

Utilization of Maternity Waiting Homes and Associated Factors among Pregnant Women in Kirehe District, Rwanda

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Abstract

Maternal mortality remains a significant public health concern despite global and national efforts to improve maternal health outcomes. In Rwanda, although maternal mortality declined from 1,071 to 203 deaths per 100,000 live births between 2000 and 2020, preventable causes related to delays in accessing care persist, particularly in rural areas. Maternity waiting homes (MWHs) have been recommended by the World Health Organization as a strategy to reduce delays in reaching skilled obstetric care. However, their utilization remains limited and not well documented in rural districts such as Kirehe. Understanding the factors influencing the utilization of maternity waiting homes is important for informing maternal health interventions and policies aimed at improving access to skilled obstetric care and reducing preventable maternal deaths in rural communities. This study aimed to assess the level of utilization of maternity waiting homes and identify socio-demographic and obstetric factors associated with their use among pregnant women in Kirehe District, Rwanda. A quantitative approach using a descriptive cross-sectional study design was employed. The study was conducted in selected health facilities in Kirehe District among pregnant women and recently delivered women aged 15–49 years. A sample size of 300 respondents was determined using Yamane's formula and selected through a multistage sampling technique, including purposive selection of the district, random selection of health facilities, and systematic random sampling of participants. Data were collected using a structured questionnaire, pretested for validity and reliability (Cronbach's $\alpha \geq 0.7$). Data were analyzed using SPSS version 26. Descriptive statistics were used to summarize variables, while binary logistic regression analysis (bivariate and multivariate) identified factors associated with maternity waiting home utilization. Variables with $p \leq 0.25$ in bivariate analysis were included in the multivariate model. Statistical significance was set at $p < 0.05$, and adjusted odds ratios (AOR) with 95% confidence intervals were reported. The findings revealed that 62.0% of respondents had heard about maternity waiting homes, while only 46.3% reported utilizing them. The majority of respondents were aged 25–34 years (39.3%), married (75.0%), and residing in rural areas (69.0%). More than half (53.7%) belonged to low-income households, and 56.3% reported difficulty accessing transport services. Multivariate logistic regression analysis showed that household income, partner occupation, access to transport, and awareness of maternity waiting homes were significantly associated with utilization. Women from low-income households were more likely to utilize MWHs compared to those from high-income households (AOR = 2.398, 95% CI: 1.153–4.987, $p = 0.019$). Women whose partners were farmers were less likely to utilize MWHs (AOR = 0.491, 95% CI: 0.244–0.989, $p = 0.046$). Similarly, women with easy access to transport were less likely to use MWHs (AOR = 0.437, 95% CI: 0.268–0.714, $p = 0.001$). Awareness of MWHs was also significantly associated with

utilization (AOR = 0.372, 95% CI: 0.228–0.607, $p < 0.001$). Obstetric factors including gravidity ($p = 0.934$), parity ($p = 0.589$), antenatal care attendance ($p = 0.104$), number of ANC visits ($p = 0.372$), and birth planning ($p = 0.197$) were not statistically significant. The study concludes that utilization of maternity waiting homes in Kirehe District remains low and is mainly influenced by socio-economic and accessibility-related factors rather than obstetric characteristics. Strengthening community awareness, improving accessibility to maternity waiting homes, and addressing transport-related barriers are essential strategies for enhancing utilization and improving maternal health outcomes in rural Rwanda.

Keywords: Maternal mortality; Maternity Waiting Homes; Utilization; Maternal health; Socio-demographic factors; Access to healthcare; Kirehe District, Rwanda.

Background

Worldwide, pregnant women from rural areas or vulnerable sites are more likely to be exposed to obstetric complications and pregnancy related deaths (Dereje et al., 2022a). World Health Organization (WHO) introduced maternity waiting homes as one of the strategies for the safe motherhood initiatives so that women have easy access to skilled obstetric care (World Health Statistics 2019, n.d.).

Over the past two decades, Rwanda has made remarkable progress in improving maternal health outcomes. The maternal mortality ratio declined significantly by about 79%, from 1,071 deaths per 100,000 live births in 2000 to approximately 203 in 2020, reflecting strong national efforts to expand access to healthcare services (Tayebwa et al., n.d.-a). Despite this achievement, maternal mortality has not been completely eliminated and has shown signs of stagnation in recent years. Many of these deaths are still caused by preventable conditions such as postpartum haemorrhage, hypertensive disorders, unsafe abortion, and obstructed labour, which are often linked to delays in seeking care, reaching health facilities, or receiving timely and adequate treatment (Penn-Kekana et al., 2017).

To address maternal health challenges, Rwanda has implemented several strategies, including the expansion of health facilities, the use of community health workers, and the introduction of community-based health insurance schemes (Benimana et al., 2018). These interventions have contributed to a high rate of institutional delivery, with about 94–95% of women giving birth in health facilities, according to the National Institute of Statistics of Rwanda. However, improving access alone has not been sufficient to further reduce maternal deaths. The persistence of delays particularly among women living in rural and remote areas suggests the need for additional interventions that ensure timely access to skilled obstetric care (Gordon et al., 2025).

One such intervention recommended by the World Health Organization is the use of maternity waiting homes (MWHs) (World Health Statistics 2019, n.d.). MWHs are residential facilities located near health centers or hospitals where pregnant women can stay as they approach delivery, especially those at high risk or those who live far from healthcare services (Gordon et al., 2025, 2025). By reducing the distance between pregnant women and skilled birth attendants at the onset of labor, MWHs help address the critical delay in reaching care (Gurara et al., 2022). Recent global evidence shows that MWHs can improve access to skilled delivery services, increase postnatal care utilization, and significantly reduce maternal and neonatal complications (Katangolo-Nakashwa et al., 2025).

