

Maternity waiting homes in Rural Health Centers of Ethiopia: The situation, women's experiences and challenges

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Abstract

Background: Maternity waiting homes have been promoted to improve pregnant women's access to quality obstetric care. The main aim of this study was to assess the situation of maternity waiting homes and the experiences and challenges of mothers using waiting homes.

Methods: A cross-sectional study was conducted in 134 health centers in Amhara, Oromia, Southern Nations Nationalities and People (SNNP) and Tigray regions of Ethiopia. The study employed both quantitative and qualitative methods. Data were collected by interviewing the head of the health centers and women staying at the waiting homes during the time of the survey.

Results: Ninety-four (70%) health centers had maternity waiting homes at the time of the survey. Typologies of the waiting homes and their capability of holding clients varied from region to region.

Protocols for managing the waiting homes and admission and discharge criteria were not available elsewhere. Mothers who used waiting homes faced several challenges: No one was available to care for children at home, mothers were considered as being lazy, food problems and lengthy prenatal stay were among the challenges mothers mentioned of staying at the waiting homes.

Conclusions: It is necessary to prepare guidelines for the establishment and management of waiting homes as well as set up admission and discharge criteria and to initiate quality control mechanisms. [*Ethiop. J. Health Dev.* 2016; 30(1):19-28]

Keywords: Maternity waiting homes, waiting homes, prenatal care, intention to stay postpartum, postpartum care, Ethiopia, health center, obstetric complications

Background

Regardless of Ethiopia's remarkable success in reducing infant and under-5 mortality, the reduction in maternal and neonatal mortality is relatively low. The neonatal mortality rate currently stands at 29 deaths per 1,000 live births and accounts for 43% of all under-five mortality (1). The maternal mortality ratio (MMR), 353 per 100,000 live births is among the highest in the world (2). Most maternal and infant deaths occur during the time of childbirth and in the first few hours and days after birth: more than 40% of maternal and newborn deaths and stillbirths occur during the time of birth (3), 45% maternal deaths (4) and 36% of neonatal deaths (5) occur during the first 24 hours. Hemorrhages, hypertension in pregnancy, obstructed labor, abortion, and sepsis are the major causes of maternal death. Indicating the interventions to address these threats require institutional care (6-8).

However, several women in developing countries face challenges in accessing timely institutional care mainly due to various factors such as socio-cultural, geographical, a limited number of well-equipped and well-functioning facilities as well as weak referral system (9-13).

In Ethiopia, though delivery by skilled healthcare provider has shown a substantial increase from 10% in 2011 to 53% in 2015, the coverage of postnatal care (PNC) within 48 hours of birth has stalled at 10% (14). The national Demographic and Health Survey (DHS)

data shows that of the few (8%) who had PNC visit, nearly half (53%) gave birth in a health facility (18), where crowds due to lack of space and the practice of early discharge often hindered mothers from receiving proper postpartum care (15).

Maternity waiting homes (MWHs) have been promoted to improve pregnant women's access to quality and timely maternal health care services, especially for women with high-risk pregnancy or women who live in remote areas (16, 17).

Maternity waiting homes are residential facilities located near a hospital or a health center to accommodate women in their final weeks of pregnancy to bridge the geographical gap in obstetric care between rural and urban areas and areas with poor access to facilities (18). Once labor starts, women would move to the health facility so that they can be assisted by a skilled birth attendant (19) and the mothers and their newborns could stay postpartum at MWHs for some more days to ensure all is well before going back home, long distances (15).

Many studies revealed that the use of MWHs was linked to the use of maternal health services and indicated lower risk of maternal and perinatal death (19-22). However, there are barriers to access to and use of MWHs. Lack of family and community support (21, 23), food insecurity (18), the cost of staying at MWHs (22), distance and lack of knowledge about the

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MWHs (23-24) are some. Additionally, lack of basic social and healthcare services; inadequate sleeping space, beddings, water and sanitary services, food and cooking facilities and lack of visits to mothers (25) were the factors deterring the use of MWHs.

With an established evidence of the benefits of MWHs, Ethiopia has plans to expand the MWHs to avert postpartum complications that could occur during the first 24 hours after delivery, as recommended by World Health Organization (WHO) (26). This study aimed at describing the situation of MWHs and the experiences and challenges of mothers using waiting homes in selected rural health centers of Ethiopia.

