm baby; the mother had provided adequate support, and now, the child was healthy. Community FGD participants noted exclusive breastfeeding and keeping the baby warm as appropriate care practices to ensure the survival of these babies.

"Based on my experience, such babies can grow and do anything like others—for example, one of my neighbors delivered a preterm baby at the hospital and based on the counseling she got from the…[health care workers]…she keeps the baby warm using kangaroo mother care and now he is big and normal."—Community member, North Wollo Zone

Fathers in North Wollo stated that LBW and preterm babies have a 50% chance of survival; if appropriate care is given, then the baby will survive. One father stated that if a mother dies during labor, then the baby would likely die as well. Additionally, one father mentioned the distinction between babies born at 8months versus babies born at 7months; his belief was similar to community members in Arsi Zone who thought that babies born at 7months will most likely survive, and those born at 8months will likely not survive.

"Mostly, the community believes that the newborn delivered at the seventh month might survive, but those who delivered at eighth month may not survive."—Father, North Wollo Zone

3.2.4.4. Stigma toward mothers and couples with LBW or preterm babies

When asked about the community's attitudes toward women or couples who have LBW or preterm babies, community respondents in Arsi Zone stated that they did not stigmatize these women or couples because they understood the LBW or preterm status to be an act of God. Despite mentioning poor maternal nutrition, lack of adequate rest and/or excessive workload during pregnancy as causes for LBW babies or premature delivery (as in blaming the woman), there appears to be a general tendency to consider it as an act the supernatural power. While this appears to be conflicting, it is common for God /the supernatural to be given the ultimate responsibility for what happens in their wellbeing and life.

One community member stated that previously, there was a perception that if a family had a preterm or LBW baby, it would not survive; now, due to increased awareness in the community on proper care, these babies can grow and survive. Additionally, one community member noted that previously, everyone in the community knew what type of baby a couple had, but that now, no one was interested in those details, only the fact that they had a baby. Fathers in Arsi similarly stated that there was no stigma in their community. One father noted that in his community, 2–3 children were born small and had to stay in the hospital and that while the families stayed in the hospital, the community aided in taking care of the older children. Additionally one male participant of the community FGD came forward and stated that his son was of LBW when he was born, he stated that it was the first time he had told anyone in the community, because he did not want anyone to see his family differently.

"There may be two types of attitudes about these things. The previous perception was that the baby may not grow or survive. Nowadays, due to advancements in education, the community thinks every child will grow if they are well cared for and seek help from health institutions."—Community member, Arsi Zone

In North Wollo Zone, community FGD participants stated that no one in the community stigmatized mothers or couples with LBW or preterm babies. One community member cited the reason being that religious leaders in the community preached about supporting others, especially those in need. However, one community member stated that although the community did not stigmatize the mothers or parents of LBW or preterm babies, the mothers or parents still feel ashamed to have people see their small baby.

"No negative attitudes are practiced against the family or parents who have LBW or preterm babies. But some families themselves may not even bring the baby to the vaccination site for fear of cold, and few of them feel shame to expose the baby in front of many mothers because of… [its]…small size."—Community FGD participant, North Wollo Zone

Similar to the community FGDs, fathers in North Wollo stated that the mothers or couples who have LBW or preterm babies were once stigmatized, but that stigma did not exist anymore. One father in particular stated that the community did not stigmatize these women or couples because people are now aware of the causes of delivering preterm and LBW babies.

Table 10 summarizes these findings.

Table 10.Key findings on perceptions and beliefs about LBW and preterm babies among community members and fathers

Causes	LBW baby: • Poor nutrition during pregnancy • Missing key vaccinations • *Miche* (infection) • Lack of ANC • High work load • Not spacing out pregnancies • Multiple births	Preterm baby: • Heavy work burden • Poor nutrition • *Shotelay* (being Rh negative) • Infections • Cancer • Gastritis • Mother not eating what she craves during pregnancy
Prevention	• Diversify food intake • Eat vegetables, fruits, wheat, barley, juice, and milk • Rest • Get vaccinations during pregnancy	
Survival	• If proper care is given, babies will survive • Babies born at 7 months and at term will survive • Babies born at 8 months have low chances of survival • Preterm and LBW babies will not survive • 50% chance of survival	
Stigma	• Seen as an act of God • Previously stigmatized, but community awareness has increased • Lack of interest in knowing what type of baby is born • Religious leaders preach about supporting the community	

Notes: antenatal care (ANC), low birth weight (LBW)

3.3. Quantitative Results

The skill-observation method aimed to determine the quality and appropriateness of HEWs' service provision and counseling to mothers of LBW babies, measured against the established protocols and chart booklets. Additionally, the observations aid in distinguishing variation in skill levels of more experienced and less experienced HEWs.

3.3.1. Assessment of Health Posts (HPs)

During skills observation, the field research team also assessed the availability and functionality of equipment and recordkeeping materials in HPs. In Arsi Zone, 12 HPs were visited and in North Wollo Zone, 10 HPs were visited. These are all HPs found in the kebeles the LBW babies are traced back in.

As shown in **Table 11**, in Arsi, all assessed HPs had a functioning thermometer, and 91.7% had a functioning baby weigh scale and respiratory counter or watch. Similarly, all assessed HPs in North Wollo Zone had a working thermometer and respiratory counter or watch, and 90% of the HPs had a functioning baby weigh

scale. However, the number of HPs with behavior change communication materials pertaining to KMC was very low in both Arsi and North Wollo—16.7% and 10%, respectively.

All assessed HPs in Arsi and North Wollo had a CBNC chart booklet (integrated community case management [iCCM] chart booklet) and CBNC (iCCM) register (for children aged 0–2 months), as shown in **Table 12**. This was also the case for the Family Health Guide in Arsi. However, the number of HPs with the Family Health Guide was slightly lower in North Wollo, at 90%.

Table 11. Availability of functional equipment for service provision to LBW babies in health posts (N = 22) in Amhara and Oromia Regions, Ethiopia

Percent of HPs with available and functional selected equipment				
Item	Arsi Zone (n = 12)		North Wollo Zone (n = 10)	
	Available and functional		Available and functional	
	n	%	n	%
Baby weigh scale	11	91.7	9	90.0
Respiratory counter or watch	11	91.7	10	100.0
Thermometer	12	100.0	10	100.0
KMC behavior change communication materials	2	16.7	1	10.0

Note: kangaroo mother care (KMC)

Table12. Availability of key job aids and registers for assessing and managing LBW babies in health posts (N = 22) of Amhara and Oromia Regions, Ethiopia

Percent of health posts with availability of selected record keeping materials				
Record	Arsi Zone (n = 12)		North Wollo Zone (n = 10)	
	Available		Available	
	n	%	n	%
CBNC chart booklet (integrated community case management [iCCM] chart booklet)	12	100.0	10	100.0
Family Health Guide	12	100.0	9	90.0
CBNC (iCCM) register, 0–2 months	12	100.0	10	100.0

Note: Community-Based Newborn Care (CBNC)

The Family Health Guide contains very minimal information on the care and management specific to LBW and preterm babies. However, the iCCM chart booklet contains information on weight classification and care and treatment for each weight category, as well as special forms of care for these babies, including detailed instructions on breast milk expression, cup feeding, and the importance of keeping LBW babies warm.

