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# Maternity waiting home utilization and associated factors in the rural community of Dangur District, Northwestern Ethiopia: results from a community-based cross-sectional household survey

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## Abstract

**Background** Approximately 80% of people in Ethiopia live in rural areas, where poor access to maternity services, accounts for the majority of maternal and perinatal deaths. Maternity waiting homes are residential facilities for women who come from remote areas to stay and wait before giving birth at health facilities, particularly in hospitals and health centers. It is a new initiative and one of the strategies that increase skilled care utilization at birth. However, there is no evidence on the status of maternity waiting home utilization in the study area. Therefore, this study aimed to generate evidence on the status of maternity waiting home utilization and its associated factors.

**Methods** A community-based cross-sectional household survey was conducted from June 5–30, 2022. The sample size was calculated using the single population proportion formula, which resulted in 354 participants. The study population included mothers who gave birth within 12 months before the survey were selected by using a systematic sampling method. The data were coded, edited, cleaned, and entered into Epi Data version 3.1. The data were subsequently exported to SPSS version 25 for analysis. Descriptive, bivariable, and multivariable binary logistic regression analyses were performed. The results are presented in the text, figures, and tables. Finally, variables with a  $p$  value  $< 0.05$  in the multivariable analysis were reported as significantly associated with the independent variables and outcome variable.

**Results** The magnitude of maternity waiting home utilization was 36.4% (95% CI = 31.4, 41.8). Being knowledgeable about the presence of maternity waiting home (AOR = 3.9; 95% CI: 1.0–15.2), being able to afford transportation (AOR = 2.4; 95% CI: 1.01–5.9), being home delivery (AOR = 0.007; 95% CI: 0.002–0.031) and being access to transportation services (AOR = 3.0; 95% CI: 1.2–7.5) were significantly associated with maternity waiting home utilization.

**Conclusion** The magnitude of maternity waiting home utilization in the study area was found to be low. Access to and affordability of transportation services, being knowledgeable and being home delivery were associated factors for the use of maternity waiting homes. Therefore, increasing maternal knowledge, economically empowering

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women and respecting care while waiting at maternity homes are important for improving the utilization of maternity waiting homes.

**Keywords** Benishangul Gumuz, Dangur, Maternity waiting home, Maternal health

### Plain English Summary

Nearly 80% of people in Ethiopia live in rural communities, where poor access to maternity services is a leading cause of maternal and perinatal deaths. Maternity waiting homes are residential facilities for women who come from remote areas to stay and wait before giving birth at health facilities, particularly in hospitals and health centers. However, there is no evidence on the status of maternity waiting home utilization and its associated factors in Rural Dangur Districts. Therefore, this study aimed to address this gap. The primary data were collected using an interviewer-based structured questionnaire. The collected data were subsequently entered and coded with Epi Data software. Following data entry and coding, the data were exported to SPSS software for analysis. Descriptive and binary logistic regression analyses were performed to determine the magnitude of maternity waiting home utilization and identify associated factors. The magnitude of maternity waiting home utilization in the study area was 36.4%. Being knowledgeable about the presence of maternity waiting homes, being able to afford transportation costs, having institutional delivery experience, and having access to transportation services were found to be predictors of maternity waiting home utilization. These predictors were more likely to increase the utilization of maternity waiting homes. Therefore, policy-makers, maternal health programmers, and other stakeholders need to strengthen maternal knowledge, economically empower women, and provide respectful and compassionate care while women gave birth at the health facility and access to transportation services to improve the utilization of maternity waiting homes.

### Background

In low-income countries, one in 41 women die from pregnancy-related causes, and one of the major contributors to these deaths was the distance and consequent delay in the treatment of childbirth complications [1]. The World Health Organization (WHO) recommends skilled care at every birth, which includes access to facilities with the capacity for emergency obstetric care [2]. However, easy access to obstetric care is a challenging issue in developing countries, and pregnant women from hard-to-reach areas are more likely to be exposed to obstetric complications and pregnancy-related deaths [3]. Some developing countries are attempting to reduce delays in treatment by transporting women at risk to maternity waiting homes located near hospitals or health centers a few days prior to the date of birth [4].

