



## OPEN Community perceptions and determinants of obstetric fistula across gender lines

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Obstetric fistula is a major maternal health challenge in low-income countries like Ethiopia. Misperceptions about obstetric fistula delay seeking and accessing healthcare. Understanding community attitudes is crucial for prevention, early detection, and support for affected women. A community-based study was conducted from February 1 to April 26, 2024, among 640 women and men to assess attitudes and influencing factors. Participants were selected using a multistage sampling. Multivariable logistic regression analysis was performed, with a  $p$ -value  $< 0.05$  considered statistically significant. The study included nearly equal proportions of males (49.1%) and females (50.9%), with a median age of 32 years (IQR: 19–64). Among participants, 47.8% (95%CI: 43.7–51.6) had a favourable attitude towards obstetric fistula. Those under 20 years (AOR: 7.7; 95%CI: 2.3–28.6), aged 20–35 (AOR: 3.9; 95%CI: 1.8–8.5), and aged 36–50 (AOR: 6.36; 95%CI: 3.0–14.1) were more likely to have a favourable attitude compared to those over 50 years. Female gender (AOR: 1.5; 95%CI: 1.1–2.2), primary education (AOR: 1.86; 95%CI: 1.3–2.9), and awareness of obstetric fistula (AOR: 3.04; 95%CI: 2.0–4.6) were significant determinants. The study revealed unfavourable community attitudes towards obstetric fistula, with notable gender and age differences. Enhancing attitudes requires a comprehensive, tailored program involving all relevant stakeholders.

**Keywords** Community attitude, Determinant factors, Obstetric fistula, Ethiopia

### Abbreviations

AOR	Adjusted odds ratio
COR	Crude odds ratio
CI	Confidence interval
OF	Obstetric fistula
UNFPA	United Nations population fund agency
VVF	Vesico vaginal fistula
WHO	World Health Organization

Obstetric fistula is a serious condition resulting from prolonged or obstructed labour, leading to an abnormal opening between the vagina and the urinary tract or rectum<sup>1</sup>. This condition is a common and devastating maternal health issue globally, particularly affecting women in resource-limited settings. It is estimated that 2 to 3.5 million women worldwide live with obstetric fistula, with approximately 2 million cases untreated<sup>2</sup>. The presence of obstetric fistula often reflects the challenges faced in maternal healthcare in low-resource settings, highlighting the urgent need for improved obstetric care to prevent and address this significant issue<sup>1,3</sup>.

Women affected by obstetric fistula frequently experiences social exclusion and significant health challenges, including urinary and faecal incontinence<sup>4,5</sup>. Despite its elimination in wealthier countries through high-quality

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maternity care, millions of new cases continue to emerge annually in resource-poor nations<sup>6</sup>. Prevention relies on accessible and respectful obstetrical care, driven by trust and positive attitudes<sup>7</sup>. Ethiopia, for instance, is actively working to address fistula through prevention and treatment strategies, aligning with Sustainable Development Goals for 2030<sup>8–10</sup>.

An unfavourable attitude towards obstetric fistula within a community can have devastating consequences<sup>11,12</sup>. Stigmas surrounding contraception and early childbearing can lead to misconceptions about prevention methods and hinder access to proper reproductive health services<sup>13</sup>. This lack of accurate knowledge may result in affected women seeking ineffective treatments or avoiding seeking medical help altogether<sup>14</sup>. Such attitudes not only perpetuate the cycle of misinformation but also contribute to the physical, emotional, and social burden faced by women suffering from obstetric fistula<sup>8</sup>. Addressing these negative attitudes and promoting accurate information is essential in alleviating the burden of this preventable condition on individuals and communities<sup>9,10,15,16</sup>.

Studies highlights unfavourable attitude towards preventing obstetric fistula in Sub-Saharan Africa, influenced by societal stigmas against contraception and early childbearing<sup>7,17</sup>. Misconceptions persist, with beliefs in traditional remedies and avoiding sexual activities as prevention methods. These misconceptions hinder the uptake of reproductive health services and may lead affected women to seek alternative treatments<sup>18,19</sup>. Addressing these misconceptions is crucial for improving reproductive health outcomes in the region<sup>20–22</sup>. Unfavourable attitudes toward obstetric fistula within a community can be influenced by several risk factors. A lack of awareness and education about the condition can lead to stigma and misconceptions, causing women to suffer in silence<sup>23,24</sup>. Cultural beliefs and traditions may also perpetuate negative attitudes, as some communities may view obstetric fistula as a punishment or curse. Additionally, social and economic factors such as poverty and gender inequality can further marginalize women with obstetric fistula, hindering their ability to seek help and support<sup>8,25–30</sup>.