Methods

A facility-based quantitative and qualitative cross-sectional study was conducted in all 134 health centers where The Last Ten Kilometers Project (L10K)^a was implemented its basic emergency obstetrics and newborn care (BEmONC) project (Figure 1).

The study employed 24 data collectors who had good knowledge of the local health system. The enumerators took training for three days with one day dedicated to field training to test actual data collection. Data were collected through interview with the heads of the health centers and women and their husbands staying at the waiting homes at the time of the survey. To assess services provided by the MWHs as perceived and reflected by pregnant women staying at MWHs, 129 women, out of 137, staying at the homes on the day of the visit were interviewed. Pretested and structured set of questions translated into Amharic, Oromifa, and Tigrigna was used to collect data. Health professionals whose mother tongue was the respective languages administered the interview. Data were captured using Android mobile application *Survey CTO collect^b*. The application allowed data quality assurance through appropriate skip patterns during the interview and allowing only the entry of logical values. Data collection was conducted from July 1-30, 2015. Survey coordinators checked the completeness and accuracy of data daily and uploaded them on the server.

Enumerators with prior experience of qualitative data collection conducted in-depth interviews (IDIs) with pregnant women staying in MWHs and their husbands. The IDI guides were administered in local languages. Fourteen IDIs were held with women who stayed at MWHs. Among husbands, six in-depth interviews were conducted before saturation of information was reached. Digital audio recorders were used to record the conversations of the IDIs.

The quantitative data were edited; open-ended responses were recoded into categorical variables where necessary and analyzed using StataCorp (27) software. Descriptive statistics was used to analyze the infrastructure, services offered, and the management of the MWHs. Chi-square (χ^2) and t-test with p-value set at 0.05 were used to test the regional variations. Audio records from IDIs were transcribed verbatim and translated into English. The researchers exported

transcript texts to Open Code version 3.6 software and analyzed it using thematic framework analysis. They then gave codes to the themes that emerged after reading the transcripts. Similar codes received a category. Finally, the researchers summarized concepts and organized them into categories. Important quotations from women and husbands supported the summaries.

Ethical review committees of the respective Regional Health Bureaus granted ethical clearance. All study participants were informed about the purpose of the study and their right to opt out or to respond to questions. Informed verbal consent was obtained from all study participants prior to the interview. The values, rights, and norms of the study subjects, the community, enumerators, and supervisors were respected. The data were collected with anonymous questionnaires and codes were used to identify study participants.

Results

Overall, 94 (70%) health centers-79% in SNNP, 73% in Amhara, 67% in Oromia and 55% in Tigray- had MWHs at the time of the survey mainly to house prenatal mothers. At the time of the survey, 41 (44%) MWHs had mothers and hosted 137 (mean of 1.3) women.

Physical Structure of the MWHs: Well-furnished houses, traditional huts, and simple shelters made up of corrugated iron sheets were the main types of MWHs observed. More than one-third (36%) of the MWHs had modern corrugated iron roof and brick wall structures that were relatively well maintained and 16% of them were tukuls. Nearly one in five of the MWHs were part of an existing MCH clinic labeled as MWH. These typologies significantly varied across regions (P-value <0.05) (Table 1).

Most, 81 (86%), of the MWHs had an electricity grid connection. Regional level analysis showed that all MWHs in Amhara and Tigray regions and two-thirds of MWHs in Oromia region had an electric grid connection. Less than half (47%) of MWHs had access to a water source and a little more than a quarter (28%) of MWHs had bathrooms (Table 1).

Accommodations and Housing Facilities of the MWHs: The MWHs had a mean of 1.6 rooms, which can accommodate an average (SD) of 8(5.8) women at any given time. The number of rooms and its capacity of holding mothers at a time vary across regions (p-value <0.01).

