

Knowledge of Obstetric Fistula and Its Associated Factors among Women Attending Antenatal care at University of Gondar Comprehensive Specialized Hospital Northwest, Ethiopia (2025): Facility based Cross-Sectional Study

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Abstract

Background: Obstetric fistula continues to be a significant contributor to maternal morbidity and mortality in Ethiopia, leading to devastating physical, psychological, and social consequences. Poor knowledge of women about obstetric fistula and its risk factors are the main predisposing factors of obstetric fistula. Limited data are available on knowledge of women on fistula and its risk factors in Gondar town. Therefore this study was assess knowledge of women on fistula and aiming to enhance knowledge of women on fistula and inform strategies for targeted interventions.

Objective: This study aims to assess knowledge of obstetric fistula and associated factors among pregnant women who attend antenatal care.

Methods: A facility-based cross-sectional study was conducted from April 20 to May 20, 2025, among 413 pregnant women selected using systematic random sampling. Data were collected through face-to-face interviews with pretested structured questionnaires and analyzed using STATA 14.1. Bivariable logistic regression was performed with statistical significance set at $p < 0.25$ and multivariable logistic regression analyses were performed, with statistical significance set at $p < 0.05$. Model fitness was checked by the Hosmer–Lemeshow test ($p = 0.49$).

Results: Overall, 55.9 % of respondents had poor knowledge of obstetric fistula with 95% of CI. Women who had given birth (AOR: 4.3; 95% CI: 1.8–9.7), women who ever used contraceptive (AOR: 3.1; 95% CI: 1.6–6.2), women who had availability of transportation (AOR: 1.9; 95% CI: 1.4–4.2), those who had media exposure on reproductive health (AOR: 2.9; 95% CI: 1.9–7.4), women being circumcised (AOR: 0.25; 95% CI: 0.14–0.44), and being unable to read and write (AOR: 0.22; 95% CI: 0.07–0.70) were significantly associated with knowledge of obstetric fistula.

Conclusion and recommendations: Knowledge of obstetric fistula among pregnant women was low. Promoting family planning service utilization, availability of transpositions, and addressing harmful traditional practices and educational barriers are essential to improving women's knowledge of obstetric fistula. Zonal health and Woreda's health bureaus should be strengthen family planning service utilization and community should be advocate against female circumcision, promoting media-exposure and safer cultural practices.

Introduction

Obstetric fistula is an abnormal passage between vagina and bladder or rectum which develop after prolonged and obstructed labor and lead to persistent urinary or fecal incontinence (1). Obstetric fistula is associated with prolonged and obstructed labor when emergency obstetric care is inadequate or inaccessible (2). Around one million women worldwide currently suffer from obstetric fistula (3). In developed countries obstetric fistula is nearly eliminated (< 1 per 100,000 women) (4). Obstetric fistula is a disease of poverty which occurs in all developing countries, particularly in the Northern half of sub-

Saharan Africa(5).National strategic plan of Ethiopia for the elimination of obstetric fistula (2021–2025) estimates that more than 140 thousand fistula patients exist in Ethiopia (6).

Ending obstetric fistula is one of the critical measures to achieve third Sustainable Development Goal(SDGs)(7).World health organization set a strategies to eliminate fistula through availability and accessibility of reproductive health services. Despite WHO strategies and SDGs to eliminate fistula, developing countries are still unachievable due to inaccessibility and unavailability of reproductive health services, lack of women's education, poverty and early marriage (8).

Poor knowledge of women on fistula and its associated factors are the main contributors of obstetric fistula (9).Poor knowledge of women on obstetric fistula in developed countries is less than 10% (10).Poor knowledge of women on obstetric fistula in low and middle countries is between 50% and 90% (19).Poor knowledge of women on obstetric fistula in sub-Saharan countries is between 60% and 85% (11).In Burkina Faso 63.6% of women had poor knowledge on obstetrical fistula and it's prevention methods (14).Poor knowledge of women on obstetric fistula in Ethiopian is between 65% to 80%) (12).Demographic Health Survey (EDHS 16), states 39% of women had good knowledge on obstetric fistula (13).Studies conducted in Northeast Ethiopia,42.2% of women had good knowledge on obstetric fistula(15).