Understanding the risk factors associated with unfavourable attitudes toward obstetric fistula within a community is crucial in Ethiopia to address gaps in evidence and enhance the access to care for affected women. By researching community attitudes, specific cultural beliefs, misconceptions, and social barriers contributing to stigma and discrimination can be identified. This information can help policymakers and healthcare providers craft targeted interventions and awareness campaigns to challenge these negative attitudes and foster acceptance and support for women with obstetric fistula. Moreover, research can shed light on the influence of socioeconomic factors and healthcare accessibility on community attitudes, guiding efforts to improve maternal health services and ensure timely treatment for women living with obstetric fistula. However, there is a significant gap in the available evidence regarding the community's understanding and attitudes towards obstetric fistula and its influencing factors in northwest Ethiopia, highlighting the need to assess and address this gap to provide better support for affected individuals and reduce the prevalence of fistula cases. Therefore, this study aimed to assess community attitudes towards obstetric fistula and identify contributing factors among adults residing in Gondar, Northwest Ethiopia.

## Methods

### Study design and period

A community based cross-sectional study was conducted from 1st February 2024 to 26th April 2024 to determine the community's attitudes towards obstetric fistula and identify its determinants.

### Study setting

The study was carried out in Gondar city, situated in the Amhara region, Northwest Ethiopia. Gondar city is composed of twelve administrative or sub-cities, encompassing 22 kebeles (the smallest administrative units in Ethiopia). The city accommodates an estimated 53, 725 households and 395, 000 adults. Within Gondar, there is a referral hospital featuring a fistula treatment center, alongside eight governmental health centers and a general hospital. In the context of social diversity and equipped fistula treatment center, the study examined the complex community attitude towards obstetric fistula.

### Source and study population

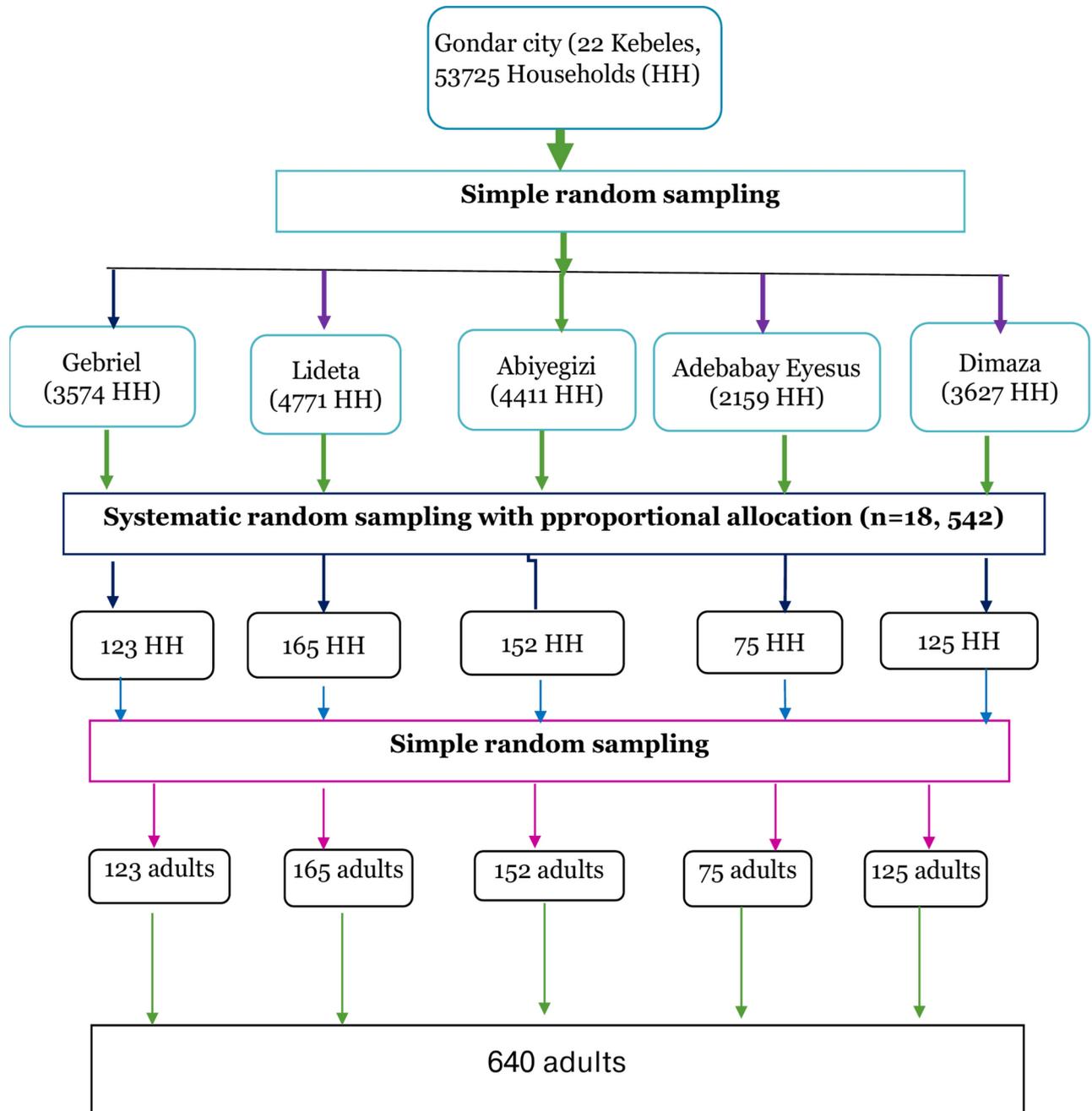
The source population for the study is comprised of adult individuals of males and females aged 18 years and older. The study population consisted of individuals aged 18 years and above who lives in the selected kebeles of the Gondar city for a minimum of six months.

