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Acceptability of Maternity Waiting Home and its Associated Factors Among Women in Southern Ethiopia; A Community-Based Cross-Sectional Study

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ABSTRACT

Introduction: Since 2015, Ethiopia has increased the implementation of maternity waiting home interventions as a holistic strategy to reduce its high rate of maternal mortality. However, pieces of evidence on the acceptability of maternity waiting homes and its associated factors are inadequate. This study aimed to evaluate the acceptability of maternity waiting homes and its associated factors using the 'Theoretical Framework of Acceptability' among women in Southern Ethiopia.

Methods: We conducted a community-based cross-sectional study between April 15 to May 15/ 2023. A sample size of 834 households with eligible women was selected using a multi-stage sampling technique. We collected data using a pre-tested structured questionnaire prepared by adapting the 'Theoretical Framework of Acceptability' and other variables from the literature reviewed. The binary analysis was employed and variables associated in bivariate were included in multivariate analysis of binary logistic regression using a Forward-wald method and the model goodness-of-fit was tested using Hosmer-Lemishow's method.

Results: A total of 834 women with complete information were included in the study and its response rate was 98.65%. The study revealed acceptability of maternity waiting homes was 21.5%. The acceptability of maternity waiting homes was associated with its perceived image in the community (AOR=6.25 (95%CI: 3.30-11.86)); perceived social influence (AOR = 3.30(95%CI: 1.73-6.30)); perceived affective attitude (AOR = 2.42(95%CI: 1.57-3.72)); and perceived burden to use (AOR = 0.40(95%CI: 0.24-0.65)).

Conclusions: Acceptability of maternity waiting homes is low in the study area. Women's perceived image, social influence, and affective attitude were key factors associated with the acceptability of maternity waiting homes. The maternity waiting home program should focus on improving women's perceptions and attitude towards maternity waiting homes and it is better to conduct advanced-level research on the issue.

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Introduction

A maternity waiting home (MWH) is a residence near a health facility with 24-hour emergency obstetric care (EmOC) services for pregnant women who are far from the facility to stay there in the last weeks of pregnancy for timely access to skilled healthcare during childbirth [1,2]. Globally, yet maternal mortality is far above the targeted level to be reduced. This is mainly due to poor utilization of maternal health services, particularly in many developing countries. It worsens among women living far away or across a challenging landscape from a healthcare facility [3]. To alleviate this public health burden; a maternity waiting home strategy is implemented as a comprehensive approach for women. Acceptability is a key factor for any health program's effectiveness

[4]. The utilization of MWH is low but its acceptability and associated factors among women remain uncertain [5].

Ethiopia is among the highest maternal mortality rates countries in the world, with 353 per 10000 live births [6]. Maternal delays in accessing emergency obstetric care are the major contributing factors to maternal mortality in developing countries [7]. It is due to distance and consequent delays in healthcare during childbirth besides delays at home to seek care and health facilities to contact care providers [8]. Currently, various strategies and targets are set to reduce maternal mortality, particularly in rural areas. For instance, in 2015, the World Health Organization (WHO) conditionally recommended that the MWHs strategy be implemented to ensure access to skilled care, especially in middle-and-low-income countries [9]. Ethiopia is one of the countries implementing the WHO's MWH initiation [10]. Studies

found that poor utilization of MWH by pregnant women. The Low MWH utilization was related to acceptance of the MWH among women and communities, long distances to reach the MWH, and culturally inappropriate care [11]. Evidence reveals acceptability is affected by many factors. For instance, among several predictors of acceptability of healthcare; the commonly reported include affective attitude towards an intervention, perceived burden to use an intervention, perceived effectiveness of the service, perceived ethicality of an intervention, perceived intervention coherence, perceived opportunity costs of an intervention, and perceived self-efficacy towards an intervention [4].

Even though women health achievements are yet far below the targeted goal; factors affecting the acceptability of MWHs for women remain uncertain [12]. Hence, the objectives of this study were to measure the acceptability of MWH and its associated factors among women in southern Ethiopia. It could help the program leaders and might be a baseline data for further studies.