The benefits of maternity waiting homes have been demonstrated in several low-resource settings. Studies and meta-analyses indicate that women who use MWHs are more likely to deliver in health facilities and experience better outcomes compared to non-users (Dereje et al., 2022b). In addition, facilities with MWHs

report lower rates of perinatal mortality and obstetric complications (Kurji et al., 2021). In Rwanda specifically, emerging evidence suggests that women who utilized maternity waiting homes experienced fewer complications such as stillbirths, postpartum haemorrhage, and unnecessary caesarean sections compared to those who did not use these services. This highlights the potential of MWHs as an effective complementary strategy in improving maternal health outcomes (Tayebwa et al., n.d.-b).

Despite these benefits, the implementation and utilization of maternity waiting homes remain limited and inconsistent across different settings. Research has shown that several factors influence their use, including women's level of awareness, socio-economic status, cultural beliefs, decision-making power, and support from family members, particularly husbands (Degife et al., 2025). Other barriers include long distances, indirect costs, and perceptions about the quality and comfort of the facilities (Yihune Teshale et al., 2025). On the health system side, challenges such as inadequate infrastructure, lack of basic services, and poor integration of MWHs into routine maternal healthcare can also discourage their use (Yihune Teshale et al., 2025).

In Rwanda, maternity waiting homes are still not widely established, and their role in the national maternal health strategy remains limited (Tayebwa et al., n.d.-c). Kirehe District, located in the Eastern Province, is predominantly rural and may face unique challenges related to access to maternal healthcare services. Understanding the level of utilization of maternity waiting homes and the factors influencing their use among pregnant women in Kirehe District is therefore essential. Such information help to inform policies and interventions aimed at improving access to timely obstetric care and further reducing maternal and neonatal mortality in Rwanda.

Research Methodology

This study adopted a quantitative cross-sectional research design to examine factors influencing the utilization of maternity waiting homes (MWHs) among women of reproductive age in Kirehe District. A quantitative approach was considered appropriate because it focuses on the collection and analysis of numerical data to determine relationships between variables. The cross-sectional design enabled the researcher to collect data from the study population at a single point in time in order to assess the level of MWH utilization and identify associated socio-demographic and obstetric factors. Data were collected using structured questionnaires administered to pregnant women attending antenatal care services and recently delivered women in selected health facilities. The collected data were analyzed using statistical techniques, including descriptive statistics and binary logistic regression, to determine the strength and direction of associations between independent variables and utilization of maternity waiting homes.

Research Design

The study used a descriptive cross-sectional research design. This design is suitable for collecting data at a single point in time and describing the characteristics of a population while also examining relationships between variables. It allows the researcher to assess the prevalence of maternity waiting home utilization and analyze associated factors without manipulating any variables (Capili, 2021). The cross-sectional design is cost-effective, time-efficient, and appropriate for public health studies where the objective is to identify predictors of a health outcome within a defined population.

Location of the Study

The study was conducted in Kirehe District, located in the Eastern Province of Rwanda. Kirehe is predom-

minantly rural and characterized by scattered settlements, hilly terrain, and long distances between communities and health facilities. The district has several health centers that provide maternal health services, including maternity waiting homes for pregnant women from remote areas. Despite these services, utilization remains a concern due to geographic, economic, and socio-cultural barriers, making it an appropriate setting for this study.

Target Population

The target population of this study consisted of pregnant women of reproductive age (15–49 years) residing in Kirehe District and attending antenatal care (ANC) services or recently delivered in selected health facilities. These women were considered appropriate respondents because they are either current users or potential users of maternity waiting homes. They directly interact with maternal health services and are therefore in a good position to provide reliable information on utilization patterns and factors influencing the use of maternity waiting homes in the district.

Sampling Techniques and Sample Size

Sample Size

The sample size for this study was determined using Yamane’s formula (1967) for finite populations, which is commonly applied in social science and public health research when the population size is known. The formula is expressed as:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = required sample size

N = total population of pregnant women of reproductive age (15–49 years) attending ANC or recently delivered in selected health facilities in Kirehe District

e = margin of error (0.05)

Assuming a known study population of pregnant and postnatal women in selected health facilities in Kirehe District, the computation yielded a sample size that was rounded to ensure adequacy for statistical analysis.

To ensure sufficient statistical power for binary logistic regression analysis, N=1500 a final sample size of 300 respondents was adopted for the study. This sample size was considered adequate to provide reliable and representative data for examining the utilization and factors associated with the use of maternity waiting homes among pregnant women.

Therefore, the study included: 300 pregnant women of reproductive age (15–49 years) residing in Kirehe District and attending antenatal care (ANC) services or recently delivered in selected health facilities.

This sample size ensured representativeness of the target population and was sufficient for identifying significant predictors of maternity waiting home utilization using logistic regression analysis.

Table 1: Health centers selected in in this study

Health Facility	ANC Population	Sample Allocation
Kirehe Health Center	400	80
Nyarubuye Health Center	300	60
Ntaruka Health Center	250	50

Musaza Health Center	350	70
Nyabitare Health Center	200	40
Total	1500	300

Sampling Techniques

The study employed a multistage sampling technique to ensure representativeness and reduce selection bias. First, Kirehe District was purposively selected due to its relevance to the study topic. Secondly, health facilities with maternity waiting homes were selected using simple random sampling to give equal chances of inclusion. Finally, systematic random sampling was used to select eligible women from antenatal and postnatal registers. This approach ensured that every selected respondent had an equal and independent chance of being included in the study, enhancing the reliability of the findings.