Methods and materials

Study Area and period

This study was conduct at University of Gondar Comprehensive specialized Hospital from April 20 to May 20, 2025.University of Gondar Compressive Specialized Hospital serves for more than 12 million people and provides different health services to the communities. In University of Gondar Comprehensive Specialized Hospital the number health professional provide on sexual and reproductive health are 180 midwives, 35 residents, 12 specialist and sub specialist.University of Gondar Comprehensive Specialized Hospital provides different sexual and reproductive health services such as antenatal care, postnatal care, labor and delivery, abortion and post abortion care, family planning, counseling on reproductive health and treatments of obstetrical and gynecological complications.

Study design

Institutional based cross-sectional study design was conducted.

Source population

All pregnant women who attended antenatal care services at the University of Gondar Comprehensive Specialized Hospital.

Study population

All pregnant women who attended antenatal care services at University of Gondar Compressive Specialized Hospital during the study period.

Sample population

All pregnant women who were fulfilled inclusion criteria and consent to participate.

Inclusion and Exclusion criteria

Inclusion criteria

Pregnant women who had at least one outpatient antenatal care contact at the University of Gondar Comprehensive Specialized Hospital.

Exclusion criteria

Pregnant women who were critically ill and mentally incapable to communicate during data collection time.

Sample size and sampling procedure

Sample size determination

The sample size was determined through single population proportion formula by taking 42.2% of women who had good knowledge on obstetric fistula in Northwest Ethiopia with 5% of margin of error and 95% confidence level(38).The required sample size is calculated as, where

n = required sample size

z = confidence level

d = margin of error (degree of freedom).

$n = (z \alpha/2)^2 * p (1-P) / d^2$

$(1.96)^2 * .422 * 0.578 / 0.0025 = 375$. Then considering 10% of non-response rates the final sample size was 413.

Table 1

-Sample size calculation based on associated factors influencing knowledge of obstetric fistula among pregnant women attending antenatal care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2025.

Variable	Assumptions% non-exposed /lack of awareness	Sample size	NR 10%	Maximum sample size	References
ANC follow up	Power = 80%,AOR = 0.937,CI = 95%,exposed to unexposed ratio = 1,P (38.4%)	146	15	161	(38)
Institutional delivery	Power = 80%,AOR = 2.5,CI = 95%,exposed to unexposed ratio = 1,P(13.4%),	238	24	262	(23)
Distance from health facility < 30 minutes by barefoot	Power = 80%,AOR = 0.935,CI = 95%,exposed to unexposed ,ratio = 1,P(26.5%)	70	7	77	(23)
Age at first pregnancy < 18 years	Power = 80%,AOR = 1.263,CI = 95%,exposed to unexposed ratio = 1,P(58.1%)	138	14	152	(23)

Sample size calculated from associated factors on fistula is lower than sample size of knowledge of fistula. Therefore the sample size is the largest sample size, which is 413.

Sampling procedure

The schematic presentation of the sample size determination and sampling procedure is shown in Fig. 1. The study participants were selected using a systematic random sampling technique from pregnant women who attended antenatal care services at least once at the University of Gondar Comprehensive Specialized Hospital who met the inclusion criteria. According to outpatient records, the average monthly antenatal care attendance was 912.

Variables of the study

Dependent variable

Knowledge of obstetric fistula

Independent Variables

Socio-demographic variables: Age, residence, household income, marital status, educational level, and occupational status.

Reproductive health variables: ANC,PNC, family planning service utilization, abortion history, place of delivery and parity.

Accessibility-related variables: Media exposure, distance from health facility, and availability of transportation.

Health-seeking behavior variables: Decision-making autonomy in seeking health services and getting health services as soon as beginning of obstetric complications.

Harmful traditional practices: Female genital mutilation, early age at marriage, early childbirth, and sexual violence.