Methods

Study Setting

The study was conducted in the Wolaita Zone, Southern Ethiopia. The central town for the Zone is Wolaita Sodo; located 379 kilometers (km) to the south of Addis Ababa, the capital city of Ethiopia. The Zone has 16 administrative Woredas and six town administrations with a total of 310,454 households with 88.51% rural inhabitants. Based on the Central Statistical Agency of Ethiopia's (CSA) 2020 population projection, it has a total population of 5,385,782 people with 50.11% female and 49.89% male.

The Zone has 358km of all-weather, and 425-kilometer dry-weather roads, for an average road density of 187 kilometers per 1000 square kilometers [13]. There are about 348 health posts, 73 health centers, six primary hospitals, two general hospitals, and one tertiary-level referral hospital in the zone [14]. This study was conducted in five randomly selected districts implementing MWH in their respective health facilities.

Study Design and Period

A community-based cross-sectional study design was used to assess MWHs acceptability and its associated factors based on adapted TFA among women in the Wolaita Zone, Southern Ethiopia. The study was conducted between April 15 to May 15/ 2023.

Population

The source population was all women of reproductive age, and the study population was all women who were randomly selected from the source population.

Inclusion and Exclusion Criteria

We included all the selected women, who have given birth in the last year, in the study area during the study period. However, we excluded women who were age < 18 years, age > 49 years, seriously ill, unable to speak/listen, or resided less than six months in the study area.

Sample Size Determination

We calculated the study sample size using a single population proportion formula. The assumptions of a 5% margin of error, 95% confidence level, and 50%(for no previously conducted study) proportion of acceptability of MWHs were used by adding a 10% non-response rate. The calculated sample size was 384

households. We considered a 10% non-response rate and sampling design-effect factor 2; the final sample size calculated was 846 households with eligible women.

Sampling Technique

The authors used a multi-stage sampling approach. First, Woredas were selected by simple random sampling technique, followed by selecting eligible study Kebeles by simple random sampling technique. Then, the study households were selected using a systematic random sampling method. To select the study participants; the authors proportionally allocated the total sample size. Based on the estimated target population at selected kebeles and calculated sample size, the interval values were determined at the kebele level. Finally, the first household was selected using the lottery method. If the selected household was not eligible, the next proceeding household was selected. In a given household if one eligible woman lived together, one of them was chosen randomly.

Data Collection Tools and Techniques

The data were collected using a structured questionnaire prepared by adapting the 'theoretical framework of acceptability' and the literature reviewed [4,15-24]. The tool included variables such as sociodemographic, individual-related, institutional-related, and predictor components of TFA, and constructs of acceptability.

We employed face-to-face interviews data collection technique. The trained and previously experienced data collectors (n=24) who hold diplomas in nursing or midwifery but not working in the study area were recruited, with the guidance of health extension workers of the kebeles to identify households with eligible study participants. The investigators and four BSc. degree holders in health sciences (two health officers and two nurses) supervised the data collection. They were trained for two days by the investigators about the study instrument, consent form, and data collection procedures.

Variables and Measurements

The authors adapted variables from the TFA. The variables included were sociodemographic details, knowledge and attitude towards maternal health, physical access to the health facility, decision maker to seek healthcare, predictors of acceptability from TFA, and three constructs of the dependent variable (acceptability of MWH).

Acceptability is defined as a multi-faced construct that reflects the extent to which people receiving healthcare intervention consider it to be appropriate, based on anticipated or experiential cognitive emotional response to the intervention [4].

Measurements of Variables

In this study acceptability of MWH was measured using the three constructs; perceived usefulness of MWH; perceived ease of using MWH; and attitude towards MWH.