Maternity waiting homes are residential facilities where women who live remotely can wait before giving birth at health facilities. This approach provides a setting for women who can be accommodated during the final weeks of their pregnancy near a hospital or health center with essential obstetric care, which overcomes the impact of a second delay. In most developing countries, approximately 80% of people live in rural areas, where poor access to maternity services accounts for many maternal and perinatal deaths. The use of maternity waiting home services is endorsed by the World Health Organization as one of the components of a comprehensive package for reducing maternal

mortality [5]. The final goal of implementing a maternity waiting home strategy is to advance access to skilled birth attendance and emergency obstetric care, particularly for women in rural and remote areas [6].

The concept of maternity waiting home utilization has increased in Ethiopia to include high-risk women, including those expecting their first delivery, women with many previous births, very young women, older women, and those identified as having problems such as high blood pressure during pregnancy [5]. However, Ethiopia is scaling up maternity waiting home to reduce maternal and perinatal mortality [7]. There is growing interest in maternity waiting home among the communities. To address this, the Ethiopian Ministry of Health designed a strategy that enhances and integrates maternity waiting home into a health sector transformation plan to improve maternal and child health. However, the uptake of maternity waiting home in Ethiopia is not in line with what was expected [8]. According to the national direction, every pregnant women should stay at maternity waiting home, which are attached with quality of obstetric services and compassionate care of maternity services [9]. This is because maternity waiting home strategy is a good mechanism to improve access to skilled birth attendance in rural communities of Ethiopia [9].

Safe motherhood initiative is a main concern for the Ethiopian government, and diverse efforts have been implemented, particularly in establishing and scaling

up maternity waiting homes at the hospital and health center [10, 11]. Recently, maternity waiting home has been implemented at lower-level health centers and is one of the tested and proven strategies for reducing maternal and perinatal morbidity and mortality [11]. Direct causes of maternal death can be overcome by prompt diagnosis and treatment due to the monitoring of pregnant women in a maternity waiting home [12].

According to the report of the Mini EDHS 2020, Ethiopia has a high maternal mortality ratio, with an estimated ratio of 401 per 100,000 live births and a low-skilled birth attendance (48%) in 2019 [13]. Maternity waiting home plays an imperative role in decreasing maternal and perinatal mortality [14]. Moreover, it provides an opportunity for pregnant women who experience geographical barriers, and pregnant women should be near a health facility a few weeks before birth starts [15]. When access to care is difficult, women with high-risk pregnancies should be admitted to a maternity waiting home at 36 weeks of gestational age [16]. In this maternity waiting home, additional emphasis is being placed on providing health education and counseling regarding pregnancy, delivery and care of the newborn and infant.

However, studies from different settings have examined the limited use of maternity waiting home services and have highlighted the need to consider local cultural practices and other supportive and inhibitory factors when planning to establish maternal waiting homes [17, 18]. Although the majority of health centers in Dangur District have maternity waiting homes according to the district health office report of 2031, 44% of which involved institutional delivery services, but there is no evidence indicating the status of maternity waiting home utilization in the region. Moreover, most of the studies have focused on mothers' intentions to use waiting home for their recent delivery; however, these studies may not reveal the exact status of maternity waiting home utilization or the factors affecting it. Thus, there is a scarcity of evidence on the status of maternity waiting home and its associated factors in the Dangur district. Therefore, this study aimed to fill this gap.

## Methods

### Study area and period

The study was conducted in Dangur District, Metekel zone, Benishangul Gumuz Region, Northwest Ethiopia. The Dangur district is one of the seven districts in the Metekel Zone. It is located in the northwestern part of Ethiopia approximately 572 km from Addis Ababa, the capital city of Ethiopia. The study area is bordered by the Amhara region in the Northeast, Pawi district in the East, Mandura district in the Southeast, Bullen district in the South, and Wombera district in the Southwest and

Guba district in the West. The district has 30 kebeles (the lower administrative unit), 28 of which are rural kebeles and 2 of which are urban kebeles, for a total population of 74,559 (36,907 males and 37,652 females). The district has 3 health centers and 26 health posts serving the community. Among the health workers, 51 health extension workers and 104 health professionals from the district provided health services for the target group. According to a district health office report in 2022, the district has three maternity waiting homes in the health center.