Therefore, the presence and proper utilization of these job aids and materials in all HPs is imperative for the provision of proper care to LBW babies, as well as to all mothers and newborns. However, the disconnect between the availability of these job aids and counseling materials and the HEWs' practical application of them became apparent in the fact that the majority of HEWs interviewed stated they had never encountered LBW babies in their community.

3.3.2. Skills Observation

Thirty HEWs from Arsi and North Wollo Zones were observed providing simulated care for a mannequin of an LBW baby. Case scenarios were used where one of the data collectors played the role of a mother of an LBW baby, and another observer assessed the HEWs' counseling skills using a checklist. HEWs were also provided with equipment such as Preemie Natalies of varying weights, a cup for feeding, a cloth or scarf, caps, and a breast model (Mama Breast).

HEWs' counseling skills were assessed using these three case scenarios:

- **Case Scenario 1:** Using 1.3kg Preemie Natalie, HEWs were assessed on weight measurement and classification, breastfeeding, and exclusive breastfeeding counseling skills.
- **Case Scenario 2:** Using a 1.8kg Preemie Natalie, HEWs were assessed on weight measurement and classification, breastfeeding, and exclusive breastfeeding counseling skills, as well as breast milk expression, cup feeding, and KMC skills.
- **Case Scenario 3:** Using a 1.6kgPreemieNatalie, HEWs were assessed on KMC skills.

The three scenarios were selected as they represented different sets of management skills and thinking process: very low birth weight (<1.5 kg model), low birth weight (1.5kg-2.5kg) and a low birth weight baby discharged from a hospital. Moreover, having HEWs work on the different case scenarios helped assess their consistency in applying the knowledge and skills (adherence to the management protocol). Findings from the skills observations are described below and presented in **Table 13**.For case scenario one, all HEWs in Arsi Zone greeted the mother and made her comfortable before weighing the baby. However, only one-third of the HEWs explained to the mother what they were going to do and encouraged her to ask questions. All HEWs correctly weighed the baby, and the majority (93.3%) provided counseling to the mother. Despite correctly weighing the baby, only 26.7% of HEWs appropriately categorized the baby as very LBW or LBW. The number of HEWs who identified the proper management for the classification of the baby was also low at 13.3%. Only one-quarter of the HEWs referred to the chart booklet or other job aid. Nearly half of the HEWs recorded the findings in the registration book, and one-fifth scheduled a follow-up appointment for the mother/baby.

Findings from case scenario two show that all HEWs in Arsi again greeted the mother and made her feel comfortable and proceeded to correctly weigh the baby. Despite correctly weighing the baby, only 26.7% were able to appropriately categorize the baby as very LBW, LBW, or normal and to identify the proper management for the classification using the chart booklet. The number of HEWs who referred to the chart booklet is particularly low at 13.3%. All HEWs provided counseling to the mother, and nearly half of the HEWs recorded the findings in the registration book.

In North Wollo, for case scenario one, all HEWs greeted the mother and made her comfortable during the role-play. More HEWs in North Wollo (86.7% versus 33.3% in Arsi) explained what they were doing to the mother and encouraged her to ask questions. Nearly one-half of the HEWs weighed the baby correctly and appropriately categorized the baby as very LBW, LBW, or normal. The use of a chart booklet or job aid is again particularly low, with only 26.7% of HEWs referring to it. Similarly, only 26.7% identified the proper management for the classification of the baby. Despite this, 80% of the HEWs provided counseling to mothers. Nearly half of the HEWs recorded the findings in the registration book, but only 6.7% of the HEWs scheduled a follow-up appointment for the mother and baby.

During case scenario two, nearly all HEWs in North Wollo greeted the mother and made her feel comfortable. Approximately 70% of HEWs explained what they were going to do and encouraged the mother to ask questions. Nearly two-thirds correctly weighed and appropriately categorized the baby, but only a third referred to the chart booklet and identified the proper management for the classification. A large proportion of the HEWs (86.7%) provided counseling to the mothers, and 46.7% of the HEWs recorded

findings in the registration book. However, the number of HEWs who scheduled a follow-up appointment for mother and baby was low at 20%.

Table 13.HEWs' (N = 30) skills in weighing and classifying LBW baby mannequins (Preemie Natalies) in Oromia and Amhara Regions, Ethiopia

Weighing and classifying the baby	Case scenario 1			Case scenario 2		
	Completely performed			Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (N = 30)	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (N = 30)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Greets the mother and makes her comfortable	15 (100.0)	15 (100.0)	30(100.0)	15(100.0)	14 (93.3)	29 (96.7)
Explains what she or he is going to do and encourages mother to ask questions	5 (33.3)	13 (86.7)	18 (60)	4 (26.7)	11 (73.3)	15 (50.0)
Correctly weighs the baby	15 (100.0)	7 (46.7)	22(73.3)	15(100.0)	10 (66.7)	25 (83.3)
Refers to the chart booklet or other job aid	4 (26.7)	4 (26.7)	8 (26.7)	2 (13.3)	5 (33.3)	7 (23.3)
Appropriately categorizes the baby as very LBW, LBW, or normal	4 (26.7)	7 (46.7)	11 (36.7)	4 (26.7)	10 (66.7)	14 (46.7)
Identifies the proper management for the classification, step by step, per the chart booklet	2 (13.3)	4 (26.7)	6 (20)	2 (13.3)	5 (33.3)	7 (23.3)
Provides the counseling to the mother	14 (93.3)	12 (80.0)	26 (86.7)	15 (100.0)	13 (86.7)	28 (93.3)
Records findings in the registration book	7 (46.7)	7 (46.7)	14 (46.7)	8 (53.3)	7 (46.7)	15 (50.0)
Schedules a follow-up appointment for mother and baby	3 (20.0)	1 (6.7)	4 (13.3)	4 (26.7)	3 (20.0)	7 (23.3)

Note: low birth weight (LBW)

Based on these results, the overall impressions of HEWs' weighing and classification skills can be summarized as the following:

- Nearly all HEWs were good and consistent at greeting and making the mother feel comfortable.
- HEWs in North Wollo Zone were found to be much better at explaining procedures.