### Sample size determination

The sample size for the study was determined using the single population proportion formula, considering a 95% confidence level (Z-score of 1.96), a proportion of 50% (P), and a margin of error of 5% (W). This calculation yielded a requirement of 384 participants ( $N = (Z \alpha/2)^2 (P) (1-P) / W^2 = (1.96)^2 (0.5) (1-0.5) / (0.05)^2$ ). Factoring in a design effect of 1.5 and a 10% non-response rate adjustment (Adjusted sample size = Desired Sample size / (1-non-response Rate)), the final sample size was determined to be 640 adults. Five kebeles (20% of the total) were randomly selected from the 22 kebeles using a lottery method. Study participants were selected proportionally based on the population size in each kebeles.

### Sampling techniques and procedures

A multistage random sampling technique was employed in this study. Initially, five kebeles were randomly chosen out of the total 22 kebeles in the city, representing 20% of all kebeles (Fig. 1). Subsequently, households were selected through systematic random sampling with a sampling fraction of 3 ( $k = n_i/N_i$ , where  $n_i$  denotes the proportionally allocated sample from each selected kebele and  $N_i$  represents the total number of households in



**Fig. 1.** Sampling procedure to select study participants (n = 640) in Northwest Ethiopia, 2024.

the respective kebele). The first household was selected through simple random sampling (ranging from 1 to 3), followed by the inclusion of every 3rd household in the research. Lastly, in households with more than one adult, a single individual aged 18 years or older was selected using the lottery method.

### Study variables

Attitude towards obstetric fistula was the outcome variable, while socio-demographic characteristics such as age, gender, religion, marital status, educational status, occupation, family size, distance from health facility, and awareness of factors related to fistula were the independent variables for the study.

### Measurement of variables

The outcome variable, attitudes towards obstetric fistula, was assessed using a Likert scale with 17 items consist of five levels of agreement (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). The total attitude score was calculated and categorized as either favourable or unfavourable based<sup>31</sup>. The scores for an individual participant can range from 1 to 85 points. Each respondent's score was then classified based on this overall total. Respondents were instructed to indicate their level of agreement on a scale of 1 to 5 for each

statement, with 1 representing strong disagreement and 5 representing strong agreement. The sum of all ratings determined the final score for each respondent. Participants whose total scores exceeded the median (59.09 points) were classified as having a favourable attitude, while those scores below or equal to the median were categorized as having an unfavourable attitude. Internal consistency of the questionnaire was estimated using Cronbach's alpha, and was found to be good ( $>0.70$ ). In addition to the outcome variable, the independent variables were measured as follows:

Heard of obstetric fistula was dichotomized as 'yes' = ever heard of obstetric fistula and 'no' = never heard of obstetric fistula. Heard of obstetric danger signs was dichotomized as 'yes' = heard of at least one of the 12 obstetric danger signs that contributes for obstetric fistula (adolescent pregnancy, multiple pregnancy, haemorrhage, prolonged labour, macrosomia, obstructed labour, uterine rupture, malpresentation of the foetus, mismanagement of labour, maternal sepsis, septic abortion, or home-birth-related injuries) and 'no' = never heard of any of these danger signs. Moreover, awareness about obstetric fistula was assessed using a structured questionnaire comprising twelve items. These items covered key aspects of obstetric fistula, including general information, causes, symptoms, prevention, treatment, long-term effects, burden, impact on quality of life, the role of obstructed labour in its development, effects on a woman's social life, available programs addressing obstetric fistula, and the consequences of delayed treatment. Each 'yes' response was scored as 1 point, and 'no' responses were scored as 0. The total score was calculated for each respondent, and awareness was dichotomized based on the mean score: those scoring  $\geq$  the mean was categorized as "aware," and those scoring  $<$  the mean were categorized as "not aware."

### Data collection methods and procedures

A one-day training was given to data collectors about the purpose of the study, data collection tools, techniques, and ethical issues. Data were collected using face-to-face interviewer-administrated pretested structured questionnaire which were adapted through review of relevant literature. The data were collected via an open-source Kobo Toolbox. The data were subsequently exported to an excel spreadsheet for processing, version 2108 (Microsoft Corp), and imported to the R statistical software package for analysis.