Data Collection Instruments

Data were collected using a structured questionnaire developed in line with the study objectives. The questionnaire consisted of closed-ended questions designed to collect quantitative data on socio-demographic characteristics, economic status, socio-cultural influences, health service-related factors, and utilization of maternity waiting homes. The use of structured questions allowed for uniform responses, which facilitated statistical analysis using logistic regression. The questionnaire was administered in a way that ensured clarity, consistency, and ease of understanding for all respondents.

Piloting of Research Instruments

A pilot study was conducted in a health facility outside the selected study area to test the validity and clarity of the research instruments. The pilot study helped identify unclear or ambiguous questions and allowed necessary adjustments to improve the quality of the questionnaire. It also provided an opportunity to estimate the average time required to complete each questionnaire and ensure smooth data collection during the actual study. Data from the pilot study were not included in the final analysis.

Reliability, Validity, and Trustworthiness

Reliability

Reliability refers to the consistency of the research instrument in producing stable and repeatable results. In this study, reliability was ensured through a pretest conducted among 50 women of reproductive age in Ngoma District, a neighboring district with similar characteristics to the study area. The pretest helped identify unclear questions, assess the flow of the questionnaire, and improve the overall quality of the data collection tool. Internal consistency of the questionnaire was then tested using Cronbach's alpha coefficient. A Cronbach's alpha value of 0.7 or above was considered acceptable, indicating that the questionnaire items reliably measured the intended constructs.

Validity

Validity refers to the extent to which the research instrument measures what it is intended to measure. Content validity was ensured through expert review by academic supervisors who assessed the relevance, clarity, and adequacy of the questionnaire items. Feedback from the pretest conducted in Ngoma District was also used to revise ambiguous or unclear questions to improve the accuracy and appropriateness of the instrument. Construct validity was ensured by aligning all questionnaire items with the study objectives and conceptual framework to ensure comprehensive coverage of all relevant variables.

Data Collection Methods and Procedures

Data were collected through the administration of structured questionnaires to selected respondents. Prior to the main data collection, a pilot study was conducted among 50 women of reproductive age in Ngoma District to assess the clarity, relevance, and reliability of the questionnaire. Findings from the pilot study were used to revise ambiguous questions and improve the flow and consistency of the instrument.

Before the actual data collection, permission was obtained from relevant authorities and selected health facilities. Research assistants were trained on the objectives of the study, ethical considerations, confidentiality, and proper administration of the questionnaire to ensure uniformity in data collection procedures. Respondents were informed about the purpose of the study, and informed consent was obtained before participation. Participation was voluntary, and respondents were assured of confidentiality and anonymity throughout the study. Data collection was conducted in a private and respectful manner to encourage honest responses and ensure accuracy of the information provided. Completed questionnaires were checked daily for completeness and consistency before data entry and analysis.

Data Analysis Techniques and Presentation

Data were entered, cleaned, and analyzed using the SPSS Version 26.0. Descriptive statistics such as frequencies, percentages, and means were used to summarize the characteristics of respondents and the level of maternity waiting home utilization.

Inferential analysis was conducted using binary logistic regression because the dependent variable (utilization of maternity waiting homes) was dichotomous (Yes/No). First, bivariate logistic regression was performed to identify potential predictor variables. Variables with a p-value of ≤ 0.25 were included in the multivariate logistic regression model to control for confounding factors. In the final model, statistical significance was determined at $p < 0.05$. Adjusted odds ratios (AOR) with 95% confidence intervals were used to interpret the strength and direction of associations between independent variables and MWH utilization. The results were presented using tables and explanatory narratives for clarity and interpretation.

Ethical Considerations

This study adhered to high ethical standards to ensure the protection of participants and the credibility of the research findings. Ethical approval was obtained from the Institutional Review Board (IRB) of Mount Kenya University, and authorization was secured from the Kirehe District Health Office and the management of selected health facilities before data collection commenced. Participation in the study was entirely voluntary, and all respondents, including pregnant women attending antenatal care (ANC) services and those who had recently delivered, were informed about the purpose, objectives, and procedures of the study. Written informed consent was obtained from each participant prior to data collection, and for those who were unable to read or write, consent was obtained through a thumbprint in the presence of an impartial witness. Confidentiality and privacy were strictly maintained by excluding personal identifiers from the questionnaires and securely storing all data in password-protected files accessible only to the research team. Participants were assured that their information would remain confidential and used solely for academic purposes. The study also adhered to the principle of non-maleficence by ensuring that no participant was exposed to physical, emotional, or psychological harm, and culturally appropriate language was used throughout data collection. Participants were also informed of their right to withdraw from the study at any time without any penalty or negative consequences.

RESEARCH FINDINGS AND DISCUSSION

Research findings

This part is presenting research findings of this study per objectives. The rate of study respondents was a total of 300 participants from Kirehe district.

Social Demographic Characteristics

This table is presenting social demographic characteristics of the study respondents. A total of 300 participants will participate in this study.