- HEWs in Arsi Zone performed better on weighing the baby.
- Use of and referral to the chart booklet was uniformly and consistently low across the different case scenarios among HEWs across both regions.
- Those who referred to the chart booklet or other job aids were better at categorizing the baby and identifying the proper management for the classification.
- Overall, HEWs were proactive in providing counseling across the different case scenarios.
- Only about a half of the HEWs were recording results in the registration booklet.
- HEWs performed poorly across the different case scenarios in setting follow-up appointments.

A breastfeeding assessment looked at whether the HEWs checked if the mother had positioned the baby well and also whether attachment at the breast was good. This was observed using an LBW baby mannequin and a breast model. Results are presented below and in **Table 14**.

During case scenario one, all HEWs in Arsi checked to see whether the baby's ear, shoulder, and hip were aligned; whether the baby faced the breast with nose opposite the nipple; and whether the mother was holding the baby close. The majority (93.3%) of the HEWs also checked to see whether the baby's whole body was supported. Regarding the baby's attachment at the breast, HEWs were asked to narrate each step. Eighty percent of the HEWs recorded as they narrated while checking if the baby's chin touched the breast, 86.7% narrated that they would check if the baby's mouth was wide open, and 66.7% reported that they would check if the lower lip was turned outward. Nearly three-quarters of the HEWs checked whether the breast model's areola was more visible above than below the mouth, and 60.0% narrated that they would check for effective suckling.

During case scenario 2, all HEWs in Arsi checked whether the baby had been well positioned at the breast. Checks observed include whether baby's ear, shoulder, and hip were aligned; the baby was facing the breast with nose opposite the nipple; and the baby's body was held close to the mother. Similarly, the majority (93.3%) also checked whether the baby's whole body was supported. With regard to the attachment at the breast, 86.7% of the HEWs checked whether the baby's mouth was wide open, and nearly two-thirds narrated that they would check for effective suckling.

All HEWs in North Wollo who were observed performing case scenario one checked to see whether the baby's whole, body was supported and held close to the mother and whether the baby was facing the breast with the nose opposite the nipple. Eighty percent of the HEWs also checked whether the baby's ear, shoulder, and hip were aligned. All HEWs checked whether the baby's mouth was wide open, 93.3% checked whether the baby's chin was touching the breast, and 80.0% checked whether the baby's lower lip was turned outward. The majority of HEWs (93.3%) also reported that they would check whether more areola was visible above than below the baby's mouth and check whether there was effective suckling.

During case scenario two, all HEWs in North Wollo checked to see whether the baby was facing the breast with nose opposite the nipple and whether the baby's whole body was supported and held close to the mother. The majority (93.3%) of HEWs also checked whether the baby's ear, shoulder, and hip were aligned. Similarly, the majority of HEWs also checked whether there was a good attachment at the breast. All HEWs checked whether the baby's mouth was wide open and if there was effective suckling.

Table 14. HEWs' (N = 30) skills in providing breastfeeding assessment for LBW baby mannequins (Preemie Natalies) in Oromia and Amhara Regions, Ethiopia

Observing breastfeeding	Case scenario 1			Case scenario 2		
	Completely performed			Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (N = 30)	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (N = 30)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Checks for good positioning at breast:						
1. Baby's ear, shoulders, and hips are in straight line	15 (100.0)	12 (80.0)	27 (90.0)	15 (100.0)	14 (93.3)	29 (96.7)
2. Baby's face faces the breast with nose opposite the nipple	15 (100.0)	15 (100.0)	30 (100.0)	15 (100.0)	15 (100.0)	30 (100)
3. Baby's body held close to mother	15 (100.0)	15 (100.0)	30 (100.0)	15 (100.0)	15 (100.0)	30 (100)
4. Baby's whole body supported	14 (93.3)	15 (100.0)	29 (96.7)	14 (93.3)	15 (100.0)	29 (96.7)
5. Baby's chin touching breast	12 (80.0)	14 (93.3)	26 (86.7)	12 (80.0)	14 (93.3)	26 (86.7)
6. Baby's mouth wide open	13 (86.7)	15 (100.0)	28 (93.3)	13 (86.7)	15 (100.0)	28 (93.3)
7. Baby's lower lip turned outward	10 (66.7)	12 (80.0)	22 (73.3)	8 (53.3)	13 (86.7)	21 (70.0)
8. More areola visible above than below the baby's mouth	11 (73.3)	14 (93.3)	25 (83.3)	10 (66.7)	14 (93.3)	24 (80.0)
9. Checks for effective suckling (slow, deep sucks)	9 (60.0)	14 (93.3)	23 (76.7)	10 (66.7)	15 (100.0)	25 (83.3)

Overall impressions of HEWs' skills in assisting the mother with proper breastfeeding can be summarized as the following:

- Overall, all HEWs were very good and consistent at checking how the baby is positioned to the breast and making sure the baby's body was positioned and supported correctly.
- HEWs in Arsi performed slightly better than HEWs in North Wollo at checking for attachment.

HEWs' skills in counseling mothers on exclusively breastfeeding for 6months were also assessed. This assessment used the following method, on which HEWs have been trained: Greet, Ask, Listen, Identify, Discuss, Recommend, Agree, and Set Follow-Up Appointment (GALIDRAA). Results are presented below and in **Table 15**.

During the observation of case scenario one, all HEWs in Arsi greeted the mother before beginning counseling. Sixty percent asked the mother what her problems with breastfeeding were and how she planned to feed the baby. Nearly one-half of HEWs listened to the mother's reaction. Sixty percent of the HEWs were able to identify the mother's difficulties. Only 6.7% discussed the available options with the mother. Nearly all (93.3%) HEWs counseled the mother to exclusively breastfeed for the first 6months. One-third of the HEWs shared and explained the recommended actions for the mothers, and approximately three-quarter agreed on the actions for the mother to take. However, only 13.3% of HEWs provided an appointment or a follow-up for the mothers.

The tools HEWs use to provide exclusive breastfeeding counseling were also assessed. In Arsi, approximately one-half of the HEWs brought or collected all required counseling job aids. A picture of a mother breastfeeding a baby is one of the key counseling aids HEWs are given. None of the HEWs in Arsi showed this picture to the mother during either case scenario.

In North Wollo, during case scenario one, nearly all HEWs (93.3%) greeted the mother before beginning counseling. In contrast to the HEWs in Arsi, fewer HEWs in North Wollo asked the mother about her problems with breastfeeding (33.3% in North Wollo versus 60.0% in Arsi) and listened to her reaction (20.0% in North Wollo versus 46.7% in Arsi). Subsequently, only 6.7% of the HEWs in North Wollo were able to identify the mother's difficulties. Despite this, 93.3% counseled the mother to exclusively breastfeed for the first 6months, explained the recommended actions, and agreed on the actions to take. Sixty percent were able to identify a doable action for the mother. However, only 20% of the HEWs set an appointment or follow-up for the mothers. With regard to the use of counseling aids, only one-third of the HEWs in North Wollo brought or collected all required counseling job aids. Similarly, only one-third asked the mother to observe the picture of a mother breastfeeding a baby, and one-quarter asked her to reflect on what she saw.