### Data quality assurance

The questionnaire was initially translated into the local language, Amharic, and then back-translated into English to verify consistency. A pre-test was conducted on 5% of the sample size (32 respondents). Training sessions were provided to the data collectors and supervisors on how to approach respondents and collect data. The investigators supervised the data collection process on daily bases to guarantee the consistency and completeness of data on a daily basis.

### Statistical analysis

Descriptive statistics were presented using absolute and relative frequencies, with the exact binomial confidence interval (CI) provided for the relative frequencies. Bi-variable logistic regression was conducted to gain insights into the determinants of the attitude towards obstetric fistula. Variables with a  $p$ -value of  $\leq 0.2$  in the bivariable logistic regression were chosen for inclusion in the multivariable logistic regression model. The results were reported as adjusted odds ratios. The data analysis was performed using the open-source statistical software R, version 4.3.1 (R Project for Statistical Computing). A two-sided test was applied to all hypotheses with a significance level of 5% ( $p < 0.05$ ), and the corresponding 95% CI was reported.

## Results

### Socio-demographic characteristics of the respondents

In this study, a total of 640 individuals were involved. The total attitude score for each respondent ranged from 1 to 85 points, with a mean of  $59.06 \pm 5.68$ , and a median of 59.09 (IQR: 33–74). The median age of the participants were 32 years (IQR: 19–64). Almost half of the study participants (49.1%) were males, while 45.9% ( $n = 294$ ) had attained a secondary level of education as their highest educational achievement. Majority of the study participants were married (68.8%,  $n = 440$ ) and had a family size ranging from 3 to 5 members (61.9%,  $n = 396$ ) (Table 1).

### Awareness of obstetric fistula related characteristics

In this study, 369 (57.7%) individuals were not heard of obstetric fistula, and over half of the study participants did not hear of obstetric danger signs that could contribute for obstetric fistula and the associated complications. Out of the total 640 participants, only 59.8% ( $n = 383$ ) demonstrated awareness concerning obstetric fistula, including its risk factors, preventive measures, and the availability of management strategies (Table 2).

### Community's attitude towards obstetric fistula

Three hundred and five respondents, representing 47.7% (95% CI: 43.7–51.6) of the total sample, exhibited favourable attitude towards obstetric fistula prevention, symptoms, risk factors, complications, and health-seeking behaviour. A significant proportion of participants believed that obstetric fistula is associated with the influence of evil spirits and can be inherited, with percentages of 45.2% ( $n = 138$ ) and 68.5% ( $n = 209$ ), respectively. Furthermore, over two-thirds of the participants with favourable attitude perceived that obstetric fistula could be prevented by delivering with the assistance of trained healthcare professionals, with a percentage of 77.7% ( $n = 237$ ) (Table 3).

Parameters	Study population	Attitude status	
	Total N (%; 95%CI)	Favourable attitude N (%; 95%CI)	Unfavourable attitude N (%; 95%CI)
Observations: N	640 (100)	305 (47.7; 43.7–51.6)	335 (52.3; 48.4–56.3)
Age (years)			
<20	25 (3.9; 2.5–5.7)	6 (2.0; 0.7–4.2)	19 (5.7; 3.4–8.7)
20–35	364 (56.9; 52.9–60.8)	169 (55.4; 49.6–61.1)	195 (58.2; 52.7–63.5)
36–50	196 (30.6; 27.1–34.4)	89 (29.2; 24.1–34.6)	107 (31.9; 26.9–37.2)
≥51	55 (8.6; 6.5–11.0)	41 (13.4; 9.8–17.8)	14 (4.2; 2.3–6.9)
Gender			
Female	326 (50.9; 46.9–54.9)	138 (45.2; 39.6–51.0)	188 (56.1; 50.6–61.5)
Male	314 (49.1; 45.1–53.0)	167 (54.8; 48.9–60.0)	147 (43.9; 38.5–49.4)
Religion			
Orthodox	578 (89.8; 87.8–92.5)	272 (89.2; 85.1–92.4)	306 (91.3; 87.8–94.1)
Muslim	42 (6.9; 4.7–8.8)	24 (7.9; 5.1–11.5)	18 (5.4; 3.2–8.4)
Protestant	15 (2.3; 1.3–3.8)	9 (3.0; 1.3–5.5)	6 (1.8; 0.7–3.8)
Catholic	5 (0.9; 0.2–1.8)	0 (0.0; 0.0–1.2)	5 (1.5; 0.5–3.4)
Marital status			
Single	166 (25.9; 22.6–29.5)	74 (24.3; 19.6–29.5)	92 (27.5; 22.8–32.6)
Married	440 (68.8; 65.0–72.3)	212 (69.5; 64.0–74.6)	228 (68.1; 62.8–73.0)
Divorced	21 (3.3; 2.0–4.9)	10 (3.3; 1.6–5.9)	11 (3.3; 1.6–5.8)
Widowed	13 (2.0; 1.1–3.4)	9 (3.0; 1.3–5.5)	4 (1.2; 0.3–3.1)
Educational status			
No formal education	52 (8.1; 6.1–10.5)	24 (7.9; 5.1–11.5)	28 (8.4; 5.6–11.9)
Primary education	181 (28.3; 24.8–31.9)	70 (23.0; 18.4–28.1)	111 (33.1; 28.1–38.5)
Secondary education	294 (45.9; 42.0–49.9)	152 (49.8; 44.1–55.6)	142 (42.4; 37.0–47.9)
College and above	113 (17.7; 14.8–20.8)	59 (19.3; 15.1–24.2)	54 (16.1; 12.3–20.5)
Occupation			
Government	276 (43.1; 39.2–47.1)	153 (50.2; 44.4–55.9)	123 (36.7; 31.5–42.1)
Private	169 (26.4; 23.0–30.0)	79 (25.9; 21.1–31.2)	90 (26.9; 22.2–31.9)
Self employed	152 (23.8; 20.5–27.2)	57 (18.7; 14.5–23.5)	95 (28.4; 23.6–33.5)
Unemployed	43 (6.7; 4.9–8.9)	16 (5.2; 3.0–8.4)	27 (8.1; 5.4–11.5)
Family size			
1–2	46 (7.2; 5.3–9.5)	14 (4.6; 2.5–7.6)	32 (9.6; 6.6–13.2)
3–5	396 (61.9; 57.9–65.7)	180 (59.0; 53.3–64.6)	216 (64.5; 59.1–69.6)
≥6	198 (30.9; 27.4–34.7)	111 (36.4; 30.9–42.1)	87 (26.0; 21.4–31.0)
Distance from HF			
≤30 min	440 (68.8; 65.0–72.3)	220 (72.1; 66.7–77.1)	220 (65.7; 60.3–70.7)
>30 min	200 (31.2; 27.7–35.0)	85 (27.9; 22.9–33.3)	115 (34.3; 29.3–39.7)