The MWHs were furnished with beds, mattresses or in most cases, just mattresses. In 55% of the MWHs, women shared sleeping space (i.e., rooms and sometimes the mattresses). Curtains for privacy were available in six (6%) of MWHs. Most MWHs, 79 (84%), allowed families of pregnant women to stay with them; however, 56 (71%) did not have extra spaces for accompanying families. Similarly, 69 (73%) of the health centers with MWHs reported there

were no spaces to accommodate women and their newborns for postnatal observation. Cooking areas were available for 71% of MWHs. Among MWHs that had cooking areas, the cooking facility had cooking utensils (79%), coffee (67%), and cooking fuels (84%). A quarter of MWHs had recreational facilities that vary 55% in Amhara, 18% in Tigray, 13% in SNNP, and 8% in Oromia (Table 2).

Table 1: Physical structure of MWHs in Amhara, Oromia, SNNP, and Tigray regions of Ethiopia, July 2015, n(%).

Character	Amhara (n=27)	Oromia (n=26)	SNNP (n=30)	Tigray (n=11)	X ²	p-value
Type of MWH						
Traditional hut	1(3.7)	1(3.9)	13(43.3)	0(0.0)		
Modern and well-finished house	26 (96.3)	23(95.8)	17(56.7)	11(100.0)	23.94	Fisher's=0.00
Walls of the MWH						
Natural material (stone, mud, thatch, wood)	14(51.9)	16(61.5)	13(43.3)	0(0.0)		
Concrete/ bricks or metal/corrugated iron	13(48.2)	10(38.5)	17(56.7)	11(100.0)	123.64	Fisher's=0.00
The roof of the waiting home						
Natural & rudimentary roof	18(66.7)	12(46.2)	21(70.0)	10(90.9)	76.56	Fisher's=0.00
Cement/concrete/metal	9(33.3)	14(53.9)	9(30.0)	1(9.1)		
Main material of dwelling floor						
Natural material	10(37.0)	10(38.5)	11(36.7)	2(18.2)		
Ceramic tiles/cement or asphalt strips	17(63.0)	16(61.5)	19(63.3)	9(81.8)	15.88	Fisher's=0.00
Electricity grid connection						
No	0(0.0)	8(30.8)	5(16.7)	0(0.0)		
Yes	27(100.0)	18(69.2)	25(83.3)	11(100.0)	125.62	Fisher's=0.00
Water source						
No	12(44.4)	15(57.7)	16(53.3)	7(63.6)		
Yes	15(55.6)	11(42.3)	14(46.7)	4(36.4)	15.24	0.002
Latrine						
No	11(40.7)	8(30.8)	0(0.0)	7(63.6)		
Yes	16(59.3)	18(69.2)	30(100.0)	4(36.4)	210.21	Fisher's=0.00
Bathroom availability						
No	18(66.7)	20(76.9)	22(73.3)	8(72.7)		

Table 2: The capacity and housing services provided at the MWHs in Amhara, Oromia, SNNP, and Tigray regions of Ethiopia, July 2015, n(%).

Housing character	Amhara (n=27)	Oromia (n=26)	SNNP (n=30)	Tigray (n=11)	X ²	p-value
Women share sleeping space						
No	5(18.5)	8(30.8)	20(66.7)	9(81.8)		
Yes	22(81.5)	18(69.2)	10(33.3)	2(18.2)	21.52	Fisher's=0.000
Availability of screen/curtains for privacy						
No	23(85.2)	25(96.2)	30(100.0)	10(90.9)		
Yes	4(14.8)	1(3.9)	0(0.0)	1(9.1)	5.67	Fisher's=0.088
Extra space to accommodate postnatal women and newborns						
No	17(63.0)	21(80.8)	22(73.3)	9(81.8)		
Yes	10(37.0)	5(19.2)	8(26.7)	2(18.2)	2.63	Fisher's=0.506
Family are welcome to stay with women						
No	3(11.1)	9(34.6)	2(6.7)	1(9.1)		
Yes	24(88.9)	17(65.4)	28(93.3)	10(90.9)	9.54	Fisher's=0.034
Extra space for accompanying family to stay with her (n=79)						
No	17(70.8)	11(64.7)	19(67.9)	9(90.0)		
Yes	7(29.2)	6(35.3)	9(32.1)	1(10.0)	2.21	Fisher's=0.561
Separate cooking area						
No	8(29.6)	3(11.5)	10(33.3)	6(54.6)		
Yes	19(70.4)	23(88.5)	20(66.7)	5(45.5)	7.66	Fisher's=0.046
Entertainment/recreational facilities (TV/Radio) available						
No	12(44.4)	24(92.3)	26(86.7)	9(81.8)		
Yes	15(55.6)	2(7.7)	4(13.3)	2(18.2)	20.32	Fisher's=0.000