Table 2: Social Demographic Characteristics of the study respondents

Variables	Frequency (%)
Age Group	
15-24	77(25.7)
25-34	118(39.3)
35 and above	105(35.0)
Marital Status	
Single	34(11.3)
Married	225(75.0)
Divorced/Widowed	41(13.7)
Religion	
Catholic	124(41.3)
Protestant	117(39.0)
Muslim	26(8.7)
Adventist	33(11.0)
Level of Education	
No formal Education	41(13.7)
Primary Level	126(42.0)
Secondary and above	133(44.3)
Husband's/Partner's Educational Level	
No Formal Education	64(21.3)
Primary Level	126(42.0)
Secondary and above	110(36.7)
Occupation of the Respondents	
Housewife	161(53.7)
Farmer	91(30.3)
Business	34(11.3)
Employed	14(4.7)
Occupation of husband/Partner	
Farmer	218(72.7)
Business	46(15.3)
Employed	36(12.0)
Household Income	
Low	161(53.7)

Medium	82(27.3)
High	57(19.0)
Residence	
Rural	207(69.0)
Semi-Urban	63(21.0)
Urban	30(10.0)
Time taken to reach nearest Health Facility	
Less than 60 minutes	139(46.3)
More than 60 minutes	161(53.7)
Access to Transport	
Easy	131(43.7)
Difficult	169(56.3)

The study composed by 300 respondents. The majority was women aged 25–34 years (118, 39.3%), followed by those aged 35 years and above (105, 35.0%), while younger women aged 15–24 years made up 25.7% (77). In terms of marital status, most women were married (225, 75.0%), while smaller numbers were divorced or widowed (41, 13.7%) and single (34, 11.3%). Looking at religion, majority were member of Catholics (124, 41.3%) and Protestants (117, 39.0%), who together formed the vast majority. Only a few respondents identified as Adventists (33, 11.0%) or Muslims (26, 8.7%), When it comes to education, nearly half of the women had reached secondary level or higher (133, 44.3%), and a similar proportion had primary education (126, 42.0%), while only 13.7% (41) had no formal education. A similar pattern was seen among their husbands or partners, most of whom had at least primary (42.0%) or secondary education (36.7%).

In terms of occupation, more than half of the women were housewives (161, 53.7%), and many others were farmers (91, 30.3%), with very few involved in business (11.3%) or formal employment (4.7%). Likewise, most husbands or partners were farmers (218, 72.7%), showing that agriculture is the main source of livelihood for most families in the area.

Economic conditions as more than half of the respondents were in the low-income group (161, 53.7%), while fewer were in the medium (27.3%) and high-income (19.0%) categories. In addition, most participants lived in rural areas (207, 69.0%), with fewer in semi-urban (21.0%) and urban (10.0%) settings, which may affect their access to services. Distance and transport were also important challenges: over half of the women (161, 53.7%) reported that it took them more than one hour to reach a health facility, and a majority (169, 56.3%) said they had difficulty accessing transport.

Table 3: Obstetric Characteristics of the study respondents

Variables	Frequency (%)
Gravidity	
1-2	107(35.7)
3-4	124(41.3)
>4	69(23.0)
Parity	
0-2	155(51.7)
3-4	103(34.3)

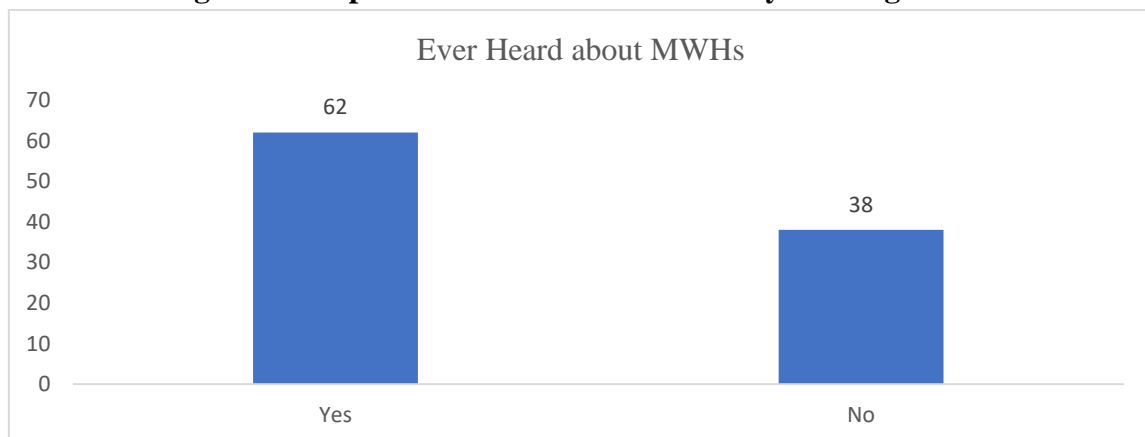
>4	42(14.0)
ANC Visit	
Yes	257(85.7)
No	43(14.3)
Number of ANC Visits	
1	33(11.0)
2	81(27.0)
3	72(24.0)
4 and above	114(38.0)
Birth Plan	
Yes	148(49.3)
No	152(50.7)

The obstetric characteristics shown that in terms of gravidity, the largest proportion of women had been pregnant 3–4 times (124, 41.3%), followed by those with 1–2 pregnancies (107, 35.7%), while 23.0% (69) had experienced more than four pregnancies. Looking at parity, over half of the respondents had given birth 0–2 times (155, 51.7%), indicating that many women were either early in their childbearing journey or had relatively small families. This was followed by those with 3–4 births (103, 34.3%), while only 42(14.0%) had more than four children. Regarding antenatal care (ANC) attendance, a strong majority of women (257, 85.7%) reported attending ANC services, while only 43(14.3%) had not attended at all. This indicates good overall uptake of ANC services among the study population. However, when looking more closely at the number of ANC visits, only 114(38.0%) achieved four or more visits, which is the recommended standard, while others had fewer visits 81(27.0%) attended twice, 72(24.0%) attended three times, and 33(11.0%) attended only once. In terms of birth planning, the respondents were almost evenly split, with 148(49.3%) reporting that they had a birth plan, while a slightly higher proportion 152(50.7%) did not wanted the pregnancy.