**Table 1.** Socio-demographic characteristics of study participants by attitude towards obstetric fistula, 2024.

### Multivariable logistic regression analysis

Both the bivariable logistic regression analysis and the multivariable logistic regression analysis, after adjusting the effect of covariates, showed that Age of the participants, female gender, attending primary education, and aware about obstetric factors were all statistically significant independent factors influencing the community attitude towards obstetric fistula.

The odds of having a favourable attitude towards obstetric fistula is 3.9 times higher (95% CI: 1.8–8.5) among individuals aged 20–35 compared to those aged 51 or older. Similarly, individuals in the 36–50 age group are 6.36 times more likely to have a favourable attitude compared to those aged 51 or older. Additionally, the likelihood of having a positive attitude towards obstetric fistula is 1.5 times higher (95% CI: 1.1–2.2) among females compared to males.

The likelihood of possessing a positive attitude towards obstetric fistula is 1.86 times higher among individuals with primary education compared to those who have completed secondary education. Moreover, the odds of harbouring a positive attitude are 3.04 times higher (95% CI: 2.0–4.6) among individuals with good awareness of obstetric fistula compared to those with no awareness. These findings are detailed in Table 4.

### Discussion

This study examined the attitudes towards obstetric fistula within the communities of Gondar town, Ethiopia. Furthermore, the study identified the factors that influences the communities' attitudes towards obstetric fistula.

Parameters	Study population	Attitude status	
	All N (%; 95%CI)	Favourable attitude N (%; 95%CI)	Unfavourable attitude N (%; 95%CI)
Observations: N	640 (100)	305 (47.7; 43.7–51.6)	335 (52.3; 48.4–56.3)
Heard of obstetric fistula			
No	369 (57.7; 53.7–61.5)	160 (52.5; 46.7–58.2)	209 (62.4; 56.9–67.6)
Yes	271 (42.3; 38.5–46.3)	145 (47.5; 41.8–53.3)	126 (37.6; 32.4–43.0)
Heard of obstetric danger sign			
No	352 (55.0; 51.1–58.9)	164 (53.8; 47.9–59.5)	188 (56.1; 50.6–61.5)
Yes	288 (45.0; 41.1–48.9)	141 (46.2; 40.5–52.0)	147 (43.9; 38.5–49.4)
Participated in any maternal health conference			
No	442 (69.1; 65.3–72.6)	215 (70.5; 65.0–75.6)	227 (67.8; 62.5–72.7)
Yes	198 (30.9; 27.4–34.7)	90 (29.5; 24.4–34.9)	108 (32.2; 27.3–37.5)
Aware about obstetric fistula			
No	257 (40.2; 36.3–44.1)	81 (26.6; 21.7–31.9)	176 (52.5; 47.0–57.9)
Yes	383 (59.8; 55.9–63.7)	224 (73.4; 68.1–78.3)	159 (47.5; 42.0–52.9)

