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# Facilitators for maternity waiting home utilisation at Attat Hospital: a mixed-methods study based on 45 years of experience

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## Abstract

**OBJECTIVE** To describe facilitators for maternity waiting home (MWH) utilisation from the perspectives of MWH users and health staff.

**METHODS** Data collection took place over several time frames between March 2014 and January 2018 at Attat Hospital in Ethiopia, using a mixed-methods design. This included seven in-depth interviews with staff and users, three focus group discussions with 28 users and attendants, a structured questionnaire among 244 users, a 2-week observation period and review of annual facility reports. The MWH was built in 1973; consistent records were kept from 1987. Data analysis was done through content analysis, descriptive statistics and data triangulation.

**RESULTS** The MWH at Attat Hospital has become a well-established intervention for high-risk pregnant women (1987–2017: from 142 users of 777 total attended births [18.3%] to 571 of 3693 [15.5%]; range 142–832 users). From 2008, utilisation stabilised at on average 662 women annually. Between 2014 and 2017, total attended births doubled following government promotion of facility births; MWH utilisation stayed approximately the same. Perceived high quality of care at the health facility was expressed by users to be an important reason for MWH utilisation (114 of 128 MWH users who had previous experience with maternity services at Attat Hospital rated overall services as good). A strong community public health programme and continuous provision of comprehensive emergency obstetric and neonatal care (EmONC) seemed to have contributed to realising community support for the MWH. The qualitative data also revealed that awareness of pregnancy-related complications and supportive husbands (203 of 244 supported the MWH stay financially) were key facilitators. Barriers to utilisation existed (no cooking utensils at the MWH [198/244]; attendant being away from work [190/244]), but users considered these necessary to overcome for the perceived benefit: a healthy mother and baby.

**CONCLUSIONS** Facilitators for MWH utilisation according to users and staff were perceived high-quality EmONC, integrated health services, awareness of pregnancy-related complications and the husband's support in overcoming barriers. If providing high-quality EmONC and integrating health services are prioritised, MWHs have the potential to become an accepted intervention in (rural) communities. Only then can MWHs improve access to EmONC.

**keywords** maternity waiting homes, maternal health, community health services, hospitals, community, health education, Ethiopia

## Introduction

Maternal health made it to the global health agenda in 1987, with the launch of the Safe Motherhood Initiative

and its objective to halve maternal mortality by 2000 [1]. Progress was slow until the introduction of the Millennium Development Goals: on average a 1.2% annual decline in global maternal mortality ratio. Between 2000

and 2015, the annual decline accelerated to 3.0% on average, although 5.5% would have been needed to achieve the target [2, 3]. With the intention to increase women's access to emergency obstetric and neonatal care (EmONC), maternity waiting homes (MWHs) were included in maternal health strategies since 2000 in South Africa, Zimbabwe, Zambia, Uganda, Malawi and Ethiopia [4–6]. MWHs are residential structures near a health centre or hospital that lodge high-risk pregnant women and those living far from a facility in the final weeks of pregnancy [7]. Although evidence for their effectiveness is low [8, 9], several studies have shown that availability and utilisation of an MWH had a positive effect on the number of institutionalised births and birth outcomes [8–16].

In 1973, Attat Our Lady of Lourdes Catholic Primary Hospital (hereafter Attat Hospital) established the first MWH in Ethiopia. This MWH is generally considered an example of good clinical practice, in terms of utilisation (>12 000 women used the intervention between 1987 and 2017) and birth outcomes [7, 10, 12, 16, 17]. Partly based on the experiences in Attat, the Ethiopian Ministry of Health incorporated MWHs into its national health strategy in 2014, aiming to reduce maternal deaths from 412 per 100 000 live births in 2016 to below 200 maternal deaths per 100 000 live births by 2020 [5, 6, 18]. By 2016, more than half of all facilities in Ethiopia had an MWH. However, at the time of the 2016 national EmONC assessment, mean occupancy was only two women, while mean capacity stood at seven [6].