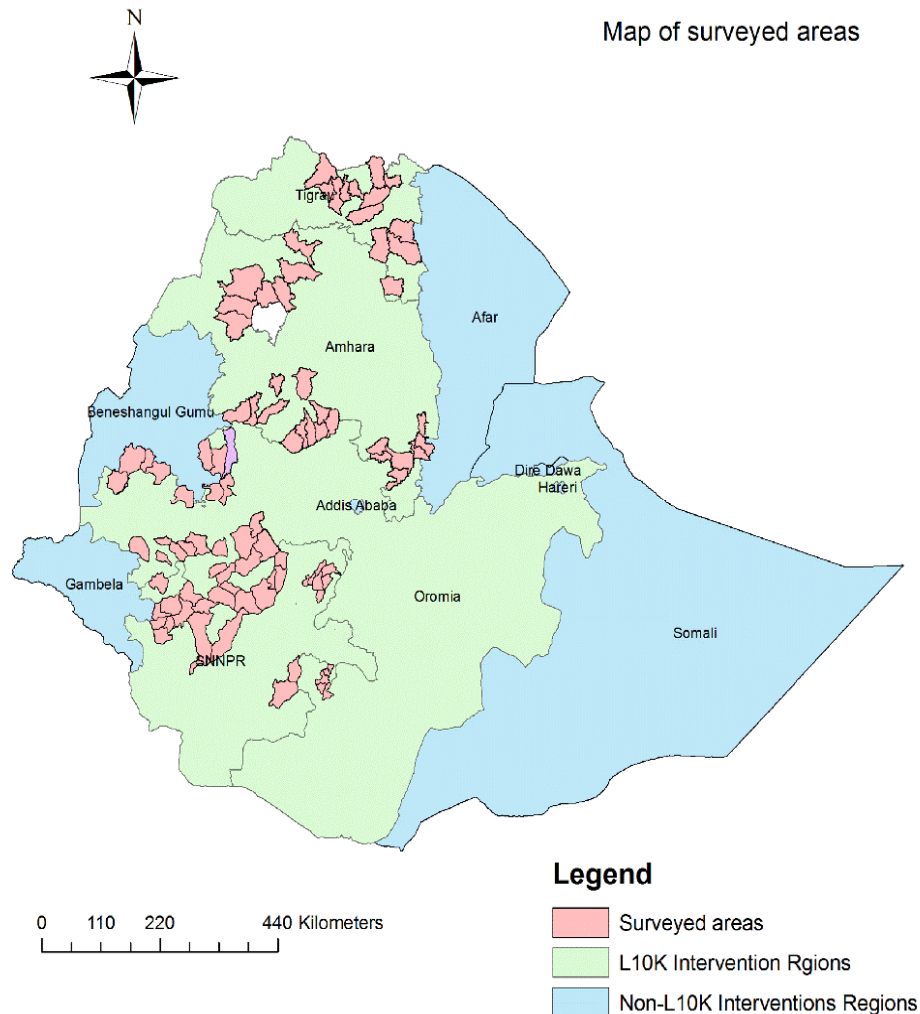


Figure 1: Map showing the surveyed health centers in the four regions of Ethiopia

Cost and Community Participation: Many MWHs were built with the support of the community, which usually contributed food items and money for mothers staying at these waiting homes, a workforce to build MWHs, and wood and grass for construction. Most (86%) of the MWHs had no budget allocated from government funds.

Family Support: Women stayed at the MWHs reported that decision to come to the MWHs was made mainly by a joint discussion with family/husband (46%). Decision-making, to be admitted to MWHs, by the woman herself was made in 16% of the cases (Table 4). In-depth interview participants also replied that the decision to come to MWHs was mainly made with husbands.