**Table 2.** Awareness of obstetric fistula related characteristics among adults in Gondar, 2024.

Items	Favourable attitudes	Unfavourable attitudes
	N (%; 95%CI)	N (%; 95%CI)
Obstetric fistula is preventable	161 (52.8; 47.0–58.5)	128 (38.2; 32.9–43.6)
Obstetric fistula is curable	251 (82.3; 77.5–86.4)	190 (56.7; 51.2–62.1)
Women are at risk of developing obstetric fistula	159 (52.1; 46.4–57.8)	123 (36.7; 31.5–42.1)
Women with obstetric fistula are stigmatized	223 (73.1; 67.7–78.0)	166 (49.6; 44.1–55.0)
Women who married early are at higher risk of obstetric fistula	153 (50.2; 44.4–55.9)	103 (30.7; 25.8–36.0)
Obstetric fistula is related with act of evil spirits	138 (45.2; 39.6–51.0)	197 (58.8; 53.3–64.1)
Obstetric fistula is heritable	209 (68.5; 62.9–73.7)	219 (65.4; 60.0–70.5)
Surgical treatment is an effective for obstetric fistula	246 (80.7; 75.7–84.9)	140 (41.8; 36.4–47.3)
Fistula is curable by alternative medicines (cultural/herbal)	170 (55.7; 49.9–61.4)	203 (60.6; 55.1–65.9)
Delivery by trained healthcare professional prevent fistula	237 (77.7; 72.6–82.3)	120 (35.8; 30.7–41.2)
Delivery by caesarean when indicated could help prevent fistula	211 (69.2; 63.7–74.3)	252 (75.2; 70.2–79.8)
Obstetric fistula is caused by sexual transmitted infections	152 (49.8; 44.1–55.6)	218 (65.1; 59.7–70.2)
Obstetric fistula is caused by improper use of family planning methods	175 (57.4; 51.6–63.0)	237 (70.7; 65.6–75.6)
Malnutrition & micronutrient deficiency in pregnancy increase risk of fistula	211 (69.2; 63.7–74.3)	144 (43.0; 37.6–48.5)
Obstetric fistula could lead to infertility	267 (87.5; 83.3–91.0)	186 (55.5; 50.0–60.9)
Unsafe abortion may cause obstetric fistula	113 (37.0; 31.6–42.7)	246 (73.4; 68.4–78.1)
Home delivery could contribute to increase risk of obstetric fistula	224 (73.4; 68.1–78.3)	230 (68.7; 63.4–73.6)

**Table 3.** Favourable attitudes of participants towards obstetric fistula prevention and management.

In this study, it was found that 47.8% of community members in Gondar town have a favourable attitude towards obstetric fistula. A similar study from Nepal<sup>32</sup> among married women identified that 50.0% of them had positive attitude towards obstetric fistula. This may indicate a concerning lack of awareness and support for individuals affected by this debilitating condition.

One possible justification for the finding that nearly 50% of community members have a favourable attitude towards obstetric fistula could be a lack of comprehensive education and awareness campaigns about this condition. Cultural beliefs, social stigma, and limited access to information and healthcare services may also contribute to these attitudes<sup>33,34</sup>.

In this study, 68.5% of participants believed that obstetric fistula is heritable, while 45.2% associated the condition with evil spirits. These misconceptions surrounding obstetric fistula can lead to stigma and discrimination against women who suffer from the condition. It is important to educate the public about the true causes of obstetric fistula, which are primarily related to lack of access to proper maternal healthcare<sup>22</sup>. By dispelling myths and increasing awareness, it is recommended to work towards eradicating obstetric fistula and improving the lives of affected women. On the contrary, a study conducted in Ibadan, Nigeria<sup>35</sup>, among healthcare workers demonstrated that 91.2% of them had positive attitude towards obstetric fistula. This proportion is much higher than the current study which might be due differences in socio demographic characteristics of the study participants. While 45.9% of the study participants had attained a secondary level of education as their highest educational achievement in the current study, all were with higher level of education in the report

Parameters	Attitude towards obstetric fistula (N = 640)				
	Favourable (N = 305)	Unfavourable (N = 335)	Crude OR (95% CI)	Adjusted OR (95% CI)	P value
Age (Years)					
<20	6 (2.0%)	19 (5.7%)	9.3 (3.2–29.8)	7.65 (2.3–28.6)	<0.001
20–35	169 (55.4%)	195 (58.2%)	3.4 (1.8–6.6)	3.9 (1.8–8.5)	
36–50	89 (29.2%)	107 (31.9%)	3.5 (1.8–7.1)	6.36 (3.0–14.1)	
≥51	41 (13.4%)	14 (4.2%)	1	1	
Gender					
Female	138 (45.2%)	188 (56.1%)	1.5 (1.1–2.2)	1.5 (1.1–2.2)	0.028
Male	167 (54.8%)	147 (43.9%)	1	1	
Education status					
No formal education	24 (7.9%)	28 (8.4%)	1.3 (0.7–2.3)	1.15 (0.6–2.2)	0.031
Primary education	70 (23.0%)	111 (33.1%)	1.7 (1.2–2.5)	1.86 (1.3–2.9)	
College and above	59 (19.3%)	54 (16.1%)	0.9 (0.6–1.5)	1.07 (0.6–1.8)	
Secondary education	152 (49.8%)	142 (42.4%)	1	1	
Aware about obstetric fistula					
Yes	224 (73.4%)	159 (47.5%)	3.1 (2.2–4.3)	3.04 (2.0–4.6)	<0.001
No	81 (26.6%)	176 (52.5%)	1	1	