The perceived usefulness of MWH was measured using responses to four questions with a four-point Likert scale (1- the lowest value and 4- the highest value) provided. The points scored from the four questions (the minimum point was 4 and the maximum scored point was 16) were computed for the mean value and finally, those scored less than the mean value were categorized 'negative' perception of the usefulness of MWH, and those scored the mean or greater than the mean score were categorized 'positive' perception towards the usefulness of MWH.

The perceived ease of use towards MWH was assessed again using responses of the other four respective questions with a four-point Likert scale (1 the lowest value and 4- the highest value) provided. The points are computed similarly to the above one. The computed score less than the mean value was categorized as a 'negative' perception towards ease-of-use MWH, and those who scored the mean or greater than the mean score was categorized as a 'positive' perception towards ease-of-use MWH. The last construct of acceptability, attitude towards the MWH intervention, was measured in a similar to the above approaches mentioned with the 5 questions responses given.

Finally, the acceptability of MWH was measured using the responses of those three construct questions (13 questions with a minimum point 13 and maximum 52point value); computed scores less than the mean value were categorized as 'low' acceptability towards MWH intervention; and those scored the mean or greater than the mean score were categorized 'high' acceptability towards MWH intervention [4,25]. The four-point Likert scale was revised from 5-point Likert scale based on the pre-test conducted found it more convenient to the respondents to understand.

Sociodemographic variables included the women's age, education, occupation, number of family members, and average monthly income of the household. Knowledge about the MCH variable was measured using 8 items inquiring about knowledge of MCH. All the items were prepared with "yes" or "no" answer questions that were coded '0' for the wrong answer and '1' for the correct answer. Finally, the scores computed out of 100% and those scored $\leq 37.5\%$ (answered ≤ 3 items correctly from 8) were categorized as poor knowledge, scored $37.5\% - 62.5\%$ (answered 4-5 items correctly) were categorized as satisfactory knowledge and those scored $>62.5\%$ (answered >5 items from the given 10 items) were categorized high-level knowledge towards MCH [26]. Knowledge of MWH was assessed with five items ('yes' or 'no') inquiring about knowledge of MWHs.

The acceptability of MWH was assessed using perception constructs, including affective attitude towards MWH (how an individual feels about the intervention), a perceived burden to use MWH (the perceived amount of effort required to participate in the intervention), the perceived ethicality of MWH intervention (the extent to which the MWH has a good fit with an individual's value system) of MWH, perceived intervention coherence (the extent to which the participant understands an MWH and how it works) of MWH, perceived effectiveness of a WMH intervention (the extent to which an MWH is perceived as likely to achieve its purpose) of MWH, and perceived self-efficacy (the participants' confidence that they can perform the required to participate in an MWH) to utilize MWH.

Each construct were measured using 4 questions with a 4-point Likert-scale range where 1 (is the lowest) to 4 (the highest) value. Finally, total scores were computed and those who scored less than the mean were categorized as poor/low perception of a given predictor, and those who scored mean or above the mean were categorized as positive/high perception of the predictor assessed.

In addition to the above-mentioned variables, the study included a new category of variables of women-centered interventions in the community aimed at building the economic and decision-making power of women. We assessed the women's membership status of community-based health insurance, safety-net programs, microfinance loan beneficiaries, and community-based water

supply interventions. The interventions are supposed to capacitate women and reduce the workload in the household. Thus, we are interested in assessing these variables if any association with women's acceptability of MWH services i.e. healthcare-seeking behavior.

Data Quality Control

The questionnaire prepared in English version was translated into the local (Wolaitigna) language and back-translated into English version by a different language expert with the help of a health professional. The authors provided training for the data collectors and supervisors for consecutive two days. The training aimed to equip on the study problem notion, objectives, information confidentiality, informed consent, and interview techniques. We pre-tested the tool on 10% of the study participants out of the selected study area but it has a similar setting (Damot Gale Woreda). After pre-testing, all necessary amendments were made. During the data collection period, we employed closed supervision to ensure the data validity and consistency.