### Study design and period

A community-based cross-sectional household survey was conducted from June 5–30, 2022.

### Study population

The study population included women who gave birth in the last year before the survey and who were selected and included in the study by using the systematic sampling procedure. The inclusion criterion was a woman who gave birth within 12 months and lived for more than 6 months (permanent residents) in the district. However, women who had difficulty of communication due to severe illness or who were unable to respond because of hearing problems and psychiatric problems during the study period were excluded.

### Sample size determination and technique

The sample size was calculated using the single population proportion formula based on the following assumption: the proportion of maternity waiting home utilization in Gimbo districts of the keffa zone was 42.5% [19], 95% confidence interval (1.96), 5% margin of error and 10% non-response rate. Therefore, the calculated sample size was 359. Among the 28 rural kebeles, nine were selected by using simple random sampling methods. According to district health office reports, 950 mothers gave birth within one year from nine selected kebeles. The sample size was proportionally allocated to each kebele based on the number of deliveries within one year. Finally, the household was selected at every  $k^{\text{th}}$  interval, which means that  $k = N/n = 950/359 = 2.7 \sim 3$  intervals for each selected kebele (*Supplementary – 1*).

### Data collection procedure

Structured questionnaires were used by interviewers to collect data on sociodemographic characteristics and obstetric, maternal and facility-related factors related to maternity waiting home utilization. One day of training was given to the data collectors and supervisors on the objective and relevance of the study and on the confidentiality of the information, the respondent's right, informed consent and the techniques used for the

interviews. The data were collected through face-to-face interviews by trained data collectors who can read and write both Amharic and English with a pretested structured questionnaire, which was adapted by reviewing different studies [3, 18, 20].

### Study variables

The outcome of this study was the status of maternity waiting home utilization. The independent variables were sociodemographic variables (*marital status, religion, ethnicity, educational status and occupational status*), obstetric and gynecological variables (*ANC follow up, gravidity, parity, pregnant related problems*), maternal factors (*knowledge status, source of information and place of delivery*) and health facility-related factors (*privacy of waiting room, availability of food, water, electricity in the waiting room, availability of traditional ceremony, accessibility of transportation and mode of transportation*).

### Measurement and definition of variables

#### Utilization

Mothers who were admitted and waited at maternity waiting home service a maximum of 2 weeks before starting labor and a minimum of 24 h after delivery.

#### Parity

The number of times a woman gave birth, including intrauterine deaths and stillbirths.

#### Distance

The distance traveled on the foot from home to the government health institution explained the time taken to walk on the foot, but it would be fair if the distance traveled on the foot was less than one hour for this study.

#### Woman decision-making power

Women who generally made decisions independently or jointly with their husbands were considered to have decision-making power.

### Data analysis

After the data were collected on paper-based form, the data were coded, edited and entered into Epi Data version 3.1. The data were subsequently exported to SPSS version 25 for analysis. A descriptive analysis was used to describe the data structure. Initially, bivariable binary logistic regression was performed to select candidate variables for which the *P* value was less than 0.25. The candidate variables (those with a *P* value less than 0.25) were exported to multivariable binary logistic regression. The adjusted odds ratio (OR), 95% CI and *p* value were used to determine the strength of the association and statistical significance. Logistic regression assumptions

were tested, and the model goodness of fit was checked. Finally, the data are presented in the text, tables and figures.

### Data quality management

The data quality was maintained throughout the entire procedure. Primarily, a standardized research instrument was used in English, after that, the instrument was translated into Amharic and then back-translated into English by experts in different languages. Seven data collectors and two supervisors who were fluent in the local language and Amharic were recruited. Then, they were trained for one day. One week before the data were collected, the questionnaire was pretested on 25 pregnant women by a principal investigator to validate the instrument. The survey team checked the wording, logic and skip patterns of the questions. After pretesting, amendments were made accordingly. After analyzing the pretest data, a question that was not clear, it would be rephrased and corrected. The supervisors and the principal investigator were frequently checked during the data collection process to ensure the completeness and consistency of the gathered information.