**Table 4.** Multivariable logistic regression using attitude status as response.

from Nigeria who were also expected to have adequate awareness about obstetric fistula. In the current study; however, 57.7% of the study participants were not aware of obstetric fistula, and half of them had inadequate awareness about obstetrics danger signs that contributes to obstetric fistula and its associated complications. This finding is in line with the study conducted in Egypt<sup>36</sup>, Ethiopia<sup>28,37</sup>, and Burkina Faso<sup>38</sup>, but better than a finding from Gambia<sup>27</sup>. This may be attributed to several factors. Limited access to educational resources, cultural stigmas surrounding reproductive health issues<sup>39</sup>, and a lack of targeted public health campaigns can contribute to such low awareness levels<sup>40,41</sup>. Obstetric fistula, often resulting from prolonged labour without timely medical intervention, is a condition that can be shrouded in taboo, leading to reduced discussion and understanding among affected populations<sup>39</sup>. Additionally, healthcare infrastructure and the availability of trained professionals<sup>42</sup> can significantly influence awareness and education regarding this condition. In contrast, the study in Uganda<sup>43</sup>, reported that 45% of communication professionals exhibited satisfactory awareness of obstetric fistula. This relatively higher percentage might reflect better access to information and training among communication professionals, who are often engaged with public health messaging and community outreach. This implies the need to design community tailored awareness creation campaigns to bring positive attitude within the community in the study setting.

Younger community members, under the age of 20, exhibited a significantly more positive attitude towards obstetric fistula compared to their older counterparts. The odds ratio was 7.7, with a 95% confidence interval of 2.3–28 indicating a strong association between younger age and attitude towards obstetric fistula. The odds of having favourable attitude towards obstetric fistula is nearly 8 times higher in individuals under the age twenty compared to those above fifty years. The observed disparity in awareness of obstetric fistula may be attributed to an awareness gap between younger and older individuals. A study from Ethiopian National Demographic Survey reported that individuals aged 20–25 years were 17% more likely to be aware of obstetric fistula compared to those older than 25 years<sup>28</sup>. This finding suggests that younger individuals may have greater access to information, potentially facilitated by social media platforms<sup>28</sup>. Implementing targeted awareness campaigns could play a pivotal role in addressing this disparity and improving awareness among older age groups. However, the wide confidence interval suggests some uncertainty in the estimate because the smaller sample size in this age group (20 participants). Future studies with larger sample sizes are essential to strengthen the evidence base and guide effective public health strategies. Similarly, individuals in the age range 20–35, and 36–50 were more likely to have nearly four times (AOR: 3.9; 95%CI: 1.8–8.5) and seven times (AOR: 6.36; 95% CI: 3.0–14.1) favourable attitude towards obstetric fistula compared to those over 50 years. This may be due to the fact that the younger population is more likely to have access to information related to obstetric fistula which may contributed for their positive attitude towards the condition.

Women are more likely to have a positive attitude towards obstetric fistula compared to men, with women being 1.5 times more likely to have a favourable attitude towards this condition. A study from Egypt reported a highly substantially positive association among overall awareness and attitude towards obstetric fistula<sup>7</sup>. This positive outlook among women may be attributed to their understanding of the physical and emotional impact it can have on affected individuals. Women's positive attitude towards obstetric fistula may stem from their understanding of the physical and emotional toll it can take on women<sup>44,45</sup>. They may also be more empathetic towards the challenges faced by those affected by this condition<sup>46</sup>. On the other hand, men may not have the same level of awareness or personal connection to the issue, resulting in a less positive attitude overall. Narrowing this

difference is important to minimize gender disparities in attitudes towards obstetric fistula and promote greater support and understanding across all genders.

Individuals with only a primary education are 1.86 times more likely to have a favourable attitude compared to those who have completed secondary education, according to a study with a 95% confidence interval of 1.3–2. However, it is important to note that education level is just one factor that can influence attitudes. Other variables such as socioeconomic status, cultural background, and personal experiences may also play a significant role in shaping an individual's perspective<sup>47</sup>. Additionally, attitudes are complex and can be influenced by a variety of factors, making it essential to consider a holistic approach when studying attitudes and behaviours<sup>48</sup>. Another possible justification for individuals with primary education being more likely to have a favorable attitude towards obstetric fistula compared to those who completed secondary education could be related to the level of exposure and understanding of the issue. Individuals with primary education may have received basic information about obstetric fistula, which could lead to a more empathetic and supportive attitude. On the other hand, those who completed secondary education may have higher expectations or be more critical due to their advanced level of education, potentially leading to a less favorable attitude.