Data Processing and Analysis

The data collected were checked for completeness, coded, and entered into Statistical Package for Social Science (SPSS) version 25(IBM) for processing and analysis. We edited and cleaned the data before the actual analysis. We used descriptive statistics for categorical variables to show frequencies and percentages; and for the continuous variables to compute mean and standard deviation (SD). Cronbach's alpha values were computed to examine the internal consistency of acceptability constructs. The Cronbach's alpha-value of greater than 0.7 was accepted.

A binary logistic regression for bivariate analysis was done between an independent and dependent variable with a p-value cut-off point <0.25 . Adjusted odds ratio(AOD) with 95% confidence interval (CI) was computed to see the presence of association between the dependent and independent variables. We used a multivariate logistic regression with the Forward-wald method and Hosmer-Lemeshow's test at p-value ≤ 0.05 statistical significance.

Ethical Consideration

The study was employed according to Helsinki's ethical principles for medical research guidelines of health research ethics. An ethical approval letter was obtained from the Research and Development Committee (RDC) of the College of Health Sciences and Medicine (CHSM), Wolaita Sodo University (WSU) with ref. No- *ወ.ሰ.ዩ* 41/33/83. A letter of permission was obtained from the Wolaita Zonal Health Department and respective study district health offices and health centers (HCs). A verbal informed consent was obtained from each of the study participants. Every participant's personal information was kept strictly confidential.

Results

A total of 834 participants with complete information were included in the study. Its response rate was 98.58% the rest 14 women's data were excluded for incomplete information. Among the total women who participated, maternity waiting home acceptability was 21.5% (179). Most of the Theoretical Framework of Acceptability predictors were found associated with the acceptability of MWH.

Of the total women participated, almost half of them, 403 (48.3 %) were aged between 25-30 years. The mean participants' age was 29.27 years with a standard deviation (SD) of 4.12 years. Regarding educational status, about 353(42.3%) women completed

secondary school but about 18.3% did not attend formal education. Whilst in the occupational status, the majority, 498(59.7%) women were housewives. Regarding average monthly income, about 321(38.5%) households reported it between 1501-2500ETB. Whereas the households' asset ownership, about 239(28.7%), 222(26.6%), and 373(44.7%) women-owned poor, moderate, and sufficient amount respectively. Whilst, 630(75.5%) of the participants' number of household members was five or above. (Table 1)

Personal and Interpersonal-Related Characteristics

Among 834 total participants, about 447(53.6%), 217(26.0%), and 170(20.4%) women had moderate, high, and low knowledge of MCH healthcare services respectively. Whilst, about 509(61.0%) women had utilized MCH services during the last birth and the rest 325(39.0%) had not utilized it.

Regarding the decision-maker to visit a healthcare facility (HF) when needed, more than half, 445(53.4%) women had to get permission from their partner whereas only 232(27.8%) women decided by themselves to visit a health facility when they need. The study assessed the past obstetric history of the participant women and it revealed that about 244(29.3%) women had faced problems related to pregnancy or pregnancy outcomes in the past. The decision-making and the ever-faced problem of pregnancy revealed significant differences among women who had good acceptability of MWH and their counterparts. (Table 2)

Acceptability of MWH and its Construct Variables

Out of 834 total participants, about 178(21.3%) women had acceptability to MWH and the rest 656(78.7%) women had no acceptability. The acceptability of MWH among the study participants was measured with three constructs; perceived usefulness, perceived ease of use, and attitude toward MWH [4].

Among the total participants, about 335(40.2%), 168(20.1%), and 176(21.3%) women perceived MWH as useful; perceived MWH as easy to use; and had a positive attitude towards MWH respectively. (Table 3)

Multivariate Analysis of Variables

The authors carried out a multivariate binary logistic regression to identify variables independently associated with the acceptability of MWH. As shown in Table 5, variables such as women's perceived image of using MWH in the community, perceived social influence to use MWH, women's affective attitude towards MWH, age, and educational status of the women were independently associated with the acceptability of MWH. On the other hand, most of the variables studied were associated with the dependent variable in bivariate analysis but were found insignificant in the multivariate analysis we computed.