Table 15. HEWs' (N = 30) skills in providing exclusive breastfeeding counseling for LBW baby mannequins in Oromia and Amhara Regions, Ethiopia

Counseling mothers on exclusive breastfeeding (GALIDRAA)	Case scenario 1			Case scenario 2		
	Completely performed			Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
1. Greets mother	15 (100.0)	14 (93.3)	29 (96.7)	15 (100.0)	11 (73.3)	26 (86.7)
2. Asks what her problem is and how she plans to feed the baby	9 (60.0)	5 (33.3)	14 (46.7)	3 (20.0)	9 (60.0)	12 (40.0)
3. Listens to her reaction	7 (46.7)	3 (20.0)	10 (33.3)	6 (40.0)	3 (20.0)	9 (30.0)
4. Identifies her difficulties	9 (60.0)	1 (6.7)	10 (33.3)	12 (80.0)	4 (26.7)	16 (53.3)
5. Discusses options	1 (6.7)	12 (80.0)	13 (43.3)	2 (13.3)	12 (80.0)	14 (46.7)
6. Counsels the mother to exclusively breastfeed for the first 6 months	14 (93.3)	14 (93.3)	28 (93.3)	15 (100.0)	15 (100.0)	30 (100)
7. Shares and explains recommended actions	5 (33.3)	14 (93.3)	17 (56.7)	7 (46.7)	13 (86.7)	20 (66.7)
8. Agrees on the actions for the mother	11 (73.3)	14 (93.3)	25 (83.3)	13 (86.7)	11 (73.3)	24 (80.0)
9. Gives appointment or follow-up	2 (13.3)	3 (20.0)	5 (16.7)	4 (26.7)	1 (6.7)	5 (16.7)
10. Brings or collects all required job aids for counseling	8 (53.3)	5 (33.3)	13 (43.3)	9 (60.0)	4 (26.7)	13 (43.3)
11. Lets the mother observe the picture	0 (0.0)	5 (33.3)	5 (16.7)	0 (0.0)	4 (26.7)	4 (13.3)

Counseling mothers on exclusive breastfeeding (GALIDRAA)	Case scenario 1			Case scenario 2		
	Completely performed			Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
12. Asks her to reflect what she saw	0 (0.0)	4 (26.7)	4 (13.3)	0 (0.0)	4 (26.7)	4 (13.3)
13. Helps her personalize	2 (13.3)	3 (20.0)	5 (16.7)	1 (6.7)	2 (13.3)	3 (10.0)
14. Identifies a doable action for the mother	11 (73.3)	9 (60.0)	20 (66.7)	12 (80.0)	12 (80.0)	24 (80.0)

Notes: Greet, Ask, Listen, Identify, Discuss, Recommend, Agree, and Set Follow-Up Appointment (GALIDRAA); health extension worker (HEW)

Overall impressions of HEWs' skills in counseling on exclusive breastfeeding are summarized below:

- Overall, all HEWs performed well consistently across the case scenarios at greeting and communicating with the mother.
- Majority of HEWs also performed well at recommending exclusive breastfeeding.
- Overall, the HEWs did not perform well at asking questions and listening, which means they will be unable to identify difficulties the mother might be facing. This was consistently poor across the case scenarios.
- Some HEWs (from North Wollo Zone) performed well at explaining options, offering recommendations and agreeing on actions.
- Not all HEWs were proficient at using the necessary job aids and setting up follow-up appointments.

HEW skills in breast milk expression were observed using a breast model worn by the researcher that was playing the role of the mother. Results are presented below and in **Table 16**.

In Arsi, approximately two-thirds of HEWs washed their hands and let the mother wash her hands before expressing breast milk. Eighty percent obtained a clean cup or bowl. The proportion of HEWs who moved their hands around the breast so that milk could be expressed from all areas of the breast was low (6.7%). HEWs in Arsi performed well in some aspects of demonstrating how breast milk was expressed, such as appropriate massaging of the breast (93.3%), appropriate holding of the breast (80.0%), expressing one breast (86.7%), expressing the second breast (86.7%), and repeating expression for both breasts (80%). However, they did not perform well on the following aspects: correct positioning of the mother (20%) and asking the mother to redemonstrate expressing breast milk (6.7%).

HEWs in North Wollo performed relatively poorly (20%) in comparison to HEWs in Arsi at washing their hands and letting the mother wash her hands before expressing the breast milk. Despite this, the majority of HEWs in North Wollo obtained a clean cup or bowl for the milk. Concerning skills in expressing breast milk, the majority were able to perform following the recommended steps. All HEWs massaged the breast from the outside toward the nipple to help the milk come down, and squeezed the thumb and other fingers together to help express the milk; 86.7% also pressed, released, and tried to use the same rhythm as a baby's suckling. Although they expressed the milk according to the recommended steps, only 20% of HEWs

expressed the second breast and repeated the expression for both breasts. Furthermore, only 20% asked the mother to redemonstrate expressing breast milk.

Table16. HEWs' (N = 30) skills in breast milk expression in Oromia and Amhara Regions, Ethiopia

Observation for expressing breast milk	Case scenario 2		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (N = 30)
	n (%)	n (%)	n (%)
1. Greets the mother and makes her comfortable	14 (93.3)	14 (93.3)	28 (93.3)
2. Explains what he or she is going to do and encourages mother to ask questions	3 (20.0)	13 (86.7)	16 (53.3)
3. Washes hands	10 (66.7)	3 (20.0)	13 (43.3)
4. Lets the mother wash hands	10 (66.7)	3 (20.0)	13 (43.3)
5. Obtains a clean cup or bowl	12 (80.0)	14 (93.3)	26 (86.7)
Demonstrates the following:			
6. Massages the breast from the outside toward the nipple to help the milk come down	14 (93.3%)	15 (100.0%)	29 (96.7%)
7. Holds the breast with thumb on top and other fingers below, pointing away from the areola	12 (80.0%)	13 (86.7%)	25 (83.3%)
8. Asks the mother to lean slightly forward, so the milk will go into the container	3 (20.0%)	9 (60.0%)	12 (40.0%)
9. Squeezes thumb and other fingers together, and moves them toward the areola so the milk comes out	10 (66.7%)	15 (100.0%)	25 (83.3%)
10. Presses and releases and tries using the same rhythm as the baby suckling	8 (53.3%)	13 (86.7%)	21 (70.0%)
11. Moves hands around the breast, so milk is expressed from all areas of the breast	1 (6.7%)	11 (73.3%)	12 (40.0%)
12. Expresses one breast until breast softens	13 (86.7%)	10 (66.7%)	23 (76.7%)
13. Expresses the second breast	13 (86.7%)	3 (20.0%)	16 (53.3%)
14. Repeats expression for both breasts	12 (80.0%)	3 (20.0%)	15 (50.0%)
15. Asks mother to re-demonstrate expressing breast milk	1 (6.7%)	3 (20.0%)	4 (13.3%)