Operational definition

Accessibility of health services

-Refers to the extent to which individuals are able to obtain and use appropriate health services when needed, measured by factors such as geographic proximity, availability of services, affordability, accommodation (convenience),and acceptability of care(40).

Availability of health services:-The ability of individuals who get health services without barriers related to medical supply or financial cost(40).

Good media exposure:-Participants who expose at least one form of mass media (radio, TV, newspaper, or internet) for 30 minutes and at least once per week on health services(46).

Harmful traditional practice:-Refers to cultural beliefs that negatively affect the health, rights or well-being of individuals, especially women and children (38).

Health-seeking behavior:-Refers individuals, who take an action to maintain or improve their health, including recognizing symptoms, deciding to seek care with in 24 hours of onset of obstetric complication(46).

Index child birth:-The most recent live birth a woman has experienced prior to the time of data collection (29).

Poor knowledge:-Participants who answer score below mean from 12 knowledge items questions using likert scale (52).

Sexual violence :-Sexual violence is any sexual act, attempt to obtain a sexual act, or other act directed against a person's sexuality using coercion, force, threats, or manipulation, regardless of the relationship to the victim, measured by self-reported experiences of unwanted sexual contact, assault, or coercion(55).

Data collection techniques and tool

Data were collected using structured and semi-structured questionnaires through face-to-face interviews. The questionnaire covered socio-demographic information, reproductive health service, harmful traditional practices, health seeking behaviors, accessibility of transportation and media exposure and women's knowledge of obstetric fistula. Kobo Toolbox was used as the data collection tool.

Data collection procedure

Data were collected from April 20 to May 20, 2025, by two BSc midwifery staff working at the University of Gondar Comprehensive Specialized Hospital. After verbal informed consent was obtained from participants and data collectors were collect data using Kobo tools. Initially, two pregnant women who attended ANC were listed, then the one was randomly selected by lottery method, and then every second woman was interviewed.

Data quality assurance

Data quality was ensured throughout the stages of data collection, coding, entry, analysis, and reporting. The questionnaire was first prepared in English, translated into Amharic, and then back-translated into English to ensure consistency. A pretest was conducted on 5% of the sample to check clarity and relevance. One-day training was given to data collectors. The supervisor reviewed data daily for completeness and consistency during the data collection period.

Data processing and analysis

Data were entered, coded, and cleaned using STATA version 14.1. Descriptive statistics were used to summarize the data and presented using texts, tables, and graphs. Bi variable logistic regression analysis was performed to assess associations between each independent variable and the dependent variable using crude odds ratios (COR) with 95% confidence intervals (CI). Variables with p-values < 0.25 in bi variable analysis were included in the multivariable logistic regression model to control for confounders. Statistical significance was declared at $p < 0.05$ using adjusted odds ratios (AOR) with 95% CI. The Hosmers-Lemeshow test was used to assess model goodness-of-fit is 0.49 and VIF is 4.7.

Ethical consideration

Ethical clearance for this study was obtained from the Ethical Review Committee of the University of Gondar, College of Medicine and Health Sciences, Institute of Public Health. Before data collection, the purpose of the study was explained to all participants, and verbal informed consent was obtained after ensuring their understanding. Participation was voluntary, and participants were assured of their right to withdraw at any stage without any consequences. To maintain confidentiality, participants were coded during data collection, analysis, and reporting.

Results

Socio-demographic characteristics of the respondents

A total of 413 pregnant women participated in the study, yielding 100% of response rate. The mean age of participants was 33.7 ± 5.8 years (range: 15–49 years). The majority of women 182 (44.1%) were aged between 35–39 years. Regarding educational status, 101 (24.5%) of participants had attained college education or higher, while 95 (23.0%) were unable to read or write. In terms of occupational status, 175 (42.4%) were government employees, followed by 142 (34.4%) who were housewives. The majority of women 378 (91.5%) reported having their own source of income. Among those, 270 (71.5%) had a monthly income ranging between 3,500 and 10,000 ETB.