The level of utilization of maternity waiting homes among pregnant women in Kirehe District.

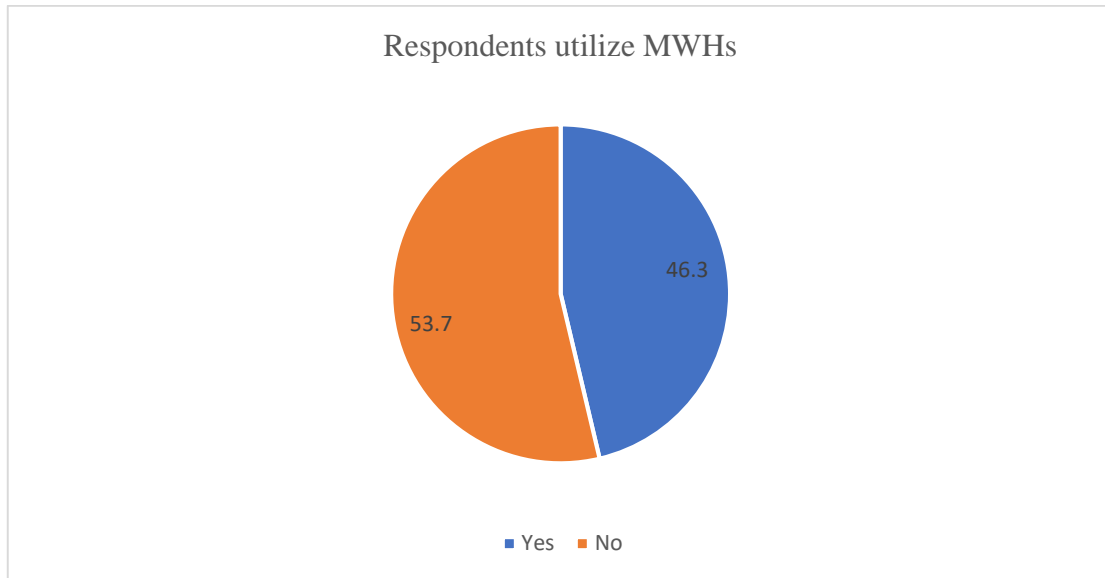
This figure (2) is presenting the level of utilization of Maternity Waiting Homes among pregnant women in Kirehe District among 5 selected health facilities.

Figure 1: Respondents ever Heard Maternity Waiting homes



This figure (2) shown that majority of the respondents ever Heard about MWHs with 62.0% of the total respondents only 38.0% did not heard about MWHs.

Figure 2: Respondents Utilize of Maternity Waiting Homes



This figure (3) shown that only 46.3% of respondents utilized MWHs while 53.7% did not utilize MWHs.

Socio-demographic factors associated with the use of maternity waiting homes among pregnant women in Kirehe District

This table is presenting Bivariate analysis for Social Demographic Characteristics Factors associated with utilization of Maternity Waiting Homes among pregnant women in Kirehe District.

Table 4: Bivariate Analysis -Social Demographic Characteristics factors associated with utilization of Maternity Waiting Homes

Variables	Utilize of MWHs		P -Value
	Yes n(%)	No n(%)	
Age Group			0.410
15-24	31(22.3)	46(28.6)	
25-34	59(42.4)	59(36.6)	
35 and above	49(35.3)	56(34.8)	
Marital Status			0.221
Single	11(7.9)	23(14.3)	
Married	108(77.7)	117(72.7)	
Divorced/Widowed	20(14.4)	21(13.0)	
Religion			0.124
Catholic	64(46.0)	60(37.3)	
Protestant	49(35.3)	68(42.2)	
Muslim	8(5.8)	18(11.2)	
Adventist	18(12.9)	15(9.3)	
Level of Education			0.060

No formal Education	26(18.7)	15(9.3)	
Primary Level	56(40.3)	70(43.5)	
Secondary and above	57(41.0)	76(47.2)	
Husband's/Partner's Educational Level			0.824
No Formal Education	29(20.9)	35(21.7)	
Primary Level	61(43.9)	65(40.4)	
Secondary and above	49(35.3)	61(37.9)	
Occupation of the Respondents			0.215
Housewife	69(49.6)	92(57.1)	
Farmer	50(36.0)	41(25.5)	
Business	13(9.4)	21(13.0)	
Employed	7(5.0)	7(4.3)	
Occupation of husband/Partner			0.033
Farmer	11(79.9)	107(66.5)	
Business	15(10.8)	31(19.3)	
Employed	13(9.4)	23(14.3)	
Household Income			>0.001
Low	39(28.1)	18(11.2)	
Medium	61(43.9)	100(62.1)	
High	39(28.1)	43(26.7)	
Residence			0.684
Rural	99(71.2)	108(67.1)	
Semi-Urban	28(20.1)	35(21.7)	
Urban	12(8.6)	18(11.2)	
Time taken to reach nearest Health Facility			0.404
Less than 60 minutes	68(48.9)	71(44.1)	
More than 60 minutes	71(51.1)	90(55.9)	
Access to Transport			0.002
Easy	65(46.8)	104(64.6)	
Difficult	74(53.2)	57(35.4)	
Heard about MWHs			>0.001
Yes	103(74.1)	83(51.6)	
No	36(25.9)	78(48.4)	

The bivariate analysis was conducted to assess the association between socio-demographic factors and the utilization of maternity waiting homes (MWHs). The results revealed that only a few variables showed a statistically significant relationship with MWH utilization, namely occupation of the husband/partner ($p = 0.033$), household income ($p < 0.001$), access to transport ($p = 0.002$) and awareness to Maternity Waiting Health Services.