In 1996, the crucial elements of an MWH were compiled by WHO: proper risk selection, a functioning referral linkage system, availability of EmONC and community support [7]. Many barriers that prevent women from utilising MWHs have been described, including poor awareness of the presence or benefits of an MWH, associated costs, being away from the household and poor quality of care at both the MWH and the adjacent facility [4, 8, 19–21]. However, information on the implementation of WHO's MWH elements over time and how barriers to utilisation can be overcome is scarce. The objective of this study was to describe factors that contributed to MWH utilisation at Attat Hospital, with a view to guide policy-makers in developing a blueprint for MWHs in Ethiopia and beyond.

## Methods

### Study design

A mixed-methods research design was employed, using semi-structured in-depth interviews (IDIs), focus group

discussions (FGDs), observations, a cross-sectional structured questionnaire and document review (Table 1). Data were collected over several periods between March 2014 and January 2018. This research is part of a larger study for Butajira General Hospital for which ethical approval was granted by Southern Nations, Nationalities, and People's Regional State Health Bureau in Hawassa, Ethiopia.

### Setting

The study was performed at Attat Hospital in the Western Gurage Zone. The hospital was established in 1969 by the Medical Mission Sisters, an international Catholic congregation. The first services included in-patient care and outreach programmes to neighbouring villages to vaccinate children, educate people and provide clean water sources. Between 1973 and 1999, traditional houses accommodated high-risk pregnant women to await birth on the hospital compound (Figure 1). Materials and workforce were supplied by the community. After fire destroyed the traditional houses, a modern building was constructed. The current structure consists of four rooms with electricity (48 beds in total, of which six beds are for postpartum women), a traditional kitchen, toilet and washing facilities, an outside water point and a vegetable garden [17]. Further details on the hospital and MWH were published previously [12, 16].

In 2017, the catchment population of Attat Hospital's curative services was approximately 800 000. Through continuous effort and adaptation, the initial outreach programme developed into an extensive public health (PH) programme, awarded with the WHO Primary Healthcare Prize in 1993. Since the government has become an active partner, they have taken over responsibility of primary healthcare services in several peasant associations (introduced by the Derg regime in 1975 [22]), reducing the target area of Attat Hospital's PH programme. In 2017, the programme targeted approximately 32 000 people, organised around nine peasant associations in Cheha district and bordering villages in surrounding districts. It comprised 32 women's groups (3699 women involved), 130 safe water sites, nine health posts and an immunisation programme. Villages involved have their own development committee, consisting of five to seven men and women chosen by the community. The committee has leadership over village activities: building and maintaining their health post, paying community health agents and water pump attendants and overseeing that villagers construct and use pit latrines. Through regular monitoring and evaluation meetings with Attat Hospital, these committees form the link between the hospital and the community. Women's groups meet every

**Table 1** Data collection tools and sampling techniques used to gain insight into the facilitators for MWH utilisation at Attat Hospital

Methods	Sampling	Participants	Data collection
<i>Qualitative</i>			
In-depth interviews (7 participants)	Purposeful	MWH users ( $n = 2$ ) Head Midwife ANC/MWH (from 1986) Medical Director/Gynaecologist Obstetrician (from 1997) Founding sister/Nurse (from 1969) Sister/Responsible for PH programme (1984–2000) PH programme coordinator (from 1982)	March 2014 March 2014, January 2018 January 2018
Focus group discussions (28 participants)	Convenience	MWH users ( $n = 8$ ) Male attendants* ( $n = 8$ ) Female attendants* ( $n = 12$ )	October 2014
Observations	N/A	Authors JL and NK observed for 2 weeks consecutively at Attat Hospital, the MWH and during outreach activities of the PH programme.	January 2018
<i>Quantitative</i>			
Cross-sectional survey (244 respondents)	Consecutive	MWH users	May–December 2014
Document review	N/A	Attat Hospital's available annual facility reports: 1977, 1978, 1980–1987, 1990–2017	January 2018

ANC, antenatal care; MWH, maternity waiting home; N/A, not applicable; PH, public health.

\*An attendant is someone who stays with the pregnant woman at the MWH, usually a family member.