### Results

#### Sociodemographic factors

Among the 354 study participants, 112 (32%) were aged between 35 and 49 years, with a mean ( $\pm$ SD) of  $31.21 \pm 5.69$  years. More than three fourth of respondents—283 (79.9%)—were married, and half of the respondents 108 (50.8%) were orthodox religion followers. Regarding occupational status, 243 (68.6%) women were housewives. Less than half, 140 (39.5%), of the women were unable to read and write (Table 1).

#### Obstetrical and gynecological-related factors

The majority of the study participants 323 (91.2%) had received ANC visits; 156 (44.1%) had received a fourth ANC visit or more. Among the study participants, 278 (78.5%) experienced with the multigravidity, and 244 (68.9%) experienced with pregnancy-related complications. Of the study participants, 152 (42.9%) were delivered at home, and 244 (68.9%) were knowledgeable about the presence of maternity waiting home in the health center (Table 2).

#### Facility-related factors

Among 129 mothers who utilized maternity waiting home, 49 (38%) reported that privacy in the waiting room was not ensured, and 24 (18.6%) said that there were no midwife checks. Similarly, 60 (46.5%) of mothers said that there was no recreational material (TV or radio), and 84

**Table 1** Socio-demographic characteristics of study subjects, Dangur District, Metekel Zone, Benishangul Gumuz Region, Northwestern Ethiopia, June 5–30, 2022 ( $n = 354$ )

Variable	Characteristics	Frequency	Percent
Marital status	Married	283	79.9
	Single	21	5.9
	Widowed	12	3.4
	Divorced	38	10.7
Religion	Orthodox	108	50.8
	Muslim	93	26.3
	Protestant	76	21.5
	Others	5	1.4
Ethnicity	Gumuz	101	28.5
	Amhara	98	27.7
	Agew	72	20.3
	Shinasha	66	18.6
	Others	17	4.8
Educational status	Unable to read and write	140	39.5
	Able to read and write	164	46.3
	Primary education	35	9.9
	Secondary education	12	3.4
	Higher education	3	0.8
Occupational status	Housewife	243	68.6
	Merchant	39	11.0
	Private business	34	9.6
	Government	28	7.9
	Daily laborer	10	2.8

(65.1%) of mothers reported that there was no extra space for the family to stay with the mother (Table 3).

#### Status of maternity waiting home utilization

Among the study participants, 129 (36.4%) with 95% CI = 31.4–41.8 utilized a maternity waiting home. (Fig. 1).

#### The reasons for not using maternity waiting home

Among the study participants, 225 (64%) were not utilizing maternity waiting home. The major reasons that the mothers mentioned for not utilizing maternity waiting home were lack of knowledge 185 (82%), lack of transportation services 173 (77%) and lack of cultural practice within the community 121 (54%) (Fig. 2).

#### Factors associated with maternity waiting home utilization

Primarily, bivariable binary logistic regression was performed for each independent variable and the dependent variable. During bivariable analysis, seventeen variables with a  $p$  value of less than 0.25 were subjected to multivariable binary logistic regression analysis. After all the variables were adjusted for possible confounding effects, four factors such as knowledge about the presence of

maternity waiting home in the health center, place of delivery, affordability of transportation and access to transportation services, were found to be statistically significant predictors of maternity waiting home utilization.

Thus, the odds of utilizing maternity waiting home among mothers who had knowledge about the presence of maternity waiting home in the health center (AOR = 3.9; 95%CI: 1.01, 15.24) were 3.9 times higher than those among mothers who lacked knowledge about the presence of maternity waiting home in the health center. Similarly, the odds of utilizing maternity waiting home among mother who were able to afford transportation (AOR = 2.4; 95%CI: 1.01–5.9) were 2.4 times higher than those for mothers who were not able to afford the cost of transportation services. Moreover, the odds of utilizing maternity waiting home among mothers who had access to transportation services (AOR = 3.0; 95%CI: 1.2–7.5) were three times higher than those among mothers who did not have access to transportation services. In contrast, the odds of utilizing maternity waiting home among mothers who gave birth at home (AOR = 0.007; 95%CI: 0.002–0.03) were 99.3% lower than those for mothers who gave birth at health facilities (Table 4).