Table 2

Socio-demographic characteristics of women who attend ANC at University of Gondar Comprehensive Specialized Hospital, North west Ethiopia, 2025(n = 413).

Variable	Category	Frequency (n)	Percentage (%)
Age of respondents (n = 413)	15–24	31	7.5
	25–29	75	18.2
	30–34	79	19.1
	35–39	182	44.1
	>=40	46	11.1
Residency (n = 413)	Urban	313	75.8
	Rural	100	24.2
Marital status (n = 413)	Married	374	90.6
	Single	5	1.2
	Widowed	10	2.4
	Separated	14	3.4
	Divorced	10	2.4
Educational Status (n = 413)	Unable to read and write	95	23.0
	Able to read and write	94	22.7
	Primary (Grade 1–8)	42	10.2
	Secondary (Grade 9–12)	81	19.6
	College and above	101	24.5
Occupational status(n = 413)	Housewife	142	34.4
	Government employee & housewife	7	1.7
	Government employee & merchant	6	1.4
	Merchant	68	16.5
	Government employee	175	42.4
	Daily laborer	15	3.6
Do you have your own source of income (n = 413)	Yes	378	91.5
	No	35	8.5

Variable	Category	Frequency (n)	Percentage (%)
Monthly income (ETB) (n = 413)	< 3,500	101	26.7
	3,500–5,000	132	34.9
	5,000–10,000	138	36.6
	≥ 10,000	7	1.8

Note: ETB = Ethiopian Birr; Percentages are rounded to one decimal place where needed, Frequencies marked with an asterisk (*) are sub sample sizes based on relevant follow up questions.

Reproductive health, harmful cultural practice, accessibility of transportation and information, health seeking behavior related characteristics of the study participants

Among the participants, 19 women (4.6%) were married before the age of 18, and 64 women (18.2%) gave birth to their first child before the age of 20. A majority of respondents (68.5%) were multigravida, while 31.5% were primigravida. Of those who had ever given birth, 246 women (76.9%) had attended at least one antenatal care (ANC) visit for their index child, and among them, 77 (32.1%) reported attending more than three ANC visits. Regarding postnatal care (PNC), 99 women (28.1%) received PNC services for their index child, with 60 (61.2%) of these women attending two PNC visits.

In terms of family planning, 297 women (71.9%) had used contraceptives at least once, with Depo-Provera being the most commonly used method (98 women, 33.0%). A total of 12 women (2.9%) reported having received abortion services, and 173 women (41.9%) received medical care at the onset of obstetric complications.

Shared health-related decision-making between women and their husbands was reported by 68.7% of respondents. Additionally, 241 women (58.4%) had access to transportation, and 303 (73.4%) were exposed to reproductive health information via media. Among the respondents, 177 women (42.9%) reported having undergone circumcision.

Table 3

Reproductive health service, health seeking behaviour, harmful cultural traditional practice, accessibility of transportation and media exposure related characteristics of women who attend ANC at University of Gondar Comprehensive Specialized Hospital, Ethiopia 2025, (n = 413).

Variable	Category	Frequency (n)	Percentage (%)
age at first marriage (n = 413)	< 18	19	4.6
	18–24	355	86.0
	25–30	29	7.0
	> 30	10	2.4
Did you give birth? (n = 413)	Yes	352	85.2
	No	61	14.8
Age at first birth (n = 352)*	< 20	64	18.2
	20–24	157	44.6
	25–34	124	35.2
	≥ 35	7	2.0
Place of birth for index child (n = 352)*	Health Facility	240	68.0
	Home	113	32.0
Number of births /deliveries(n = 352)*	Primiparas (one times of delivery)	114	32.3
	Multi-parious (2–4)deliveries	210	59.7
	Grand multi paroius(> = five times of deliveries)	28	8.0
Did you have ANC follow up previous child birth?(n = 352)*	Yes	246	69.9
	No	106	30.1
Number of ANC visits on previous child (n = 246)*	< 4	169	77.9
	4–8	77	32.1
Did you have PNC follow-up on previous child ?(n = 352)*	Yes	99	28.1
	No	253	71.9
Number of PNC visits (n = 99)*	1	35	35.7
Note: ANC = Antenatal Care, PNC = Postnatal Care. Frequencies marked with an asterisk (*) are sub sample sizes based on relevant follow up questions.			