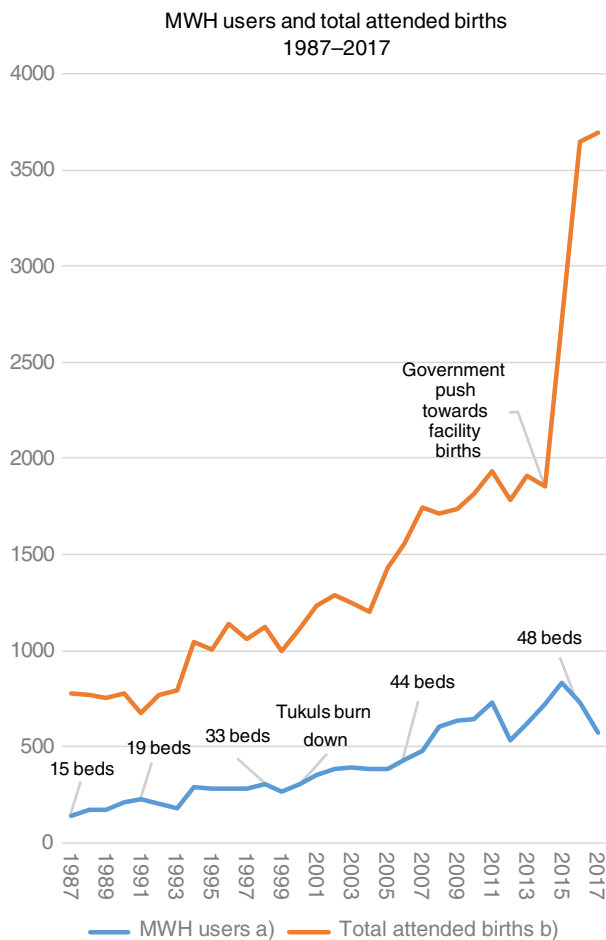
2 weeks to organise their revolving fund and have health education sessions. Before the introduction of the government's Health Extension programme, Attat Hospital trained 82 community health agents and 61 Traditional Birth Attendants, who provided basic primary care at health posts and health education at various locations and gatherings. In the last 5 years, Health Extension Workers have received additional training from Attat Hospital on safe motherhood. The community health agents and former Traditional Birth Attendants now focus on supporting the Health Extension Workers, taking part in public health campaigns and community mobilisation. Health education is a key element of the PH programme, comprising the 16 packages of the Health Extension programme as well as women's rights, taught through drama, role-play, songs, lectures and dialogue [17, 23].

### Participants

At the start of the study, two MWH users were selected for a formative IDI. These women had stayed at the MWH for more than 7 days, had attended school (grades 7 and 10), and were chosen for their strong verbal skills (Table 1). The objective was to gain a basic understanding of facilitators and barriers to MWH utilisation, which was used to finalise the questionnaire, IDI and FGD guides. Staff members were selected as key informants for

the IDIs based on their work experience at Attat Hospital, in the MWH or PH programme. For the FGDs, all eligible participants were recruited at the time of the visit. Inclusion criteria were staying at the MWH at the time of the FGD for at least 7 days as user or attendant (someone who stays with the pregnant woman at the MWH, usually the husband or another family member) and being able to communicate in Amharic. For the cross-sectional survey, a sample size of 223 was calculated using Epi Info StatCalc, with a 5% error margin and a 95% confidence interval, based on the number of women that stayed in the MWH in 2012 (534). Respondents were sampled consecutively at the MWH from May 2014 until the required sample size was achieved. In total, 244 MWH women took part in the survey. They were asked to participate towards the end of their stay, to ensure sufficient experience at the MWH. The median stay was 9 days (range 2–75); 225 of the 244 respondents (92.2%) had resided at the MWH for at least 7 days. Staff members and women unable to communicate in the national language Amharic or the local Gurage language were excluded. The response rate of MWH women who met the inclusion criteria was 100%. No records were kept on the number of MWH women that did not meet the inclusion criteria.