The odds of acceptability of MWH were about 6.2-fold higher for women who perceived the image of using MWH in the community as positive than those women who perceived the image of using MWH in the community as negative (AOR =6.253; 95%CI:3.298, 11.856). Whilst, the likelihood of acceptability of MWH for women who had perceived positive social influence in the community to use MWH was about 3.3 times higher than their counterparts (AOR =3.300; 95%CI:1.727, 6.303). In addition, the study revealed that the likelihood of acceptability to MWH was about 2.4 times higher among women who had a positive affective attitude towards MWH than those women who had a negative affective attitude towards MWH (AOR =2.418; 95%CI:1.574,3.716). Regarding age as a

factor; the likelihood of acceptability of MWH among women aged 25- 30 years old was about 49% less than those women aged <25 years old (AOR=0.0510; 95%CI: 0.311, 0.837). On the contrary; the likelihood of acceptability of MWH among women who were >35 years old was about 4fold higher than those women who were <=25 years old (AOR =4.033; 95%CI; 1.757, 9.258). The other variable associated independently was the educational status of the women; acceptability of MWH is lower for women who had not attended formal education than those women who attended primary, secondary, or higher educational levels (Table 4).

Discussion

This study was conducted among women who recently gave birth and residing in a rural community; using a cross-sectional design to measure the acceptability of MWH and identify its associated factors adapting the TFA in our study [4]. To control a recall bias, we used participants who gave birth in the last year. To better investigate the predictors of the study problem, we adapted. To the level of investigators' knowledge; this is the first study in the study area.

The objectives of the study were to determine the acceptability of MWH and to identify its associated factors using adapted TFA. We measured the acceptability of MWH using three construct components with 4-point Likert-scale items for each construct [4]. We analyzed the magnitude of acceptability and computed bivariate and multivariate logistic regression to identify variables associated with the acceptability of MWH.

Our study identified the magnitude of acceptability of MWH and its very important associated factors among women; such as a perceived image of using MWH in the community, a perceived social influence to use MWH, affective attitude towards MWH, and perceived burden were significantly associated with MWH of acceptability.

Moreover, the current findings revealed the acceptability of MWH among the study participants was 21.5%. This finding is relatively consistent with the previous studies conducted in different parts of Ethiopia on utilization of MWH [15,18,27,28]. On the contrary, it was lower than other studies conducted in different parts of Ethiopia [19,24,27, 29-33]. It was also very far below when compared with the FMOH-Ethiopia targeted to achieve MWH utilization on the guideline set [34]. The reason for these differences might be the study area, study period, study population, sample size, and socioeconomic factors difference between the previous studies and our study. It also may be our study was on the acceptability but the others are directly about utilization of MWH. On the other hand, this finding was to some extent higher than the studies conducted in Ethiopia [17,35]. The reasons for these differences might be the study period and socioeconomic factors difference between them.

Among the factors independently associated with the acceptability of MWH, the perceived image of using MWH in the community was an important associated factor with the acceptability of MWH among women. The odds of acceptability of MWH was about 17-fold higher for women who perceived a positive image of using MWH in the community than those women who perceived a negative image of using MWH in the community. This finding was consistent with the theoretical framework of the acceptability concept stated [4]. This is supported by the fact that human behavior can be influenced by feedback from family, friends, or community members for a given practice or action. That means,

if the community members give positive feedback towards an individual's given practice, it is more likely to be repeated and developed into behavior. On the contrary, if the community assigns a negative image towards MWH, women in that community are affected with a lack of confidence, and the acceptability of the action may be low.

This study also revealed women perceived social influence to use MWH in the community was another factor associated with the acceptability of MWH. Those women who perceived there was a positive social influence to use MWH are more likely to have acceptability of MWH than those women who did not perceive there was a positive social influence in the community to use MWH. This is supported by the other literature [4]. The other factor found independently associated with the acceptability of MWH was women's affective attitude towards MWH. Those women who have perceived behavioral intention to use MWH are 2 times more likely to access maternal healthcare services than their counterparts. This is consistent with the previous related studies conducted [4]. The possible reasons for this are women who feel that acceptability of a given service or product among other factors, intention towards the service or product.