#### Discussion

This study aimed to assess the status of maternity waiting home utilization and associated factors among mothers who gave birth within the last year before the survey in the Dangur district. Accordingly, this study showed that the magnitude of maternity waiting home utilization was 36.4%. These findings were lower than those of studies performed in the Gimbo district of Keffa zone (42%) [19], the Sidama zone district (67%) [21] and Kenya (61%) [7] but higher than those in the Arsi zone (23.6%), Arba-minch town (8.4%) and Finfine special zone (34%) [3, 12, 22]. This variation might be due to differences in methodological procedures, sample sizes, and durations and could also be related to differences in sociodemographic, obstetric and gynecological factors; the accessibility of health facilities; health-seeking behavior; and cultural practice while women gave birth at home (traditional ceremony and social network are very strong) and facility-related factors.

Similarly, this study revealed that lack of knowledge of the presence of maternity waiting homes in health centers, the place of delivery, the affordability of transportation services and access to transportation services were associated with maternity waiting home utilization in the study area. Accordingly, women who lacked knowledge about the presence of maternity waiting home were less likely to utilize maternity waiting home. This finding is consistent with evidence from indigenous regions of the Gutamulac and Angolela

**Table 2** Obstetrical and gynecological related characteristics of study subjects, Dangur District, Metekel Zone, Benishangul Gumuz Region, Northwestern Ethiopia, June 5–30, 2022 ( $n = 354$ )

Variable	Characteristics	Frequency	Percent
ANC follow up	Yes	323	91.2
	No	31	8.8
Number of ANC follow up	One time	46	13
	Two times	43	12.1
	Three times	90	25.4
	Four times	156	44.1
	More than four times	19	5.4
Number of pregnancy (Gravidity)	Primigravida	76	21.5
	Multigravida	278	78.5
Current of place of delivery	Health facility	182	51.4
	On the way	20	5.6
	Home	152	42.9
Knowledge about maternity waiting room	Yes	244	68.9
	No	110	31.1
Source of information	HEW	197	55.6
	HDA	32	9
	Neighbors/Relative	15	4.2
	Health profession	10	2.8
	Others	100	28.2
Presence of pregnancy related complication	Yes	244	68.9
	No	110	31.1

**Table 3** Facility related characteristics of study subjects, Dangur District, Metekel Zone, Benishangul Gumuz Region, Northwestern Ethiopia, June 5–30, 2022 ( $n = 129$ )

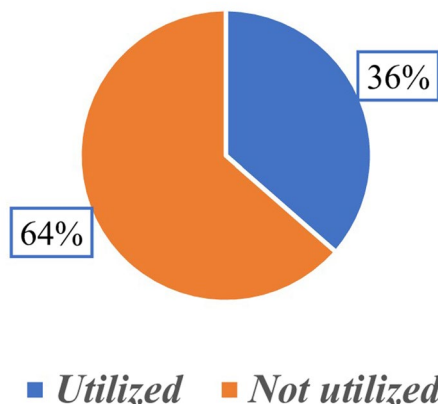
Variable	Characteristics	Frequency	Percent
Privacy in waiting room	Available	80	62.0
	Not available	49	38.0
Availability of midwife checks	Available	105	81.4
	Not available	24	18.6
Availability of recreational materials TV, radio	Available	69	53.5
	Not available	60	46.5
Extra space for the family to stay with mother	Available	47	36.4
	Not available	84	65.1
Availability of food, water, electricity, coffee	Available	100	77.5
	Not available	29	22.5
Availability of traditional ceremony	Available	97	75.2
	Not available	32	24.8

Tera districts, which revealed that women who were not familiar with the existence and benefit of maternity waiting home were less likely to utilize maternity waiting home at health facilities [23, 24]. Similarly, the findings of other studies in the Sidama zone supported these findings [21]. This is because when there is knowledge on the benefits and effects of maternity waiting home, it encourages service users to stay there

for better benefits and overcome secondary delays, which are the leading causes of maternal and perinatal death.