Husbands and family members helped in accompanying and bringing mothers to the facility, bringing regular supplies of food and fuel, and caring for the children and the remaining family at home. However, about one-third (33%) of MWHs experienced refusal of admission by husbands. Due to

concerns of the work burden and family care, husbands reported, in the qualitative study, that they wanted their wives to stay home until expected date of delivery.

Admission Management and Quality Assurance: The point of service reaching women for the provision of education on MWHs were home visits by HEWs (87%), ANC visit (84%), home visit by Health Development Armies (HDAs)^c (66%), mother's conference (66%), and other community events (37%). In-depth interview participants also mentioned that the major sources of information on the location of MWHs, services provided at the MWHs, and the benefits of staying there were HDAs and HEWs.

More than three-quarters (77%) of health centers admitted pregnant women based on their own criteria for admission such as term pregnancy, distance from the facility, economic status (i.e. accepting economically disadvantaged women), and women with high-risk pregnancy. However, nearly half of these facilities admitted mothers before term (i.e., before 37 weeks of gestation).

No uniform evaluation and quality assurance mechanisms were available. Regular performance reviews were available in only 32 (34%) of the MWHs. Regarding the information system, in three-quarters (76%) of the MWHs individual folders were not issued for mothers. Likewise, 71% of them had no separate register to document statistics for evidence generation.

Services Provided

Medical care: Women reported that on average they

stayed a mean (SD) of 14.8 (1.0) days at the MWHs and about 40% of pregnant women stayed for two or more weeks. The mean reported length of stay did not significantly vary among regions.

After admission to the MWHs, health care workers, mostly midwives, performed an initial evaluation of pregnant women. Most (87%) MWHs reported that a midwife/nurse made round to mothers primarily to follow-up the current pregnancy (Table 3).

Table 3: Facilities reported maternal and general health services provided by the MWHs in Amhara, Oromia, SNNP, and Tigray regions of Ethiopia, July 2015, n(%).

	Amhara (n=27)	Oromia (n=26)	SNNP (n=30)	Tigray (n=11)	X ²	p-value
Midwife/nurse makes round to women at the MWHs						
No	2(7.4)	3(11.5)	7(23.3)	0(0.0)		
Yes	25(92.6)	23(88.5)	23(76.7)	11(100.0)	5.35	Fisher's=0.193
Facility provides food to women during their stay at the health center						
No	3(11.1)	5(19.2)	20(66.7)	1(9.1)		
Yes	24(88.9)	21(80.8)	10(33.3)	10(90.9)	27.06	Fisher's=0.000
Health education/counseling provided						
No	4(14.8)	8(30.8)	7(23.3)	0(0.0)		
Yes	23(85.2)	18(69.2)	23(76.7)	11(100.0)	5.25	Fisher's=0.150

Pregnant women perceived the medical examinations made at admission as comprehensive and satisfying. They had general physical examinations, blood pressure and weight measurement, and physical examinations including position and presentation. The women were appreciative of receiving immediate care and consultation of a health worker when they experienced illness. However, about half (51%) of the pregnant women reported they were not seen by a health worker the day before the interview and the mean number of days a provider visited the MWHs were three days previous which contradicts to the report of the daily rounds by health centers (Table 3 & 4). Moreover, women invariably described health promotion and communication services at the MWHs as poor. A woman at an MWH said, "Health education is not provided in this waiting home... Information regarding maternal health is almost absent ... they counseled me individually while they examined me for my general health status."

Food services: About two-thirds of facilities provided food to mothers staying at the MWHs (Table 3). The type of servings varied greatly from facility to facility; it varied from the provision of coffee to meals.

In general, in-depth interview participants wished the MWHs to provide food. Some suggested the provision of food items and utensils to prepare a meal while others required ready to eat meals.

Women who were not provided food items by the MWHs were not happy. They claimed that this created an additional burden on their families by forcing the

family members to stay with the woman at the MWH and help prepare food or else having them to regularly travel long distances to deliver food, which meant additional expenses. The lack of cooking utensils was also another worrying factor because this meant the families had to bring their own, which was usually a difficult task.

A woman presented her experience, "I mainly get (food) from my husband. He brings food from the village regularly and this is a daily walk of two hours because there is no food service provided here."