Overall impressions of HEWs' skills in expressing breast milk are summarized below:

- On average, HEWs performed well on demonstrating how breast milk is expressed, but there are areas where they are lacking.
- Attention to hand hygiene was low among all HEWs, especially for those in North Wollo Zone.
- Most HEWs from Arsi Zone did not explain to the mother what they were about to do.
- Most HEWs from both zones did not ask mother to redemonstrate the expression of breast milk, thus missing the opportunity to support the mothers to refine their breast milk expression skills.

HEWs' skills in cup feeding were also assessed using a small cup and the breast model worn by one of the researchers playing the role of the mother. Results are presented below and in **Table 17**.

In Arsi, 80% of HEWs observed washed their hands before beginning to demonstrate cup feeding, and obtained a clean small cup or bowl for the milk. Approximately two-thirds of the HEWs let the mother wash her hands, and almost three-quarters of HEWs held the baby, who was supported in the correct position, and tipped the cup so that milk just touched the baby's lips. Although some HEWs were able to demonstrate cup feeding to the mother, only one HEW (6.7%) asked the mother to redemonstrate how to cup feed.

In contrast, HEWs performed poor hand washing in North Wollo Zone (20% in North Wollo versus 66.7 % in Arsi). Furthermore, none of the HEWs let the mother wash her hands before cup feeding. Although they themselves demonstrated skills in cup feeding, only 26.7% of HEWs in North Wollo asked the mother to re-demonstrate how to cup feed.

Table 17. HEWs' (N = 30) skills in cup feeding for LBW baby mannequins in Oromia and Amhara Regions, Ethiopia

Observation for cup feeding	Case scenario 2		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	n (%)	n (%)	n (%)
Greets the mother and makes her comfortable	15 (100.0)	13 (86.7)	28 (93.3)
Explains what she is going to do and encourages mother to ask questions	4 (26.7)	9 (60.0)	13 (43.3)
Washes hands	12 (80.0)	1 (6.7)	13 (43.3)
Lets the mother wash hands	10 (66.7)	0 (0.0)	10 (33.3)
Obtains a clean cup or bowl with expressed breast milk	12 (80.0)	15 (100.0)	27 (90.0)
Demonstrates the following:			
Holds baby in upright or semi-upright position with head, neck, and shoulders supported	11 (73.3)	14 (93.3)	25 (83.3)
Uses a small size cup (such as an Ethiopian coffee cup)	12 (80.0)	15 (100.0)	27 (90.0)
Tips cup so that milk just touches the lips	9 (60.0)	15 (100.0)	24 (80.0)

Observation for cup feeding	Case scenario 2		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	n (%)	n (%)	n (%)
Asks mother to redemonstrate how to cup feed	1 (6.7)	4 (26.7)	5(16.7)

Overall impressions of HEWs' skills in cup feeding are summarized below:

- Overall, all HEWs observed performed well at greeting the mother.
- Overall, the findings show that HEWs did not perform well at communicating, encouraging questions, and ensuring that the mother understood what was being demonstrated.
- HEWs in Arsi performed relatively better in hand hygiene, but overall, hand hygiene was found to be suboptimal.
- Overall, HEWs performed well at demonstrating cup feeding but performed poorly in checking whether mothers could perform the skill by asking them to re-demonstrate.

All HEWs observed in Arsi Zone greeted the mother and made her feel comfortable before demonstrating KMC, as shown in **Table 18**. The number of HEWs who explained the process and encouraged the mother to ask questions was low (26.7%). Ninety-three percent covered the baby with a cloth, and 60% positioned the baby upright and skin-to-skin between the mothers' breasts, as recommended. Approximately three-quarters of HEWs ensured that the baby's abdomen was not constricted. There were also aspects in which the HEWs did not perform well. Only 26.7% dressed the baby in a nappy and cap before KMC. Very few HEWs (6.7%) showed the mother how to wrap the baby to her body and ensured that the mother was able to perform the same process to position and secure the baby.

In North Wollo Zone, nearly all HEWs observed greeted and made the mother feel comfortable before demonstrating KMC. Over 70% of the HEWs explained the process and encouraged the mother to ask questions. Overall, majority of HEWs demonstrated some understanding and skill in KMC care. Nearly one-half of the HEWs dressed the baby in a nappy and cap only. The majority (93.3%) covered the baby with a cloth. Two-thirds of HEWs positioned the baby upright and skin-to-skin between the mother's breasts. Eighty percent maintained support of the baby with the mother's hand. Despite this, very few HEWs ensured that the baby's abdomen was not constricted. In contrast to Arsi, a greater percentage of HEWs in North Wollo showed the mother how to wrap the baby to her body and ensured that the mother was able to perform KMC independently.

Table 18. HEWs' (N = 30) skills in KMC positioning for LBW baby mannequins in Oromia and Amhara Regions, Ethiopia

Observation for kangaroo mother care and skin-to-skin positioning steps	Case scenario 2		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	n (%)	n (%)	n (%)
1. Greets the mother and makes her comfortable	15 (100.0)	14 (93.3)	29 (96.7)
2. Explains what he or she is going to do and encourages mother to ask questions	4 (26.7)	11 (73.3)	15 (50.0)
3. Dresses the baby in only a nappy and a cap	4 (26.7)	7 (46.7)	11 (36.7)
4. Puts the baby upright; skin-to-skin placement between the mother's breasts	9 (60.0)	10 (66.7)	19 (63.3)
5. Secures the baby to the mother's chest (separately performs each step below):			
a. Maintains support of the baby with the mother's hand	12 (80.0)	12 (80.0)	24 (80.0)
b. Covers the baby with a cloth	14 (93.3)	14 (93.3)	28 (93.3)
c. Ensures that the top of the cloth is just under the baby's ear	1 (6.7)	5 (33.3)	6 (20.0)
d. Ensures that the bottom of the cloth is tucked under baby's buttocks	12 (80.0)	10 (66.7)	22 (73.3)
6. Makes sure the tight part of the cloth is over the baby's back (chest)	2 (13.3)	5 (33.3)	7 (23.3)
7. Baby's abdomen is not constricted	11 (73.3)	2 (13.3)	13 (43.3)
8. Shows the mother how to wrap the baby to her body: put the *Netela* (handmade cotton scarf) securely over the back of the baby on the mother's chest, and cross the ends of the cloth behind the mother's back; bring the ends back around, and tie them in the front or at the sides underneath the baby	1 (6.7)	9 (60.0)	10 (33.3)
9. Covers the baby with a blanket or shawl, and lets the mother tuck in at the front or side (under the arms) but not between the baby's skin and her skin	12 (80.0)	10 (66.7)	22 (73.3)
10. Ensures that the mother is able to perform the same process to position and secure the baby	1 (6.7)	6 (40.0)	7 (23.3)

Overall impressions of HEWs' skills in KMC position are summarized below:

- HEWs' performance at communicating what they were about to do was not optimal, but it was relatively better among HEWs from North Wollo Zone than among HEWs from Arsi Zone.
- Overall, HEWs did not have sufficient theoretical knowledge on some aspects of the KMC procedures.