In this study, we found that mothers who are able to afford the cost of transportation were three times more likely to utilize maternity waiting home than mothers who are not able to afford fees for transportation services. This study is consistent with a study in Tanzania,

### Status of maternity waiting home



**Fig. 1** Status of maternity waiting home utilization among the study participants, Dangur district, Northwestern Ethiopia

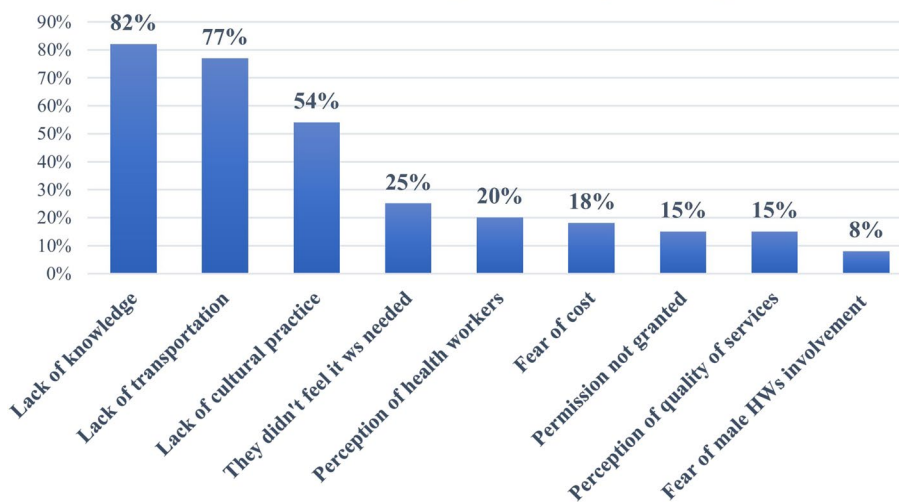
which revealed that transportation costs are an obstacle for maternity waiting home utilization in developing countries, which implies that distance to health facilities and difficult infrastructure increase the cost of transportation services [25]. Therefore, women must be economically empowered and informed early by health workers to prepare transportation fees to travel to health institutions for health care. The transportation cost varies based on the travel time and distance. Moreover, another study in the eastern Gurage Zone supported this finding and showed that the cost of transportation to and accessing health facilities

negatively affects mothers’ use of maternity waiting home [18].

The current study indicated that mothers who were delivered in health institutions were more likely to utilize maternity waiting home than those who were delivered outside of health institutions. These findings are supported by different studies conducted both domestically and internationally [22, 26, 27]. This is because maternity waiting home utilization allows a woman to receive adequate counseling and advice from health workers, which allows them to use and give birth in health institutions, which is very important for reducing the occurrence of bade obstetrical complications. This may be due to the appropriate counseling and good approach taken during ANC visits for the benefit and effect of maternity waiting home in health facilities were providing good quality and safe delivery services in health facilities is highly important, as this approach increases the use of maternity waiting home at health facilities, which is an important strategy for reducing maternal and fetal mortality due to pregnancy-related emergency complications.

Moreover, this study showed that mothers who had access to transportation services were three times more likely to utilize maternity waiting home than mothers who were inaccessible to transportation services. These findings are consistent with those of studies performed in rural health centers in Kalamo District, Zambia [28], and in the Eastern Gurage Zone, southern Ethiopia [18]. This is because the inaccessibility of transportation plays a vital role in women’s inability to use health services, particularly maternity waiting home utilization and institutional delivery services. The absence of

### Reasons for not utilizing maternity waiting home



**Fig. 2** Reasons for not utilizing maternity waiting home among the study participants, Dangur district, Northwestern Ethiopia

**Table 4** Binary logistic regression model on associated factors for maternity waiting home utilization in Dangur District, Metekel Zone, Benishangul Gumuz Region, Northwestern Ethiopia, June 5–30, 2022