Informed written consent was sought from all study participants after explaining the nature of the research and the right to refuse participation. Literate participants



**Figure 1** MWH users and total attended births at Attat Hospital 1987–2017. (a) The number of beds was gradually expanded over the years to meet the higher demand. (b) From 2014, the Ethiopian government started to heavily promote facility births in the region. Between 2014 and 2017, this led to a 99% increase in the total number of attended births at Attat Hospital (from 1855 to 3693, respectively). In addition, more health centres (with maternity waiting rooms/homes) were constructed and ambulances were introduced [6, 34]. According to Attat Hospital management, the improved availability of maternity and referral services at health centres has likely raised the threshold level of healthcare workers to refer pregnant women to hospital, which may explain the slight decrease in the number of MWH users in 2017. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)].

read the consent form themselves and were then asked to sign. The form was read aloud to illiterate participants who signed with fingerprint. In addition, IDI and FGD participants gave their oral permission for audio recording. Consent for publication was given for the quotes of health staff in this paper.

## Data collection

For the IDIs with health staff, the observation visit and document review, we developed guides to structure our enquiry into the history and organisation of Attat Hospital, the MWH and the PH programme. Document review also allowed us to extract data on the number of hospital admissions, outpatient department visits, MWH users and total attended births in the years for which annual reports were available (Table 1) [see Appendix S1 for the guides for IDIs, FGDs, observation visit and document review]. The Adapted Three Delay Model by Gabrysch and Campbell was used to develop the questionnaire and guides for IDIs and FGDs with MWH users [see Appendix S2 and S3 for the questionnaire] [24]. This model, the 2-day training of the survey team and the development and processing of the questionnaire have been described in earlier publications [12, 19]. The IDI and FGDs in Amharic were done by author GG and a female medical doctor from Butajira Hospital, who received specific training from an experienced Ethiopian social science researcher. The other IDIs were conducted in English by authors TV, JL and NK. The questionnaire interviews were conducted by two female staff members from Attat Hospital's HIV counselling unit, who were known for their communicative skills and ability to speak Amharic and Gurage. The head of the MWH and Antenatal Care Unit (ANC) at Attat Hospital identified MWH users fitting the inclusion criteria and was responsible for checking the questionnaires for completeness. Data collectors visited the MWH every morning to recruit eligible participants. Data collection took place in an area ensuring privacy of the respondent and minimising the chance of disturbance. If the survey respondent was not proficient in Amharic, the data collector translated the questions into Gurage.

## Data analysis

IDIs and FGDs were transcribed verbatim and translated into English when applicable. English translations were checked against the Amharic transcription by an Ethiopian medical student. Content analysis was conducted to derive thematic patterns, using two guiding frameworks: WHO's four crucial elements of an MWH were used to analyse the health staff perspective and the Adapted Three Delay Model was used to analyse the user perspective on facilitators for MWH utilisation [7, 22]. TV, JL and NK coded the qualitative data independently and then liaised to verify interpretations. To present the profile of the surveyed MWH users, frequencies and percentages were calculated for categorical variables, while we

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used means and standard deviations for continuous variables. Due to some missing responses, percentages will not always add up to 100.0%. Document review was performed using Attat Hospital's annual reports of 1977–2017. Annual facility reports on the period 1969–1976 and on 1979, 1988 and 1989 were not available. Furthermore, annual reports before 1987 were less complete than those thereafter and lacked a consistent format, which limited quantitative reporting about those years. Data triangulation was carried out by considering whether findings from each method were convergent, complementary or contradictory [23]. We found that the perspectives of health staff and users were interrelated and mostly complementary. Therefore, we considered it more suitable to present their perspectives jointly and we summarised the emerging themes within three pillars: access to care, quality of care and integrated health services. Our results relate to three of the four elements of the WHO framework: community support, risk selection and skilled obstetric services; and to seven of the 18 determinants of the Gabrysch & Campbell framework: marital status, woman's autonomy, family composition (sociocultural factors), perceived quality of care, previous facility birth and complications (perceived benefit/need) and ability to pay (economic accessibility).

### Ethics approval and consent to participate

Ethical approval was obtained from the Southern Nations Nationalities and People Regional State Health Bureau in Hawassa, Ethiopia on February 4, 2014, with reference number 1-1/9466. Informed written consent was obtained from all participants after explaining the purpose of the study, the importance of their contribution as well as the right to refuse participation. Illiterate women were asked to sign using their fingerprint. The participant's name was excluded from the questionnaire to assure confidentiality.