Regarding the occupation of the husband or partner, a significant association was observed. The majority of women whose partners were farmers were more likely to utilize MWHs compared to those whose

partners were engaged in business (10.8% vs 19.3%) or formal employment (9.4% vs 14.3%), who were more represented among non-users. Household income showed a highly significant association with MWH utilization. A larger proportion of women who utilized MWHs came from low-income households (39, 28.1%) compared to non-users (18, 11.2%), while the majority of non-users were from medium-income households (100, 62.1%) compared to 43.9% (61) among users. Similarly, access to transport was strongly associated with MWH utilization. Among users, the majority reported difficulty accessing transport (74, 53.2%), whereas most non-users had easy access to transport (104, 64.6%). Finally, awareness of maternity waiting homes, there was a clear and statistically significant difference ($p < 0.001$). The majority of women who utilized MWHs had heard about them (103, 74.1%), compared to 83 (51.6%) among non-users. In contrast, a higher proportion of non-users had not heard about MWHs (78, 48.4%) compared to users (36, 25.9%). This indicates that women who are aware of maternity waiting homes are more likely to use them, highlighting awareness as a key enabling factor.

Table 5: Multivariate Analysis of Social Demographic Factors associated with Maternity Waiting homes

Variables	AOR	95%CI	P-Value
Occupation of husband/Partner			
Farmer	0.491	0.244-0.989	0.046
Business	0.467	0.217-1.003	0.051
Employed	Ref.		
Household Income			
Low	2.398	1.153-4.987	0.019
Medium	0.607	0.348-1.061	0.080
High	Ref.		
Access to Transport			
Easy	0.437	0.268-0.714	0.001
Difficult	Ref.		
Heard of MWHs			
Yes	0.372	0.228-0.607	>0.001
No	Ref.		

The multivariate analysis was conducted to identify the independent factors associated with the utilization of maternity waiting homes (MWHs) while controlling for potential confounders.

Regarding the occupation of the husband/partner, women whose partners were farmers were less likely to utilize MWHs compared to those whose partners were employed (AOR = 0.491, 95% CI: 0.244–0.989, $p = 0.046$). This means that having a husband who is a farmer reduced the likelihood of MWH utilization by about 51%. Similarly, women whose partners were engaged in business were also less likely to utilize MWHs (AOR = 0.467, 95% CI: 0.217–1.003, $p = 0.051$), although this association was marginal.

For household income, women from low-income households were significantly more likely to utilize MWHs compared to those from high-income households (AOR = 2.398, 95% CI: 1.153–4.987, $p = 0.019$). This indicates that women with lower economic status were about 2.4 times more likely to use maternity waiting homes. In contrast, women from medium-income households were less likely to utilize MWHs (AOR = 0.607, 95% CI: 0.348–1.061, $p = 0.080$), although this finding was not statistically significant.

With regard to access to transport, women who reported easy access to transport were significantly less likely to utilize MWHs (AOR = 0.437, 95% CI: 0.268–0.714, $p = 0.001$) compared to those who had difficulty accessing transport. Women who had heard about Maternity Waiting Homes (MWHs) were significantly associated with the outcome variable compared to those who had not heard about MWHs (AOR = 0.372, 95% CI: 0.228–0.607, $p < 0.001$)

Obstetric factors affecting the use of maternity waiting homes among pregnant women in Kirehe District.

This table is presenting obstetric characteristic factors associated with Maternity Waiting Homes (MWHs) among pregnant women in Kirehe District.

Table 6: Obstetric factors affecting the use of maternity waiting homes among pregnant women

Variables	Utilize of MWHs		P-Value
	Yes n(%)	No n(%)	
Gravidity			0.934
1-2	50(36.0)	57(35.4)	
3-4	56(40.3)	68(42.2)	
>4	33(23.7)	36(22.4)	
Parity			0.589
0-2	68(48.9)	87(54.0)	
3-4	49(35.3)	54(33.5)	
>4	22(15.8)	20(12.4)	
ANC Visit			0.104
Yes	124(89.2)	133(82.6)	
No	15(10.8)	28(17.4)	
Number of ANC Visits			0.372
1	18(12.9)	15(9.3)	
2	32(23.0)	49(30.4)	
3	32(23.0)	40(24.8)	
4 and above	57(41.0)	57(35.4)	
Birth Plan			0.197
Yes	63(45.3)	85(52.8)	
No	76(54.7)	76(47.2)	

The bivariate analysis of obstetric factors affecting the use of maternity waiting homes (MWHs) among pregnant women in Kirehe District shows that, among all the variables examined, only awareness of MWHs demonstrated a statistically significant association with utilization, while the other obstetric factors were not significant.

For gravidity, there was no meaningful difference between users and non-users ($p = 0.934$). Most respondents in both groups had 3–4 pregnancies (40.3% vs 42.2%), followed by those with 1–2 pregnancies (36.0% vs 35.4%) and those with more than four pregnancies (23.7% vs 22.4%). This shows that the number of pregnancies does not significantly influence the decision to use MWHs.

Similarly, parity did not show a significant association ($p = 0.589$). The majority of both users and non-users had 0–2 children (48.9% vs 54.0%), followed by those with 3–4 children (35.3% vs 33.5%) and more than four children (15.8% vs 12.4%). This suggests that previous birth experience does not strongly affect MWH utilization.

Regarding antenatal care (ANC) attendance, although a higher proportion of MWH users had attended ANC (89.2% vs 82.6%), the association was not statistically significant ($p = 0.104$).