As in case scenario 2, almost all HEWs in case scenario 3 greeted the mother and made her feel her comfortable before demonstrating KMC demonstrating good consistency at greeting and establishing the rapport with the mother (**Table 19)**. In Arsi, only 26.7% explained what they were going to do and encouraged the mother to ask questions. Overall, the majority of the HEWs in Arsi demonstrated some level of understanding and skills in demonstrating KMC. All HEWs covered the baby with a cloth, and 80% made sure the bottom of the cloth was tucked under the baby's buttocks. In addition, 80% of the HEWs ensured that the baby's abdomen was not being constricted and maintained support for the baby with the mother's hand. Approximately two-thirds positioned the baby upright and skin-to-skin between the mother's breasts.

Despite this, there were areas where the HEWs in Arsi did not perform as well. Only one-third of the HEWs dressed the baby in a nappy and cap only, which is a requirement on the chart booklet. Although many HEWs were able to demonstrate KMC care, only one (6.7%) showed the mother how to wrap the baby to her body. Furthermore, only 6.7% ensured that the mother was able to perform the same process to position and secure the baby.

In contrast to Arsi, the majority of HEWs (86.7%) observed in North Wollo explained KMC to the mother and encouraged her to ask questions. Eighty-seven percent of the HEWs covered the baby with cloth and nearly one-half made sure the baby was only dressed in a nappy and a cap. Three-quarters positioned the baby upright and skin-to-skin between the mother's breasts. The number of HEWs who ensured the baby's abdomen was not constricted was very low (13.3%). In comparison to Arsi, a greater percentage of HEWs showed the mother how to wrap the baby to her body (66.7% in North Wollo versus 6.7% in Arsi), and ensured that the mother was able to perform the same process to position and secure the baby (33.3% in North Wollo versus 6.7% in Arsi).

Table 19. HEWs' (N = 30) skills in demonstrating KMC positioning to mothers of LBW babies using baby mannequins in Oromia and Amhara Regions, Ethiopia

Observation for kangaroo mother care and skin-to-skin positioning steps	Case 3		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	n (%)	n (%)	n (%)
1. Greets the mother and makes her comfortable	15 (100.0)	13 (86.7)	28 (93.3)
2. Explains what she is going to do and encourages the mother to ask questions	4 (26.7)	13 (86.7)	17 (56.7)
3. Dresses the baby in only a nappy and a cap	5 (33.3)	7 (46.7)	12 (40.0)
4. Puts the baby upright and skin-to-skin between the mother's breasts	10 (66.7)	11 (73.3)	21 (70.0)
5. Secures the baby to the mother's chest (separately performs each step below):			
a. Maintains support of the baby with the mother's hand	12 (80.0)	12 (80.0)	24 (80.0)
b. Covers the baby with a cloth	15 (100.0)	13 (86.7)	28 (93.3)
c. Ensures that the top of the cloth is just under the baby's ear	1 (6.7)	5 (33.3)	6 (20.0)
d. Ensures that the bottom of the cloth is tucked under baby's buttocks	12 (80.0)	9 (60.0)	21 (70.0)
6. Makes sure the tight part of the cloth is over the baby's back (chest)	5 (33.3)	6 (40.0)	11 (36.7)
7. Ensures baby's abdomen is not constricted	12 (80.0)	2 (13.3)	14 (46.7)
8. Shows the mother how to wrap the baby to her body: put the *Netela* securely over the back of the baby on the mother's chest, and cross the ends of the cloth behind the mother's back; bring the ends back around, and tie them in the front or at the sides underneath the baby	1 (6.7)	10 (66.7)	11 (36.7)
9. Covers the baby with a blanket or shawl and let the mother tuck in at the front or side (under the arms) but not between the baby's skin and her skin	9 (60.0)	8 (53.3)	17 (56.7)

Observation for kangaroo mother care and skin-to-skin positioning steps	Case 3		
	Completely performed		
	Arsi Zone (n = 15)	North Wollo Zone (n = 15)	Total (n = 30)
	n (%)	n (%)	n (%)
10. Ensures the mother is able to perform the same process to position and secure the baby	1 (6.7)	5 (33.3)	6 (20.0)

4. Discussion

MCSP-NEGA follows the national CBNC package and continuum-of-care approach and builds public health staff members' capacity at the regional, zonal, *woreda*, and PHCU levels. This study explored the identification of, care and management for, and attitudes toward LBW and preterm babies by health facility workers as well as caretakers in households in rural *kebeles* of North Wollo Zone (Amhara Region) and Arsi Zone (Oromia Region).The findings illustrate that limited knowledge and resources, both at the household and facility levels, interact with existing perceptions to influence the percent of LBW babies identified and cared for. This discussion section is organized into three key thematic areas—identification; care; and attitudes, beliefs, and perceptions—and discussed under the umbrella of the CBNC implementation framework.

4.1. Identification

The assessment uncovered several possible factors that result in the poor identification of LBW or preterm babies, including the following: poor quality of care and failing to identify LBW babies at HCs; poor linkage with HEWs, even when identified; total disconnect between hospitals and HC or HPs; poor counseling content for pregnant women during ANC or at PWCs; and limited coverage of early PNC home visits by HEWs. Provision of ANC service and follow-up appointments, including appropriate counseling, is among one of the key tasks of the HEWs. In ensuring that the pregnant woman and baby get the appropriate care during pregnancy and postpartum periods, ANC also serves as the gateway to PNC. HEWs are expected to conduct early PNC home visits within the first 2 days after the baby's birth.