## Results

### Access to care

Attat Hospital's long history as health facility in the region acts as facilitating factor for MWH utilisation. When the hospital was established, the surroundings lacked all basic facilities and services: no roads, safe water, soap or electricity. The population was unfamiliar with modern medicine and hesitant at first.

We had this nice medicine, and we had the infusions, people didn't have to die of diarrhoea. It was

like a miracle to the people. (...) Of course, in the beginning they did not want to be operated, we even had people getting up from the OR (operation) table and running away. (...) But they trusted us, and that was one thing. And they saw patients getting better. (Founding Sister/Nurse, IDI)

In the first year, 20 000 people were seen in the outpatient department, 92 patients were admitted and 33 births attended to, *vs.* approximately 90 000, 9000 and 3700 in 2017 respectively. In the early years, women in labour travelled long distances on foot or were carried in a basket to reach Attat Hospital. The founding sisters frequently observed obstructed labour, uterine ruptures and maternal deaths. The MWH was built to meet the needs of the target group.

We got this idea, that to really help them they have to stay. (...) Many people were really praying to get someone to help. (...) From the beginning the mothers were willing to stay. (Founding Sister/Nurse, IDI)

The number of MWH users increased with time and the number of beds was gradually expanded to meet the demand. From 2008, the MWH reached a relatively stable level of users of on average 662 per year. After government promotion of facility births, the total number of attended births at Attat Hospital doubled between 2014 and 2017; the number of MWH users stayed more or less the same (see Figure 1 for details). Between 1987 and 2017, uterine ruptures decreased from 5.8% to 0.2% and maternal deaths from 1.7% to 0.2% of all attended births.

Among both male and female participants, women's high-risk status was mentioned as main motivator for an MWH stay. Surveyed MWH users stated that complications during labour was the main reason for a facility birth in the past (79/149). For their latest pregnancy, users decided to seek care early. The husbands had the decisive role regarding utilisation and facilitated women's access to the MWH by providing financial support (203/244) (Table 2). Although the attendant being away from work ranked as second highest barrier to MWH utilisation (Table 3), many husbands (161/244) accompanied their wives during the MWH stay (Table 2). In addition to having a supportive husband, users were clear that support in the household was essential, which was mostly provided by family members (Table 2).

### Quality of care

Attat Hospital's continuous provision of effective preventive and emergency care helped build its reputation.

**Table 2** Profile of MWH users (*N* = 244)

Variables & categories	Frequency (percentage)
<i>Sociocultural</i>	
Attendant during MWH stay*	
Husband	161 (66.0)
Other family member	78 (32.0)
No one	2 (0.8)
Financial support to stay at MWH came from	
Husband/partner	203 (83.2)
Family member	15 (6.1)
Respondent	25 (10.2)
Social support at home during MWH stay came from	
Husband/partner	26 (10.7)
Family member	189 (77.5)
Neighbour/servant	5 (2.0)
No one	10 (4.1)
Other	9 (3.7)
<i>Perceived benefit/need</i>	
Ever given birth	
No	39 (16.0)
Yes (min. 1, max. 7; <i>M</i> 2.75 <i>SD</i> 1.639)	205 (84.0)
History of facility birth (min. 0, max. 5; <i>M</i> 1.30 <i>SD</i> 1.151)	
No (including Primigravida)	94 (38.5)
Yes, 1 facility birth	75 (30.7)
Yes, 2 or more facility births	74 (30.3)
History of home birth (min. 0, max. 6, <i>M</i> 1.42 <i>SD</i> 1.772)	
No (including Primigravida)	141 (57.8)
Yes, 1 facility birth	22 (9.0)
Yes, 2 or more facility births	80 (32.8)
Previous experience with Attat Hospital	
No	111 (45.5)
Yes, of which:	129 (52.9)
ANC	123 (95.3)
Ultrasound	105 (81.4)
Delivery care	104 (80.6)
Post-natal care	63 (48.8)
Referred to MWH by:	
Health post	10 (4.1)
Health centre	154 (63.1)
Hospital	73 (29.9)
Self-referred	5 (2.0)
Perceived advantages of MWH stay	
Closeness to EmONC	241 (98.8)
Saving life of mother	241 (98.8)
Saving life of baby	240 (98.3)
Rest before delivery	125 (51.2)
Number of spontaneously mentioned danger signs of possible pregnancy complications (min. 0, max. 8; <i>M</i> 3.10 <i>SD</i> 2.844)	
0	74 (30.3)
1–2	42 (17.2)
3–4	57 (23.3)
5–6	24 (9.8)
7–8	46 (18.9)
<i>Physical &amp; economic accessibility</i>	
Perceived ease/difficulty of finding transport to reach a facility in case labour starts at home†	