The study identified the age of women as a factor associated with the acceptability of MWH among women. The odds of women who aged 25-30 years were 86% less likely to have acceptability of MWH than those aged < 25 years. Similarly, the likelihood of acceptability of MWH among women aged between 30-35 years is 98% less than those aged < 25 years. In contrarily, the odds of acceptability of MWH among women who were >35 years were 8 times higher than those women who were < 25 years old. This is supported by the previous study findings [19,24,27, 29-33]. The possible reasons for this are women, who are in the age range 26-35 years possibly with a larger number of family members, and engage in stronger social and religious responsibilities; these may result in a higher burden of work-load in the household and may get busier. These factors might affect the women's time which can result in low or no acceptability of MWH.

The other factor determining the acceptability of MWH was women's educational status. Those women who had not attended formal education and attended higher educational levels were less likely to have acceptability of MWH than those women who were housewives. This is consistent with the previous related studies conducted [32, 36-40]. The possible reasons for this are these women who did not attend formal education might have low awareness for lack of information particularly for those transmitted in the public media which are transmitted in the national language (Amharic) which is different from women's local language (Wolaitigna). Whereas women who attended higher education might have adequate knowledge about the preventive methods of maternal healthcare and might be engaged in controlling their health status. Thus, they may have a low need and demand for healthcare from the health facilities; this is supported by the 'Demand for Healthcare Model'. This situation may result in low or no acceptability of MWH to stay in the last weeks of pregnancy but they might visit a healthcare facility during labor to get delivery care from skilled health professionals.

In the summary; the variables such as perceived image, behavioral intention, social influence, age, and occupation are independently associated with the acceptability of MWH.

On the other hand; variables such as occupational status, monthly income, household asset ownership, economic supportive engagements, and the rest components of TFA were found associated in bivariate but not in multivariate analysis. These findings contradict some other studies conducted on maternal health service utilization in the region as well as in Ethiopia [32, 36-40]. This disparity might be due to the difference in the sample size, the study population, and/or the study area. The other assessed variables were not associated at all with MWH acceptability in our study but were associated with the previous studies conducted locally and globally [32, 36-40]. The possible reasons for these differences might be the difference between study area, study period, study population, sample size, and socioeconomic difference between the previous studies and the current study.

Limitations

Although the study has revealed important determinants of the acceptability of MWH among women, it has some limitations. The cross-sectional study applied in this study basically cannot establish temporal relationships between cause and effect, thus, it is difficult to state the causal association in the study. In addition, the lack of literature on the acceptability of MWH with TFA was limited to discussing the findings of this study adequately.

Conclusions

The acceptability of MWH in the study area is low. The factors associated with the acceptability of MWH among women are perceived image to use MWH in the community, perceived social influence, affective attitude towards MWH, perceived burden to use MWH, age of the women, and educational status of the women.

Therefore, we suggest that the policy, operational, and researchers give concern based on the identified gaps. At the policy level, it is better to give attention to work on the women's or demand side factors not only on the supply side. At the operational, particularly at the Woreda and Zonal level in the study area to work on improving women's perception and attitude towards maternity waiting homes by disseminating behavior changing communication. Finally, the authors recommend conducting further studies to generate stronger pieces of evidence.

Data Availability

The data used in the review can be accessed from the corresponding author upon a reasonable request.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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Wolaita Sodo University supported the study financially.

Ethical Approval

The study obtained ethical approval from the Wolaita Sodo University Institutional Review Board.

Authors' contribution: Authors; KT, MG, and KD initiated and designed the study. KT, MG, KD, and MM conducted analysis and interpretation of the results. MG, KD, and MM prepared the draft of the manuscript. All authors read and agreed on the final work of the paper.

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