Variable	Characteristics	MWH Utilization		COR (95% CI)	AOR (95% CI)
		Yes	No		
Marital status	Married	113(39.)	170(60.1)	0.40(75%CI:0.24–0.64)	1.5(95%CI:0.31–7.6)
	Single	39(14.3)	18(85.7)	1.6(75%CI:0.68–3.7)	4.1(95%CI:0.38–44)
	Widowed	59(41.7)	7(58.3)	0.37(75%CI:0.16–0.84)	0.16(95%CI:0.008–3.35)
	Divorced	89(21.1)	30(78.9)	1.00	1.00
Ethnicity	Amhara	43(44.8)	53(55.2)	0.32(75%CI:0.18–0.72)	0.54(95%CI:0.61–4.33)
	Gumuz	32(31.7)	69(68.3)	0.66(75%CI:0.32–1.33)	0.52(95%CI:0.34–4.4)
	Agew	25(34.7)	47(65.3)	0.57(75%CI:0.28–1.18)	0.30(95%CI:0.63–2.81)
	Shinasha	233(34.8)	43(65.2)	0.57(75%CI:0.28–1.18)	0.19(95%CI:0.21–1.7)
	Others	4(23.5)	13(76.5)	1.00	1.00
Occupation of respondent	Housewife	89(36.6)	154(63.4)	0.72(75%CI:0.33–1.66)	0.4(95CI:0.41–4.01)
	Merchant	14(35.9)	25(64.1)	0.76(75%CI:0.31–1.8)	0.74(95CI:0.62–8.9)
	Private business	7(20.6)	27(79.4)	1.6(75%CI:0.65–4.1)	1.7(95%CI:0.7–14)
	Govt employer	16(57.1)	12(42.9)	0.32(75%CI:0.13–0.79)	1.4(95%CI:0.31–7)
	Others	3(30.0)	7(70.0)	1.00	1.00
Access to transportation	Accesses able	75(58.6)	53(41.4)	0.22(75%CI:0.16–0.29)	<b>3.0(95%CI:1.20–7.49)</b>
	Inaccessible	54(23.9)	172(76.1)	1.00	1.00
Mode of transportation	On foot	68(32.5)	141(67.5)	1.52(75%CI:1.17–1.9)	0.94(95%CI:0.41–2.18)
	On horse	3(37.5)	5(62.5)	1.22(75%CI:0.5–2.9)	0.94(95%CI:0.06–13.1)
	By ambulance	58(42.3)	79(57.7)	1.00	1.00
Having ANC follow up	Yes	126(39.0)	197(61.0)	0.16(75%CI:0.08–0.34)	1.54(95%CI:0.008–29)
	No	3(9.7)	28(90.3)	1.00	1.00
Number of times ANC received	1st ANC visit	4(8.7)	42(91.3)	10.0(75%CI:4.34–23)	0.59(95%CI:0.039–9.1)
	2nd ANC visits	7(16.3)	36(83.7)	6.33(75%CI:2.9–13.6)	0.26(95%CI:0.28–2.53)
	3rd ANC visits	32(35.6)	58(64.4)	1.74(75%CI:0.9–3.27)	0.47(95%CI:0.092–2.49)
	4th ANC visits	77(49.4)	79(50.6)	1.06(75%CI:0.58–1.94)	0.29(95%CI:0.64–1.37)
	> 4th ANC visits	9(47.4)	10(52.6)	1.00	1.00
Any pregnancy related complication	Yes	62(32.6)	128(67.4)	0.70(75%CI:0.54–0.90)	1.05(95%CI:0.47–2.31)
	No	67(40.9)	97(59.1)	1.00	1.00
Place of delivery	Home	1(0.7)	151(99.3)	0.003(75%CI:0.001–0.001)	<b>0.007(95%CI:0.002–0.03)</b>
	On the way	8(40.0)	12(60.0)	0.10(75%CI:0.003–0.035)	0.023(95%CI:0.003–0.161)
	Health facility	120(65.9)	62(34.1)	1.00	1.00
Knowing about the presence of maternity waiting home	Yes	126(51.6)	118(48.4)	15.5(95%CI:9.93–24.29)	<b>3.91(95%CI:1.00–15.24)</b>
	No	3(2.7)	107(97.3)	1.00	1.00
Source of information	HEW	102(51.8)	95(48.2)	0.039(75%CI:0.15–0.98)	0.18(95%CI:0.23–1.4)
	HDA	11(34.4)	21(65.6)	0.019(75%CI:0.008–0.44)	0.29(95%CI:0.29–2.97)
	Neighbors/Relative	8(53.3)	7(46.7)	0.39(75%CI:0.015–0.98)	0.94(95%CI:0.008–1.15)
	Health professional	6(60.0)	4(40.0)	0.18(75%CI:0.006–0.49)	0.19(95%CI:0.12–3.319)
	Others	2(2.0)	98(98.0)	1.00	1.00
Transport cost	Affordable	79(60.8)	51(39.2)	5.39(75%CI:4.08–7.11)	<b>2.44 (95%CI:1.01–5.92)</b>
	Not affordable	50(29.9)	117(70.1)	1.00	1.00
Cost for food	Possible	80(58.0)	58(42.0)	4.7(75%CI:3.57–6.17)	1.83(95%CI:0.71–4.7)
	Impossible	49(22.7)	167(77.3)	1.00	1.00
Bringing an attendant	Possible	36(58.1)	26(41.9)	2.96(75%CI:2.1–4.11)	0.61(95%CI:0.18–2.1)
	Impossible	93(31.8)	199(68.2)	1.00	1.00
Care of children	Possible	44(59.5)	30(40.5)	3.36(75%CI:2.46–4.59)	2.78(95%CI:0.84–9)
	Impossible	85(30.4)	195(69.6)	1.00	1.00
Being away from work	Possible	30(42.9)	40(57.1)	1.4(75%CI:1.02–1.9)	1.27(95%CI:0.37–4.33)
	Impossible	99(34.9)	185(65.1)	1.00	1.00
Time category	< 60 min	63(61.2)	40 (38.8)	0.22(75%CI:0.17–0.3)	2.8(95%CI:0.95–8.3)
	≥ 60 min	66(26.3)	185(73.7)	1.00	1.00