Women's Experiences: In-depth interview participants believe there are many advantages of staying at the MWHs. One is the chance to get immediate care when they experience pregnancy-related or medical problem. The other advantage presented by the women is the chance to have a general medical examination and regular follow-up. Women also reported they get a lot of rest despite their concerns over the problem of caring for their children/family at home. Additionally, women explained the possibility of having their newborn vaccinated if they stay at the MWHs.

A 37-year old para 7 woman from Amhara said, "I had experienced severe bleeding after delivery during my last pregnancy. Here, "I would be safe as they would take care of bleeding if it happened and thus they would save my life".

Husbands of pregnant women admitted to MWHs believed in the advantages of staying at MWHs. They explained that woman would avert the risk of death due to late arrival in the health center (which is due to unavailability of an ambulance on time). Others believe that it is important for a woman to take rest before delivery and this becomes possible when the woman stays at the MWHs. This also avoids the risk of postnatal bleeding and the newborn will be safe.

In-depth interview participants who liked their interaction with other pregnant women at the waiting home explained that they spent a lot of time together discussing many issues and sharing their experiences. Women also liked the presence of television for their recreation. The presence of a clean and green facility compound was also an appealing atmosphere where they would spend their time by taking walks in the compound. They also had excellent experience of doing tasks together such as cooking their meals.

A pregnant woman described her experience of the MWH, *"I had a very good experience in this waiting home and I shared my experiences with the other women who came for this service. There is a recreational center with TV where we spend our time... and sometimes, we would walk in the compound which is neat and green."*

The health care staff's courtesy, passion, and cooperation were an excellent experience for women staying at the MWHs. *"The health facility staff members including the guard have a good approach. The health professionals are friendly, passionate and committed and they always greet me and are ready to provide any support I need."*

Some women, in some of the MWHs, described their concerns about the lack of recreational facilities like television. One pregnant woman described her feeling, *"I spend my time taking walks and sleeping. As you see, there is no entertainment, no television. So I usually spend my time sleeping."*

Challenges of Staying at the WMHs: Health workers, 47 (50%), reported that there are cultural and family issues that deter women from being admitted to the MWHs. The commonest factors were: absence of caretakers for children at home (68%), husband and family did not allow admission (53%), lack of awareness about the importance of MWHs (49%), dearth of transportation to and from the MWHs (26%), and families unable to bring the woman food items and unable to continuously supply food by traveling far distances (19%).

These findings were corroborated by the qualitative study. No one was there to care for children at home and length of prenatal stay, and wrong perception by community members are some of the challenges women encountered during their stay at waiting homes.

Women and their husbands who stayed at the MWHs were worried about their farms and children at home. Absence of an adult who would take care of children at home was claimed to be one of the reasons why many women in remote areas were not motivated to come to MWHs as the whole family is dependent on the mother for all household support.

There are people who consider the women admitted to MWHs prenatal as being lazy or careless to abandon their family. This caused some concern for the women. A 33-year-old para 5 woman said, *"Yes, it [coming here] was helpful but the people made fun of me, considering me as lazy. There were mothers that did not come just in fear of such thoughts."*

Staying for a long period without delivering was another challenge women faced at the MWHs. A woman described her concern, *"The health worker told me to stay here when I came for my ANC visit because he said I reached my term. But I stayed here for two weeks with no sign of labor."* They suggested that women must be admitted around the expected date of delivery because staying a long time at home has consequences on the farm activities. A farmer said, *"It is good to come here, but around the date [of delivery] because I am a farmer and our work becomes affected."*

Intention to Stay Postpartum: Similar to the opinion of providers, most women (83%) did not want to stay at MWHs in their postnatal period. Intention to stay postpartum at MWHs was higher in Oromia and Tigray regions (Table 4). More than a quarter (27%) of those who wanted to stay postnatal wanted to stay for about 4 hours and 55% wanted to stay for 24 hours or more. Women were worried about their children at home and farm. As such, they wished to go home immediately after delivery.

However, husbands supported women's stay at MWHs during the postnatal period if there were reasons and recommendations from health care workers. They expressed their understanding of possible risks arising during this period and the benefits of staying.

Table 4: Mothers' reported health worker visit and their intention to stay postpartum in Amhara, Oromia, SNNP, and Tigray regions of Ethiopia, July 2015, n (%).