Variable	Category	Frequency (n)	Percentage (%)
	2	60	61.2
	3	3	3.1
Did you ever used contraceptive? (n = 413)	Yes	297	71.9
	No	116	28.1
Type of contraceptive used (n = 297)*	Depot Provera	98	33.0
	Depot Provera & Implant	17	5.7
	Depot Provera, Implant & Pills	1	0.3
	Depot Provera & Pills	80	26.9
	Implant	73	24.7
	Implant & Pills	16	5.4
	Pills	12	4.0
Did you have get abortion services?(n = 413)	Yes	12	2.9
	No	401	97.1
Who is decision maker for use health service?(n = 413)	My husband & myself	284	68.7
	My husband	7	1.4
	Myself	96	23.0
	Myself, husband & father	17	4.1
	Myself, husband & mother	5	1.2
	Myself, husband, father & mother	8	1.6
Did you get health services as soon as beginning of obstetric complication? (n = 413)	Yes	173	41.9
	No	240	58.1
Distance to health facility (on foot) (n = 413)	< 1 hour	167	40.5
	1–2 hours	214	51.8
	≥ 3 hours	32	7.7
Note: ANC = Antenatal Care, PNC = Postnatal Care. Frequencies marked with an asterisk (*) are sub sample sizes based on relevant follow up questions.			

Variable	Category	Frequency (n)	Percentage (%)
	Yes	303	73.4
	No	110	26.6
Is there availability of transportation to health facility?(n = 413)	Yes	241	58.4
	No	172	41.6
Did you have media exposure on reproductive health? (n = 413)	Yes	303	73.4
	No	110	26.6
Type of media accessed (n = 303)*	Phone	30	9.9
	Phone & Radio	5	1.7
	Phone & TV	5	1.7
	Radio, TV & Phone	32	10.5
	TV & Phone	231	76.2
Did you get circumcised? (n = 413)	Yes	177	42.9
	No	236	57.1
Did you faced sexual violence/rape?(n = 413)	Yes	5	1.2
	No	408	98.8
Note: ANC = Antenatal Care, PNC = Postnatal Care. Frequencies marked with an asterisk (*) are sub sample sizes based on relevant follow up questions.			

Knowledge of respondents on obstetric fistula

Out of 413 study participants, the overall women's knowledge about obstetric fistula in the study was 182 (44.1% $\pm$ 4.8%).

Table 4

knowledge of obstetric fistula and its risk factors, sign and symptoms, prevention methods and treatments centers among women attending antenatal care at University of Gondar Specialized Comprehensive Hospital, Ethiopia 2025.

Variable	Category	Frequency	Percentage
Did you know fistula? n = 413	Yes	182	44.1%
	No	231	55.9%
What does mean fistula? n = 182*	Hole between vagina and rectum	30	16.5%
	Hole between vagina and bladder	15	8.2%
	Hole between both vagina, rectum and bladder	137	75.3%
Where did you hear about fistula? n = 182*	Health facility	23	12.6%
	Health facility & Media	106	58.2%
	Media	21	11.5%
	Victims of fistula	4	2.2%
	Health facility & Family, relative	18	9.9%
	Family, relative	10	5.6%
Did you know the cause of fistula? n = 182*	Yes	136	74.7%
	No	46	25.3%
What are the possible causes of obstetric fistula? N = 136*	Prolonged labor	6	4.4%
	Prolonged labor & Early marriage	14	10.3%
	Prolonged labor, Early marriage & Female genital mutilation	47	34.5%
	Early marriage & Female genital mutilation	23	16.9%
	Home delivery	2	1.5%
	Early marriage	2	1.5%
	Prolonged labor & Home delivery	42	30.9%
Did you know about sign and symptom of obstetric fistula? n = 182*	Yes	153	84.1%
	No	29	15.9%
What are sign and symptom of obstetric fistula? n = 153*	Fecal inconsistency	9	5.9%
	Urine inconsistency	9	5.9%