**Table 2** (Continued)

Variables & categories	Frequency (percentage)
Very easy	14 (5.7)
Easy	64 (26.2)
Difficult	149 (61.1)
Very difficult	13 (5.3)
Mode of transport to nearest hospital in case of emergency during home delivery†	
Walking/carried	144 (59.0)
Public transport	42 (17.2)
Ambulance	31 (12.7)
Horse and wagon	8 (3.3)
Private transport	2 (0.8)

ANC, Antenatal Care Unit; M, mean; max: maximum; min: minimum; MWH, maternity waiting home; EmONC, emergency obstetric and neonatal care; SD: standard deviation.

\*An attendant is someone who stays with the pregnant woman at the MWH, usually a family member.

†This study is part of a larger study; these two survey questions were part of a section on birth preparedness and complication readiness to determine whether those who had poor perceived physical accessibility to a facility were more likely to use an MWH.

Many MWH users had previous experience with Attat Hospital (129/244), mostly with maternity services (Table 2). Overall quality of care at Attat Hospital was perceived as good (Table 4), which was confirmed in the FGDs and IDIs.

We really trust the hospital because no single mother has died as far as I know from an operation. (Male attendant, FGD)

Hospital management acknowledged their responsibility in guaranteeing availability of comprehensive EmONC:

If a woman is in a waiting house and she needs a Caesarean section, but there is no doctor who can do it and she ends up losing her baby ... You do that two times and your reputation is gone.

(Medical Director/Gynaecologist-Obstetrician, IDI)

After good outcomes, the news is promoted by users in their villages and eventually from one generation to the next. Place of residence of MWH users revealed that positive word-of-mouth spread far beyond the boundaries of the PH programme.

It's people coming and having good deliveries and live babies. Going back and talking about it.

(Sister/Responsible PH program, IDI)

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Conversely, perceived quality of the MWH facility was considered less favourable. Privacy and hygiene were considered good, but facilities and space for the attendants poor (Table 4).

The supply of water and electricity is good but the mothers have nothing for entertainment and the attendants sleep on the floor and that is too uncomfortable because it is too cold.

(Male attendant, FGD)

In addition, barriers to utilisation existed (Table 3). MWH users explained that overcoming these barriers had not been easy, but they had considered it worth the sacrifice for the perceived benefit of the intervention.

I sold a bull to come here because I want to save the life of my wife. (Male attendant, FGD)

**Integrated health services**

From the beginning, the hospital closely collaborated with the community, focusing mainly on women. They were given a voice, which was unconventional and new to the people. Both female and male involvement was sought through the village development committees.

There was a lot of dialogue (...). We didn't go in and say 'you do this, you do that'. Oh no, it was a discussion.

I can still remember one of the meetings. The women sit in one place and the men in another. (...) It was the first time a woman spoke and everybody was surprised because that never happened. We were breaking down some of those barriers.

(Sister/Responsible PH program, IDI)

Awareness of the MWH intervention was created through Attat Hospital's extensive network of PH activities. Admission criteria and benefits of MWH use are communicated to all 40 referring facilities. Most surveyed women had been referred to the MWH by a health centre (154/244) (Table 2).