	Amhara (n=39)	Oromia (n=23)	SNNP (n=50)	Tigray (n=17)	X ²	p-value
Decision to come to MWHs						
My self	4(10.3)	2(8.7)	5(10.0)	9(52.9)		
Jointly with family	35(89.7)	21(91.3)	45(90.0)	8(47.1)	20.98	0.000
Visited by a health worker yesterday						
No	18(46.2)	14(60.9)	22(44.0)	9(52.9)		
Yes	21(53.9)	9(39.1)	28(56.0)	8(47.1)	2.03	0.570
Intention to stay postnatal at MWHs						
No	33(84.6)	14(60.9)	49(98.0)	11(64.7)		
Yes	6(15.4)	9(39.1)	1(2.0)	6(35.3)	20.01	Fisher's=0.000

Discussion

Though MWHs have existed in Ethiopia for more than three decades, they were limited mainly to some hospitals making it inaccessible for most women (20, 21). The current expansion of MWHs to health centers is a breakthrough to bridge the geographic barriers and access to skilled care. However, a myriad of challenges and opportunities are identified in this study. The challenges identified include: 1) lack of standard guidelines to manage admissions and services provided, 2) lack of adequate space and rooms (i.e. sleeping space for mothers and accompanying family members, latrine, and bathrooms), 3) lack of adequate food and regular healthcare services, 4) long waiting time, 5) absence of someone to care for children at home and 6) negative perception by community members.

As this development is recent, the expansion of MWHs does not consider the expected number of pregnancies. Inadequate rooms, lack of cooking space, bathrooms, latrine, and recreational facilities in some health centers were identified as serious concerns of the pregnant women. Unavailability of latrines made their stay difficult because these pregnant women had to make frequent toilet visits. Other similar studies also reported lack of social services as one of the major barriers to access to and use of MWHs (25).

Another striking finding is the management of MWHs. There was lack of clear guideline or standard regarding service provision, admission criteria, quality assurance mechanism, monitoring, and reporting systems. Most health centers admitted pregnant women who have reached term, based on their own individual admission criteria. This resulted in improper utilization of resources of the MWH, on one hand, by admitting women from nearby areas and without a high-risk condition. On the other hand, it would cause poor satisfaction from the high crowding and shortage of services like food thereby leading absconding and poor utilization of MWHs. There was no established evaluation and quality assurance mechanisms to monitor and check the MWH services in most facilities. Lack of a standard way of maintaining

medical records was also a challenge in all facilities in this study. A significant number of MWHs did not issue individual maternity folders to document mothers' clinical history and registers were not available to document statistics used for evidence generation.

Most facilities provided health care and food services to mothers admitted at MWHs. However, the frequency and type of healthcare were suboptimal and did not respond to the women's needs. This is particularly important for mothers who may need to stay longer and reduce the possibility of withdrawal from the MWHs. The lack of close follow-up also leads to a possibility of missing certain illnesses that women may develop during their stay or complications of pregnancy. This fact discourages women from coming to stay at the MWHs. The MWHs should serve as an opportunity to provide maternal health services. Few studies in Africa report that maternity homes provide antenatal care, counseling on skilled care attendance, and provide postnatal care such as immunizations for both the mother and the child and counseling on family planning and HIV/AIDS (19-21). Other studies also report offering postpartum reproductive health services (28). Therefore, program managers should critically consider the provision of maternal health services as well as the integration of services including postpartum family planning and HIV testing throughout the continuum of care. On the other hand, in homes where food service is not provided, it created an additional burden to families. In Zimbabwe, the absence of food provision, the necessity to collect one's own water and firewood, poor hygiene and lack of transport for referrals were reported as important factors for mothers' refusal to use MWHs (29).

Participants from the in-depth interview who liked their interaction with other pregnant women, explained that they spent a lot of time together discussing several issues and sharing their experiences. Women also liked their rest from the strenuous work they do in their homes. Furthermore, they enjoyed the presences of a television for their recreation. However, the in-depth

interview participants were complaining about the long waiting time and stressed the importance of correctly estimating the gestational period to reduce lengthy stay. Long stays have a negative implication on the use of resources in the MWHs.