People with good awareness of obstetric fistula (AOR: 3.04; 95% CI: 2.0–4.6) were more likely to have favourable attitude towards obstetric fistula compared those without awareness. One possible justification for people with good awareness of obstetric fistula being more likely to have a favourable attitude compared to those without awareness could be the direct correlation between knowledge and empathy<sup>27,28</sup>. Individuals who are well-informed about obstetric fistula are more likely to understand the physical and emotional toll it takes on women. This deeper understanding can lead to increased empathy and support for those affected by the condition, resulting in a more positive attitude. Conversely, individuals without awareness may lack the necessary information to comprehend the impact of obstetric fistula, leading to a less favourable attitude due to ignorance or misunderstanding<sup>32</sup>.

The study provides a detailed examination of attitudes towards obstetric fistula within the communities in both genders, and identifies factors that influence these attitudes. By considering age, gender, education level, and awareness of the condition, the study offers a comprehensive analysis of the topic. The study highlights common misconceptions surrounding obstetric fistula, such as beliefs that it is heritable or associated with evil spirits. By identifying and addressing these misconceptions, the study emphasizes the importance of education and awareness in changing attitudes towards the condition. However, the findings from the study should be interpreted in line with some limitations. The study focuses on attitudes towards obstetric fistula in a specific community in Gondar town, Ethiopia. The findings may not be generalizable to other populations or regions with different socio-demographic characteristics, cultural beliefs, or healthcare systems. The study relies on self-reported data from participants, which may be subject to bias. Participants may provide socially desirable responses or inaccurately report their attitudes towards obstetric fistula, leading to potential measurement errors. The study provides a snapshot of attitudes towards obstetric fistula at a single point in time. Longitudinal data tracking changes in attitudes over time would have provided a more comprehensive understanding of how attitudes evolve and the effectiveness of interventions. While the study identifies age, gender, education level, and awareness as factors influencing attitudes towards obstetric fistula, other potential variables such as socioeconomic status, cultural norms, and personal experiences were not fully explored. A more comprehensive assessment of these factors could provide a more nuanced understanding of attitudes. Potential confounding variables such as cultural beliefs and personal experiences were not included in the analysis which could impact the interpretation of the results. Furthermore, from a theoretical perspective, the forced dichotomization of attitude into favourable and unfavourable categories excludes the neutral stance, which may overlook a significant portion of the population. However, from a practical standpoint, it is essential to provide interventions for individuals in the neutral position. This approach can empower them to make informed choices, either leaning toward a favourable or unfavourable attitude. By addressing this neutral group, we can facilitate a more comprehensive understanding and engagement with the issue at hand, ultimately promoting better health outcomes.

## Conclusions

The study shows a significant difference in attitudes towards obstetric fistula based on age, gender, education level, and awareness of the condition. Younger individuals, women, those with primary education, and those with good awareness of obstetric fistula were more likely to have a positive attitude towards the condition. This emphasizes the importance of tailored awareness campaigns and educational initiatives to promote understanding and support for individuals affected by obstetric fistula in the community.

## Recommendations

Develop educational initiatives specifically designed to raise awareness about obstetric fistula among different age groups, genders, and educational backgrounds in the community. Tailoring the information to suit the specific needs and preferences of each group can help increase understanding and support for individuals affected by obstetric fistula. Given that younger community members exhibited a more positive attitude towards obstetric fistula, it is important to involve youth in awareness campaigns and educational programs. Younger individuals can serve as advocates for change and help spread accurate information about obstetric fistula within their communities. Since women were more likely to have a positive attitude towards obstetric fistula, efforts should be made to empower women to take on leadership roles in promoting awareness and support for individuals affected by the condition. Providing women with the necessary resources and platforms to advocate for change can help bridge the gender gap in attitudes towards obstetric fistula. It is essential to maintain ongoing awareness campaigns and advocacy efforts to ensure sustained support for individuals affected by obstetric fistula. Collaborating with local organizations, healthcare providers, and community leaders can help create a

network of support and resources for those in need. We recommend that future studies should explore additional categories or continuous measures of attitude to capture the full spectrum of community's perceptions towards obstetric fistula.

## Data availability

**The data will be available from the corresponding author upon a reasonable request.**

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## Author contributions

AL, DSA, and WFC: Conceived and designed the study, substantially contributed in methodology of the article, analyzed and interpreted the data, wrote the original draft of the manuscript, revised, and approved the final manuscript. AB, ADT, BL, CB, and TAA: Involved in the data management, analysis and interpretation of the findings. All authors reviewed and edited the manuscript for intellectual content. All authors read and approved the final version of the manuscript.

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## Declarations

## Competing interests

The authors declare that there are no financial and non-financial competing interests. The authors declare no competing interests.

## Ethics statement

The studies were conducted in accordance with the ethical standard of the University of Gondar (VP/S/10291) and compliance with local legislation and institutional guidelines. The participants provided verbal and informed consent to participate in the study.

## Consent for publication

Not applicable.

## Additional information

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