The MWH forms the link between ANC and emergency obstetric care. (Medical Director/Gynaecologist-Obstetrician, IDI)

**Discussion**

The most important facilitators for MWH utilisation at Attat Hospital were the perceived high quality of care at the health facility and large perceived benefit of an

**Table 3** Barriers to MWH utilisation according to MWH users (N = 244)

Variables & categories	Frequency (percentage)
Transport to and from the MWH	
Not affordable	97 (39.8)
Affordable	146 (59.8)
Food while staying at MWH	
Not affordable	146 (59.8)
Affordable	93 (38.1)
Bringing own cooking utensils to MWH	
Not possible	198 (81.1)
Possible	43 (17.6)
Stay at MWH 2–4 weeks before delivery	
Not possible	70 (28.7)
Possible	170 (69.7)
Stay attendant at MWH 2–4 weeks before delivery	
Not possible	81 (33.2)
Possible	159 (65.2)
Child care by others while staying at MWH (n = 183)*	
Not possible	50 (27.3)
Possible	133 (72.7)
Household care by others while staying at MWH	
Not possible	73 (29.9)
Possible	167 (68.4)
Being away from own work (n = 123)*	
Not possible	46 (37.4)
Possible/no work	74 (60.2)
Attendant being away from work (n = 235)*	
Not possible	190 (80.9)
Possible	45 (19.1)

MWH, maternity waiting home.

\*Not all respondents answered these questions, for one or more of the following reasons: they had no children at home, they did not have work outside the household, and/or because they either had no husband or the husband did not have a job.

MWH stay. Other important reasons for women to use the MWH were awareness of their high-risk status and support in overcoming barriers. This is the first study to look into facilitators regarding MWH utilisation that incorporates the perspectives from users and health staff in the context of 45 years of MWH experience.

There are several limitations to this study. First, findings are based on a single MWH and Attat Hospital's public health programme has a relatively small referral population. This MWH was chosen as study site to function as blueprint for a new MWH in the same zone. Resources were limited; therefore, we were only able to seek input from users, not from non-users in the community. Nonetheless, by incorporating health workers views, triangulating data and providing context behind certain notions like community support, we feel that we are able to add to the existing literature on MWHs. We realise that responses from conductor-administered tools might



T. Vermeiden *et al.* **Facilitators for maternity waiting home use****Table 4** Perceived quality of maternity care at Attat Hospital according to MWH users with a previous experience ( $n = 128$ )\* and at the MWH according to users ( $N = 244$ )

Variables & categories	Poor/reasonable Frequency (percentage)	Satisfactory/good Frequency (percentage)
Attat Hospital ( $n = 128$ )		
Overall service	15 (11.7)	111 (86.7)
Hygiene	14 (10.9)	112 (87.5)
Privacy	15 (11.7)	111 (86.7)
Availability supplies	14 (10.9)	110 (85.9)
Waiting times	26 (20.3)	99 (77.3)
Staff professionalism	29 (22.7)	98 (76.6)
Staff friendliness	22 (17.2)	105 (82.0)
Respect preferences	24 (18.8)	105 (82.0)
MWH ( $N = 244$ )		
Facilities	171 (70.1)	74 (30.3)
Space attendants/visitors	229 (93.9)	13 (5.3)
Hygiene	19 (7.8)	223 (91.4)
Privacy	4 (1.6)	236 (96.7)
Support women	1 (0.4)	239 (98.0)

\*Of the 244 surveyed MWH women, 129 (52.9%) had been to Attat Hospital prior to their MWH stay, of whom 128 had used one or several of the following maternity services: ANC, ultrasound, delivery care, post-natal care. These women rated Attat's quality of care of maternity services on the above included items.

be subject to social desirability bias. We therefore selected local, female, bilingual data collectors for the questionnaire to minimise information concealment and elicit honest responses. The Medical Doctors were chosen as data collectors for their excellent communicative skills and knowledge of maternity care. They presented themselves to participants as independent researchers, wearing informal clothing. Despite the use of audio recordings for verbatim transcription, data interpretation may be altered through translation. Although the qualitative data is limited in number of participants, we were able to collect all relevant information to answer our study questions. Lastly, the applied frameworks had their limitations. These were useful for analysis of providers' and users' perspectives, but less appropriate for describing the inter-relatedness of these perspectives and the complex interplay of factors impacting on access to MWHs.