In this study, it was found out that community and family played a great role in the establishment of MWHs and their use. Many facilities were built from locally available materials with the support of the community. The role of the community is crucial in sustaining the MWHs and improving the utilization of the homes. Nevertheless, reports of budget shortages persist. Therefore, it is vital that community representatives are included in the management of MWHs and the management continues to engage communities and establish sustainable revenue generation. Families play a crucial role in the initial decision of whether a woman should or should not go to MWHs and on subsequent adherence to the MWHs services. Likewise, studies in Ethiopia and other areas identified family and community support as crucial for the success of MWHs (23, 30, 31).

In both the qualitative and quantitative study, most mothers did not intend to stay the postnatal period due to family issues and lack of awareness of postnatal complications and interventions after delivery. This may discourage health facilities from keeping women and newborns during the critical postnatal hours and observe them for early complications. It is also a tradition to have all relatives together and celebrate the birth (32). Thus, staying at MWH would not make all these things easy. However, evidence suggests that in countries like Ethiopia where geographical access to health care is a key factor, establishing MWHs to keep mothers and newborns during the postnatal period has a significant role in reducing maternal and newborn deaths (21). Studies in Zimbabwe confirm that MWHs have produced significant results in improving maternal and neonatal outcomes (9, 32). Husbands who were interviewed, support women's stay during their postnatal period, if this is recommended by health care workers. This informs us of the importance of discussing with families to encourage a significant proportion of women and neonates to stay longer (postnatal) in waiting homes.

Conclusions:

Typologies of MWHs, their capabilities of holding clients at a time and availability of social and health care services vary from region to region. Protocols to manage the maternity waiting homes and admission and discharge criteria were not available elsewhere.

Though most mothers liked their interaction with each other, they were not satisfied with the health care services. The absence of someone who could care for their families at home; the negative perception of the community; the lack of bathrooms, kitchen and toilets in the MWHs; the fear of staying in a crowded room; problems related to food (cooking, amount, and/or frequency); and the lengthy stay at the homes prior to

giving birth, were some of the challenging factors the women stated.

Therefore, the Ministry of Health should prepare guidelines for the establishment and management of MWHs. There is also a need for the development of admission and discharging criteria and monitoring and quality control mechanisms. The health centers should assign a focal person to handle admissions, follow-up examinations, and record keeping. Because the demand for staying at the MWHs during their postnatal period is very low, it is important to have an extensive discussion with the community to create an understanding of potential postnatal complications that could occur and the treatment opportunities available at the health center.

Furthermore, the researchers recommend an analytical study to evaluate the impact of MWHs on the health outcomes of mothers and newborns.

Competing Interests

The authors declare that they have no competing interests.

Funding

United States Agency for International Development (USAID) funded this project with cooperative agreement number of GPO-I-00-06-00007-00 and AID-OAA-A-12-00047.

Acknowledgements

We would like to thank the United States Agency for International Development (USAID) for funding the "Expanding Demand, Access to, and Use of Maternal, Newborn, and Child Health Interventions" Project and this survey. The implementation of this survey would not have been possible without the support of the Federal Ministry of Health (FMoH) and regional health bureaus of Amhara, Oromia, SNNP, and Tigray regions.

We would like to acknowledge our colleague, Adey Abebe, for editing this manuscript. We acknowledge the interviewers and the supervisors for their hard work, dedication, and accomplishment of the fieldwork on schedule. Finally, we take this opportunity to extend our gratitude to all study participants who took their time to respond to the survey questionnaires and interview guides provide us with valuable information.

Endnotes

- A. The Last Ten Kilometers (L10K) Project implemented by JSI Research & Training Institute, Inc. with funding from Bill & Melinda Gates Foundation (BMGF), United Nations Children's Fund (UNICEF) and United States Agency for International Development (USAID), implements community-based maternal, newborn and child health strategies to contribute towards reducing under-5 mortality rate and maternal mortality ratio.
- B. *Survey CTO* is an Open Data Kit (ODK) based platform designed for survey data collection using mobile phones, tablets or computers. Further

information can be found at <http://www.surveycto.com/index.html>

- C. HDAs are community volunteers. Each HDA is responsible for five households (1:5) and is organized into subgroups of five HDAs which are led by one network team leader (1:30).

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