As mentioned in the results section above, some HEWs interviewed stated that they only find out about pregnancies in the community when the mothers go into labor. This means ANC contact is not being made and counseling on complication readiness and birth preparedness is not provided. The consistent provision of focused ANC sessions for pregnant women can be used to provide information and counseling on the prevention, care, and management of LBW and preterm babies. ANC contact also provides an opportunity for HEWs to correct any misinformation or inaccurate local beliefs surrounding LBW and preterm babies. However, there is a need to address the community's and pregnant women's reluctance to discuss LBW or preterm baby issues during pregnancy—discussing it is considered a bad omen. This will require engagement with community leaders and other key stakeholders in the community to strategize how to change this attitude. Without changing this attitude, it will be difficult for HEWs to effectively integrate LBW or preterm issues in their ANC counseling.

As outlined in the results section, gaps in counseling to mothers about how to care for LBW babies were also found at the hospitals where these babies were delivered or where the babies first received newborn care service. The reasons for this were not explored as they was beyond the scope of this study. However, understanding the reasons is critical to develop appropriate strategies to care for small babies following discharge from hospitals; therefore, we recommend further studies in this area.

Another reason for poor identification and follow-up of LBW or preterm babies by HEWs was the lack of referral linkages and communication between the HCs or hospitals where the mothers gave birth or received care for their LBW babies and the HPs where the HEWs were stationed. This means that once these mothers return to their homes, HEWs have little to no information about problems the baby has and, therefore, are unable to provide the appropriate and necessary care for them. As mentioned above, CBNC emphasizes the importance of institutional delivery and strong communication or referral between HCs and HPs. However, the overall weak referral system and poor PHCU linkage (HP-HC-hospital) is negatively affecting the quality of high-impact interventions such as CBNC.

Despite strong working relationships between HEWs and HDAs, and notifications of early deliveries to HEWs, the heavy workload and the large geographic areas they cover are repeatedly mentioned as reasons for their inability to conduct timely PNC visits. This directly affects HEWs' ability to identify and classify LBW babies and, consequently, their ability to provide counseling on proper and necessary care. A large proportion

of maternal and neonatal deaths occur during the first 48 hours after delivery. Close monitoring during these first 2days is critical for both the mother and baby, not only for timely identification of complications and danger signs but also for identification of LBW and preterm babies and for providing mothers with important information on how to care for them. While an early PNC home visit is one of the key components of CBNC, HEWs are unable to conduct timely and consistent PNC visits. Given the workload of HEWs, the CBNC program could look into capitalizing on the existing HDA platform to improve the coverage and content of early PNC home visits, when identification of LBW or preterm babies can be communicated to HEWs for further care and counseling.

When looking further into the challenges in identifying LBW babies, interviews conducted with HDAs revealed that the HDA structures for immediate birth notification in both catchment areas were operating at suboptimal levels.

Main responsibilities of HDAs focus on community mobilization and on maternal and child health, including encouraging women to keep up with their ANC visits, vaccinations, and to deliver in facilities. As HDAs are not trained on LBW-specific care and identification skills, it is unlikely that HDAs can support HEWs in this regard. The FMOH's plan to strengthen the HEP and train HDAs to take over some of HEWs' health education tasks should be used to address these gaps.

Both community-identified babies were classified as LBW by the health workers in the health facilities the babies were born. In North Wollo, the baby was born at the local health center and was not breathing at birth, was resuscitated and referred to hospital for NICU care. The community identified baby in Arsi, was born in a private clinic and referred to hospital for NICU care. Health workers in both facilities explained the LBW status of the babies while offering the referral. It is interesting to note that, in both cases, mothers were not counseled on or supported for practicing KMC by the providers that offered the referral.

4.2. Care

The assessment revealed critical gaps in the care provided for mothers and their LBW babies in hospitals. Mothers interviewed in this study reported that they were given little to no information on the status of their babies' health, nor were they told of their weight or counseled on how to care for their LBW or preterm babies. This has serious implications in the subsequent care mothers provide to their babies. To effectively care for their babies, mothers and other family members need to understand the what, why, and how of LBW babies to ensure that their babies receive adequate care for survival. In addition, dissatisfaction with the care received while in the hospital—related to cost, negligence, disrespect, discrimination—was reported by mothers of LBW or preterm babies. Such dissatisfaction could deter facility delivery with implications for both the mother and baby.

Respectful maternity care (RMC) has been recognized globally as a major pillar in the provision of quality care for mothers and babies, and Ethiopia's MOH has sought to ensure that women receive acceptable, woman-centered, supportive care by integrating RMC into the in-service training packages for MNH care.[13,14] In addition to initiatives that promote facility delivery to meet the national target of reaching 90% by 2020, facility readiness to provide patient-centered, respectful, and appropriate care for small babies (including counseling for mothers and other caretakers and follow-up care) should be prioritized.

Once at home, the burden of care was almost solely placed on the mother. This was found to be a major challenge in caring for LBW babies. In both regions, findings show that the role of fathers or husbands was mainly limited to handling the financial burdens of the household and providing the grains and other materials needed during this time. While this is an indirect form of care for both the baby and mother, direct involvement of fathers in the care of their baby should be encouraged by engaging them in ANC counseling,

[13] The prevention and elimination of disrespect and abuse during facility-based childbirth: WHO statement. http://apps.who.int/iris/bitstream/10665/ 134588/1/WHO_RHR_14.23_eng.pdf.
[14] Sheferaw et al. Respectful maternity care in Ethiopian public health facilities. Reproductive Health (2017) 14:60.

PWCs, home-based birth-preparedness discussions with HEWs, and PNC that includes post discharge KMC home visits. This is especially important for optimum KMC for LBW and small babies. Fathers or husbands could assist their spouses by practicing skin-to-skin care when the mothers become tired or engaged in other activities. While such normative changes would require a long time to establish, strategies such us sharing experiences of other fathers who actively participated in the care of their LBW or preterm baby could be beneficial.

Furthermore, gaps in KMC practices were identified during the HEW skills observations; these gaps will affect mothers' practices of KMC procedures. Without the proper support and information from HEWs, mothers of LBW babies are unlikely and unable to employ these lifesaving care and management practices. Observations conducted among HEWs revealed gaps in HEW skills that can act as a barrier to proper identification and classification of LBW babies. While nearly all HEWs observed across both regions knew the correct way to weigh a baby, only about one-third of them appropriately categorized the baby as very LBW, LBW, or normal.

As seen through questions in IDIs and the skills observations, HEWs had an overall good understanding of the care needed for LBW babies. However, there are areas that also need strengthening. While they generally have the knowledge, there was variability in the adequacy of their counseling and KMC skills. This is likely to be a result of loss of skills due to their not managing LBW babies. This will continue to be a problem as LBW or preterm babies are largely being cared for at hospitals. In the future, if HEWs become involved in the care of LBW or preterm babies (including following-up care after discharge from hospital), strategies should be put in place to ensure that HEWs retain their counseling and KMC skills through periodic mentoring and provision of appropriate job aids.