For the number of ANC visits, no significant association was observed ($p = 0.372$). Among users, 41.0% had four or more visits, compared to 35.4% among non-users. The distribution across other visit categories was relatively similar in both groups, indicating that frequency of ANC visits alone does not strongly predict MWH use.

Finally, birth planning also showed no statistically significant association ($p = 0.197$). Although a slightly higher proportion of non-users had a birth plan (52.8%) compared to users (45.3%).

DISCUSSION

This study conducted level and associated factors of Maternity Waiting Homes among Pregnant women in Kirehe district. The study was found that the utilization of maternity waiting homes (MWHs) in Kirehe District was 46.3%, while 53.7% of women did not utilize them, and 62.0% had ever heard about MWHs. Similar findings were reported in Ethiopia, who found that MWH utilization was 45.8%, suggesting comparable uptake patterns in similar rural settings (Gurara et al., 2021). However, studies in Zambia reported higher utilization rates of around 57% which may be due to stronger community-based referral systems and better integration of MWH services into maternal care (Bonawitz et al., 2019).

Regarding socio-demographic factors, this study found that household income (AOR = 2.398, $p = 0.019$), husband's occupation (AOR = 0.491, $p = 0.046$), and access to transport (AOR = 0.437, $p = 0.001$) were significantly associated with MWH utilization. Women from low-income households were 2.4 times more likely to use MWHs, which suggests that these services are particularly important for economically disadvantaged women. This finding is consistent with a study conducted in Malawi which reported that women from low-income households were 1.9 times more likely to use MWHs due to financial barriers preventing timely facility access (Singh et al., n.d.). Similarly, transport difficulties increased utilization in your study, which aligns with findings from Ethiopia where women with transport barriers were 2.3 times more likely to use MWHs. This confirms that MWHs serve as a critical solution for women facing geographical and financial constraints (Dereje et al., 2022a).

The study also revealed that women whose husbands were farmers were less likely to utilize MWHs compared to those with employed partners (AOR = 0.491). This finding suggests that occupational status of the partner influences maternal health decisions, likely through income stability and decision-making power. Similar results were reported in Uganda, who found that women whose partners were in formal employment were 1.6 times more likely to support institutional maternal care compared to subsistence farmers (Gebeyehu et al., 2022). This may reflect differences in economic capacity and exposure to health information, which influence health-seeking behavior.

In contrast, obstetric factors such as gravidity ($p = 0.934$), parity ($p = 0.589$), ANC attendance ($p = 0.104$), number of ANC visits ($p = 0.372$), and birth planning ($p = 0.197$) were not significantly associated with MWH utilization. However, awareness of MWHs was strongly associated ($p < 0.001$), with 74.1% of users having heard about MWHs compared to 51.6% of non-users. This finding is consistent with a study in Ethiopia, which reported that women who had heard about MWHs were 3.5 times more likely to utilize

them(Dereje et al., 2022c). This emphasizes that knowledge and awareness are key drivers of utilization, often more influential than reproductive history.

Finally, health service-related factors did not show statistically significant associations in this study, although transport access was significant. For example, 53.2% of users reported difficulty accessing transport compared to 35.4% of non-users, indicating that women facing mobility challenges are more likely to rely on MWHs. Similar findings were reported in Tanzania where lack of transport increased MWH utilization by 2.1 times(Luvanda & Mbogoro, 2021).

Conclusion

The study concludes that utilization of maternity waiting homes in Kirehe District is influenced mainly by socio-demographic and accessibility-related factors rather than obstetric characteristics. The logistic regression analysis showed that household income, husband/partner occupation, access to transport and Awareness of Maternity Waiting Health were significant predictors of utilization, with women from low-income households more likely to use maternity waiting homes, while those with partners engaged in farming or business and those with easy access to transport were less likely to utilize them. Among obstetric factors, only awareness of maternity waiting homes was significantly associated with utilization, while gravidity, parity, antenatal care attendance, and birth planning showed no significant relationship.

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References

1. Benimana, C., Small, M., & Rulisa, S. (2018). Preventability of maternal near miss and mortality in Rwanda: A case series from the University Teaching Hospital of Kigali (CHUK). *PLoS ONE*, *13*(6), e0195711. <https://doi.org/10.1371/journal.pone.0195711>
2. Bonawitz, R., McGlasson, K. L., Kaiser, J. L., Ngoma, T., Fong, R. M., Biemba, G., Bwalya, M., Hamer, D. H., & Scott, N. A. (2019). Quality and utilization patterns of maternity waiting homes at referral facilities in rural Zambia: A mixed-methods multiple case analysis of intervention and standard of care sites. *PLoS ONE*, *14*(11), e0225523. <https://doi.org/10.1371/journal.pone.0225523>
3. Capili, B. (2021). Overview: Cross-Sectional Studies. *The American Journal of Nursing*, *121*(10), 59–62. <https://doi.org/10.1097/01.NAJ.0000794280.73744.fe>
4. Degife, E. M., Yeshialem, E., Ahmed, A. M., Teklemariam, T. A., & Ayel, A. N. (2025). Maternity waiting homes utilization and associated factors among women who gave birth in the last one year in rural settings of Basona Worena District, Ethiopia: A cross sectional study. *PLOS One*, *20*(10), e0331624. <https://doi.org/10.1371/journal.pone.0331624>
5. Dereje, S., Yenus, H., Amare, G., & Amare, T. (2022a). Maternity waiting homes utilization and associated factors among childbearing women in rural settings of Finfinnee special zone, central Ethiopia: A community based cross-sectional study. *PLoS ONE*, *17*(3), e0265182. <https://doi.org/10.1371/journal.pone.0265182>