Several studies have prioritised the need to improve facilities and quality of care at the MWH and lower barriers to increase MWH utilisation [21, 25–28]. This study, however, found that the quality of care at the health facility is more important. MWH users in Attat Hospital were characterised by an unfavourable sociodemographic profile, nonetheless demonstrated the ability to overcome barriers for the perceived benefit of an MWH stay [16]. Two retrospective cohort studies

demonstrated that birth outcomes among Attat's MWH women were indeed better than those who gave birth at Attat Hospital without using the MWH, as well as to those who gave birth in a different hospital within the same zone but without an MWH [12, 16].

The MWH in Attat Hospital is well-established within the community. Our findings describe that this was achieved through integration of in-patient services with a PH program, increasing the chance of a first encounter with the facility. Using a participatory approach, the PH team strives to empower the community, develop a cooperation based on mutual respect and effort, and create a sense of ownership towards both the hospital and its MWH. These findings are similar to those in Guatemala, where women's groups also proved effective in increasing MWHs utilisation [29].

All MWH users in Attat Hospital had experienced pregnancy-related complications, either in their current or previous pregnancy [16]. Half of the users had also experienced one or more uncomplicated home births. Awareness of the high-risk status of their latest pregnancy had motivated them to stay at the MWH. More than 50% of MWH users were able to mention three or more dangers signs of possible pregnancy complications, which is similar to results from a 2017 study among ANC users in Southern Ethiopia that had been exposed to regular educational sessions [30]. A 2010 community-based study found that only 30% of pregnant women knew two or more danger signs, compared to 66% in our study [31]. Our findings suggest that health education is an important component to facilitate MWH utilisation, including clear communication to women and their families about the indications for an MWH stay.

Few studies on MWHs cover a longer period of time [12–14, 16]. MWHs in Timor-Leste did not reach women living more than 5 km away from a facility, but the study was conducted shortly after establishing these MWHs [32]. Braat *et al.* found that users had travelled on average almost 2.5 h to reach the MWH at Attat Hospital [16]. Our findings suggest that it takes time for people to experience an MWH and promote it in their community. Future research should therefore include studies of longitudinal design, also involving non-users.

For the MWH intervention to be successfully implemented throughout Ethiopia, a wide gap still needs to be filled. In 2016, 91% of MWHs (or rooms) were located at health centres but only 5% of health centres performed all seven signal functions of basic EmONC. Overall, the met need for EmONC was merely 18%. Furthermore, only 17% of health centres had their own ambulance and 64% of health centres depended on the district ambulance for emergency transport [6]. Despite this unmet

need, the Ethiopian government heavily promotes all women to have an institutionalised birth. To facilitate MWH utilisation, improving quality of EmONC and the referral linkage system needs to be prioritised. Tangible recommendations were provided in the 2016 EmONC assessment report, including prioritising resources to facilities that lack only one or two signal functions, prioritising training of midwives at health centres, as well as making referral guidelines available in all facilities and ensuring their implementation [6]. For promotion of the MWH in the community, we support the current strategy of the Ethiopian government to work at the grass-roots level through Health Extension Workers, Health Development Armies and women's groups [5, 33]. This approach proved effective to establish trust and increase utilisation of services at Attat Hospital.

### Conclusion

High-quality EmONC at the health facility, integrated health services, awareness of pregnancy-related complications and the husband's support in overcoming barriers were considered to be crucial facilitators for MWH utilisation. If providing high-quality EmONC and integrating health services are prioritised, MWHs have the potential to become an accepted intervention in (rural) communities. Only then can MWHs improve access to EmONC.

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### Declarations

Written consent for publication was given by health staff in question for the quotes in this paper. The datasets used and analysed during the current study are available from the corresponding author on reasonable request. Laerdal Foundation (grant number 40171) supported this study as part of a PhD project of investigator TV. Data collection was funded by VSO Ethiopia and Otto Kranendonck Foundation. The funding bodies had no role in the design; collection, analysis and interpretation of data or; in writing the manuscript.

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**Supporting Information**

Additional Supporting Information may be found in the online version of this article:

**Appendix S1.** Guides IDIs, FDGs, observations.

**Appendix S2.** Questionnaire MWH users Amharic.

**Appendix S3.** Questionnaire MWH users English.

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