Key: COR Crude odds ratio, AOR Adjusted odd ratio, CI Confidence interval, 1.00: Reference



transportation services remains an issue that has not yet been solved by the existence of maternity waiting homes, which states that when transportation is accessible to health facilities, the odds of potentially utilizing maternity waiting home increase.

This study has its own strengths, which may overcome the limitations of previous studies. In the present study, we included mothers who were delivered currently, but the majority of previous studies were conducted on the intentions of pregnant mothers to utilize maternity waiting home; which may not reveal the exact status of maternity waiting home utilization or the factors affecting it. Moreover, data collectors were recruited from other nearby districts to decrease socially desirable bias and information contamination. One limitation of this study was that it was not possible to establish a cause-and-effect relationship due to the cross-sectional nature of the study.

## Conclusions

This study concluded that the utilization of maternity waiting home is low compared to that of other studies performed in our country, which revealed a prevalence of 36.4%. This study identified programmatically important factors such as mothers' knowledge of the presence of maternity waiting home in the health facility, accessibility of transportation services, affordability of transportation and place of delivery services that have a significant impact on the utilization of maternity waiting home in the study area. Therefore, increasing maternal knowledge, increasing the accessibility of health facilities and infrastructure, improving transportation services, economically empowering women and respectful and supportive care while waiting for maternity homes are important for improving the utilization of maternity waiting homes, which contributes to reducing maternal and neonatal mortality.

## Abbreviations

ANC	Antenatal Care
AOR	Adjusted odds ratio
EDHS	Ethiopian Demographic Health Survey
EMDHS	Ethiopian Mini Demographic Health Survey
HEW	Health Extension Worker
MMR	Maternal Mortality Ratio
MWH	Maternity Waiting Home
SNNPR	Southern Nation's Nationalities and Peoples Region
SPSS	Statistical Package for Social Science
WHO	World Health Organization

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12884-024-06872-7>.

Supplementary Material 1.

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## Authors' contributions

MBW conceived and designed the study. Then after, data was collected, analyzed, interpreted, and wrote the whole document. MAZ was design manuscript. GTD, MT and MAZ were critically commenting on the whole document and genuinely guide the whole work. All authors read and approved the final manuscript.

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## Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

## Declarations

### Ethics approval and consent to participate

Ethical approval was obtained from the Institutional Review Board of Jimma University, and official permission was obtained from the Dangur district health office. The formal letter was subsequently written and distributed to each health post and kebeles (lower administrative units) from the district health office. After the purpose of the study was explained, written consent was obtained from the study participants. The study participants were informed that the information they provided would not be used for any purpose other than for this study only. The confidentiality and privacy of the study participants were assured.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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