6. Dereje, S., Yenus, H., Amare, G., & Amare, T. (2022b). Maternity waiting homes utilization and associated factors among childbearing women in rural settings of Finfinnee special zone, central Ethiopia: A community based cross-sectional study. *PLoS ONE*, *17*(3), e0265182. <https://doi.org/10.1371/journal.pone.0265182>
7. Dereje, S., Yenus, H., Amare, G., & Amare, T. (2022c). Maternity waiting homes utilization and associated factors among childbearing women in rural settings of Finfinnee special zone, central Ethiopia: A community based cross-sectional study. *PLoS ONE*, *17*(3), e0265182. <https://doi.org/10.1371/journal.pone.0265182>
8. Gebeyehu, N. A., Gelaw, K. A., Lake, E. A., Adela, G. A., Tegegne, K. D., & Shewangashaw, N. E. (2022). Women decision-making autonomy on maternal health service and associated factors in low- and middle-income countries: Systematic review and meta-analysis. *Women's Health*, *18*, 17455057221122618. <https://doi.org/10.1177/17455057221122618>
9. Gordon, R. D., Kishi, A., Brown, J. A., Voisin, C., Thomas, N., Riley, S. R., Fareed, N., Bungler, A., Gillespie, S. L., Venkatesh, K. K., Juckett, L., & Brill, S. B. (2025). Rural maternal health interventions: A scoping review and implications for best practices. *The Journal of Rural Health*, *41*(1), e70007. <https://doi.org/10.1111/jrh.70007>
10. Gurara, M. K., Jacquemyn, Y., Ukke, G. G., Van Geertruyden, J.-P., & Draulans, V. (2022). Benefits, barriers and enablers of maternity waiting homes utilization in Ethiopia: An integrative review of national implementation experience to date. *BMC Pregnancy and Childbirth*, *22*, 675. <https://doi.org/10.1186/s12884-022-04954-y>
11. Gurara, M. K., Van Geertruyden, J.-P., Gutema, B. T., Draulans, V., & Jacquemyn, Y. (2021). Maternity waiting homes as component of birth preparedness and complication readiness for rural women in hard-to-reach areas in Ethiopia. *Reproductive Health*, *18*, 27. <https://doi.org/10.1186/s12978-021-01086-y>
12. Katangolo-Nakashwa, N., Shilunga, A., Mahoto, S., Haufiku, D., Alfeus, A., Iita, H., Namidi, M., & Mitonga, H. K. (2025). Effectiveness of maternity waiting homes in improving maternal and child health outcomes in Africa: A scoping review. *Journal of Global Health Science*, *7*(2). <https://doi.org/10.35500/jghs.2025.7.e18>
13. Kurji, J., Hackett, K., Wild, K., & Lassi, Z. (2021). The effect of maternity waiting homes on perinatal mortality is inconclusive: A critical appraisal of existing evidence from Sub-Saharan Africa. *BMC Research Notes*, *14*, 86. <https://doi.org/10.1186/s13104-021-05501-2>
14. Luvanda, H., & Mbogoro, E. (2021). *Determinants of Intention To Use Maternity Waiting Homes in Tanzania: A Study Based on Women Using MWH in Dodoma, Iringa and Morogoro*. <https://doi.org/10.21203/rs.3.rs-871950/v1>
15. Penn-Kekana, L., Pereira, S., Hussein, J., Bontogon, H., Chersich, M., Munjanja, S., & Portela, A. (2017). Understanding the implementation of maternity waiting homes in low- and middle-income countries: A qualitative thematic synthesis. *BMC Pregnancy and Childbirth*, *17*(1), 269. <https://doi.org/10.1186/s12884-017-1444-z>
16. Singh, K., Speizer, I., Kim, E. T., Lemani, C., & Phoya, A. (n.d.). *OBGYN*. <https://doi.org/10.1002/ijgo.12013>
17. Tayebwa, E., Gatimu, S. M., Kalisa, R., Kim, Y.-M., van Dillen, J., & Stekelenburg, J. (n.d.-a). Provider and client perspectives on the use of maternity waiting homes in rural Rwanda. *Global Health Action*, *16*(1), 2210881. <https://doi.org/10.1080/16549716.2023.2210881>

18. Tayebwa, E., Gatimu, S. M., Kalisa, R., Kim, Y.-M., van Dillen, J., & Stekelenburg, J. (n.d.-b). Provider and client perspectives on the use of maternity waiting homes in rural Rwanda. *Global Health Action*, 16(1), 2210881. <https://doi.org/10.1080/16549716.2023.2210881>
19. Tayebwa, E., Gatimu, S. M., Kalisa, R., Kim, Y.-M., van Dillen, J., & Stekelenburg, J. (n.d.-c). Provider and client perspectives on the use of maternity waiting homes in rural Rwanda. *Global Health Action*, 16(1), 2210881. <https://doi.org/10.1080/16549716.2023.2210881>
20. *World health statistics 2019: Monitoring health for the SDGs, sustainable development goals*. (n.d.). Retrieved May 3, 2026, from <https://www.who.int/publications/i/item/9789241565707>
21. Yihune Teshale, M., Bante, A., Gedefaw Belete, A., Crutzen, R., Spigt, M., & Stutterheim, S. E. (2025). Barriers and facilitators to maternal healthcare in East Africa: A systematic review and qualitative synthesis of perspectives from women, their families, healthcare providers, and key stakeholders. *BMC Pregnancy and Childbirth*, 25, 111. <https://doi.org/10.1186/s12884-025-07225-8>