4.3. Attitudes, Beliefs, and Perceptions

Community members and fathers in both North Wollo and Arsi Zones stated that they do not stigmatize mothers or couples who have LBW or preterm babies. They stated that stigma does not exist because the reasons for giving birth to these babies are known. The common causes were listed as a pregnant mother not eating what she is craving, missing key vaccinations, having poor nutrition during pregnancy, and performing a heavy workload. These causes indicate that despite a purported lack of stigma in the community, there is blame placed on the mother for causing the baby to be of LBW or preterm through her actions. Common terms used to describe both LBW and preterm babies were mentioned in North Wollo and Arsi. These terms are directly related to the size and perceived incompleteness of the preterm babies. Only in North Wollo was a negative term used to describe LBW babies (*mentai,* or troublemaker). This term could contradict the information that there were no stigmas associated with LBW or preterm babies in the communities sampled.

The community saw survival of LBW babies as favorable. However, preterm babies' survival was perceived to be contingent on the month of gestation in which the baby was born. In both Arsi and North Wollo, babies born at 7months are seen as survivors—even thriving—who will grow up to be leaders and extremely successful in life. In contrast, those born at 8months are seen as not likely to survive. This distinction between the two could translate to babies born at 8months receiving poorer care than those born at 7months. Additionally, the distinction between babies born at 7months and 8months could lead to mothers and couples feeling stigmatized. If the community believes that babies born at 8months are not likely to survive, families may not want to share the correct gestational age of their babies. Despite the perception that the community does not stigmatize mothers and couples with LBW or preterm babies, the above-mentioned reasons likely influence a mother's willingness to prepare for an LBW baby .HEWs, particularly in North Wollo Zone, stated that they do not counsel mothers on LBW and preterm babies during ANC visits because the mothers see it as a bad omen to discuss the possibility of giving birth to a LBW or preterm baby. Such blame and other misconceptions can be prevented through proper counseling by HEWs and HDAs during ANC and PNC.

In the CBNC Implementation Plan, the FMOH identified monthly *kebele*-level PWCs as one of the key strategies for improving MNCH-related behaviors and practices. These preexisting counseling structures can

be used to address other existing attitudes and beliefs about LBW or preterm babies. While some HEWs have reported using PWCs as a way to identify pregnant women, none of the interviewed mothers reported participating in these conferences. PWCs represent a major opportunity to systematically address locally held, unfavorable MNCH behaviors and practices across the continuum of care, but this potential is not being fully utilized. However, there is the need to increase the participation of pregnant women and their spouses in this forum.

5. Conclusion

This study highlights how LBW and preterm babies are identified; the knowledge and experience HEWs and HDAs have in identifying LBW and preterm babies; the care these babies receive; and attitudes, beliefs, and perceptions about LBW and preterm babies. Based on the analysis of findings, we conclude the following:

- Although HEWs and HDAs theoretically understand how to identify and care for LBW and preterm babies, LBW or preterm babies are not being identified in practice. This is likely due to poor content of counseling during ANC contacts, lack of early notification of deliveries to HEWs, and inability of HEWs to conduct early PNC home visits—all of which are strategies that could facilitate identification of LBW or preterm babies and appropriate management.
- A high proportion of mothers were not aware that their babies were LBW, yet mothers were able to identify proper care practices for LBW babies.
- Community members stated that stigma against preterm or LBW babies does not exist in their communities, yet effects of unintentional stigma are clear—through their understanding of the causes of LBW and preterm babies and through the distinction that babies born at 8 months are not likely to survive. These perceptions and beliefs have led mothers not to want their LBW babies to be seen by others and to resist counseling for LBW babies at ANC.
- Fathers of LBW babies understand their role in care to be financially support the mother rather than to be directly involved in care.
- Observation of HEWs' skills revealed that while HEWs from both regions are well equipped in both resources and skills to weigh babies correctly, they lack the skills in appropriately classifying these babies as very LBW, LBW, or normal. They were found to have excellent skills in supporting mothers in breastfeeding but were deficient in securing the baby in the KMC position.

6. Recommendations

Based on the results presented in this report, below are the overall key recommendations:

- The referral system should be strengthened to ensure that there is better documentation of all births; timely referral of LBW and preterm babies; and improved communication between HPs, HCs, and hospitals for adequate management and post discharge follow-up care of LBW and preterm babies—and all sick newborns—closer to where they live.
- The counseling and communication between providers and mothers needs to be strengthened such that all mothers are clearly informed of the LBW status of their infants and the specific elements of care needed at home to improve their survival.
- To alleviate a major barrier to identification, HEWs should have appropriate job aids to assist in the identification and categorization of all babies according to their birth weight or gestational age status.
- In order to facilitate identification and subsequent care for LBW and preterm babies, strategies to improve early PNC home visits by HEWs should be put in place. This could include task sharing with HDAs as appropriate. The strategy to shift some of the health education tasks from HEWs to HDAs presents a very timely opportunity to address this gap.
- Transportation for HEWs working in vast geographic areas should be explored. Alternately, the number of HEWs covering these areas could be increased to ensure that most, if not every newborn, is visited, weighed, and its LBW status determined and appropriate care initiated.
- Use the monthly *kebele*-level PWCs, ANC contacts, pregnancy home visits by HEWs to develop birth preparedness plans, and other contacts during pregnancy as key strategies to improve MNCH-related behaviors and practices, including changing rigid gender roles to improve male engagement in childcare. These for a can include spouses and other family members who have stakes in childcare (including in-laws, grandparents), and the for a should be used to systematically address locally held, unfavorable MNCH behaviors and practices across the continuum of care.
- Strategies for ongoing improvement and retention of health workers' counseling and KMC-related knowledge and skills in managing LBW and preterm babies' should be put in place. It is critical that these lifesaving practices are given adequate focus so that the benefits of facility delivery can have a positive impact on health outcomes for LBW babies. KMC-related knowledge and skills should be a routine part of performance review and clinical mentoring meetings and should be supported by FMOH and all implementing partners who are supporting the implementation of CBNC.
- In order for HEWs to be involved in the care of LBW and preterm babies (including providing follow-up care after discharge from hospital), strategies should be put in place to ensure HEWs retain their counseling and KMC skills through periodic mentoring and provision of appropriate job aids.
- HDA empowerment could have a significant impact on the management and care of LBW and preterm babies. HDAs live among the community they serve and have more access to these mothers than HEWs. Therefore, orienting HDAs to messages about LBW or preterm babies and strengthening HDAs' knowledge could result in positive changes for LBW babies and their mothers.
- All health workers, including HDAs, should have all appropriate job aids. This could be achieved by improving the content of the Family Health Guide to include key messages related to the identification and care of LBW and preterm babies.