Variable	Category	Frequency	Percentage
	Urine inconsistency &Fecal incontinence	80	52.3%
	Urine inconsistency & Foul smelling discharge	9	5.9%
	Fecal incontinence &Foul smelling vaginal discharge	46	30%
Who is more risky for obstetric fistula? n = 182*	Women delivering at home & age at birth less than 18	79	43.4%
	Primipara women & Women delivering at home	37	20.3%
	Primiparas women & Women's age at birth less than 18	33	18.2%
	Women's age at birth less than 18	17	9.3%
	Women delivering at home	16	8.8%
	I don't know	59	32.4
Is obstetric fistula preventable? n = 182 *	Yes	108	59.3%
	No	1	0.6%
	I don't know	73	40.1%
How can we prevent fistula?n = 182*	Through using reproductive health service	28	25.9%
	Delay early child birth & using reproductive health service	8	7.4%
	Delay early child birth & Avoid home delivery	9	8.3%
	Delay early child birth &Avoid early marriage	55	50.9%
	Delay early child birth	4	3.7%
	Delay early child birth & Avoid harmful traditional practice	2	1.9%
	I don't know	2	1.9%
Is obstetric fistula treatable? n = 182*	Yes	101	55.5%
	I don't know	81	44.5%
Where should a woman go for treatment of fistula? N = 101*	Health facility	75	74.3%

Variable	Category	Frequency	Percentage
	Health facility & Religious center	10	9.9%
	Health facility & Traditional healer	14	13.7%
	Traditional healer & Religious center	1	1%
	Religious center	1	1%

Note * are sub sample sizes based on relevant follow up questions and n = 413 total sample size

The level of women's knowledge about obstetric fistula is illustrated in Fig. 2 shows, out of 413 study participants, 182 (44.1% $\pm$ 4.8%) of women were know about fistula.

Overall knowledge of women on risk factors, sign and symptoms, prevention and treatment of obstetric fistula is illustrated in Fig. 3 is 74.7% of women had good knowledge on risk factors of fistula, 84.1% of women had good knowledge on signs and symptoms of fistula, 59.3% of women had good knowledge on prevention of obstetric fistula and 55.5% of women had good knowledge treatment of obstetric fistula.

Factors associated with women's knowledge about obstetrics fistula

Bivariable logistic regression analysis was performed to assess the association between independent variables and women's knowledge of obstetric fistula. Variables that showed statistically significant associations $p < 0.25$ included occupational status, educational level, ever used contraceptives services, access to transportation, media exposure, history of childbirth (parity), circumcision, residency, availability of transportation, and experience of sexual violence. These variables were selected for multivariable analysis using forward selection.

Table 5

Bi variable analysis of factors associated with knowledge of obstetric fistula among women who attend antenatal care at University of Gondar Compressive Specialized Hospital, 2025(413).

Variable	Category	Poor Knowledge n (%)	Good Knowledge n (%)	COR (95% CI)	P - value
Did you get bortion service ?	yes	170 (48.3%)	182(51.7%)	3.8(1.96–7.42)	0.21
	no	12(19.7)	49(80.3%)	1	
Did you ever used contraceptive?	yes	165(55.6%)	132(44.4%)	7.3(4.1–12.8)	0.000
	no	17(14.7%)	99(85.3%)	1	
Educational level	Unable to read and write	7(7.4%)	88 (92.6%)	0.15 (0.06–0.37)	0.000
	Able to read and write*	175(55.0%)	143 (45.0%)	1	
Is there availability of transportation?	yes	161(66.8%)	80(33.2%)	14.5(8.5–24.6)	0.000
	no	21(12.2%)	151(87.7%)	1	
Did you have media exposure?	yes	173(57.1%)	130(42.9%)	14.9(7.3–30.6)	0.000
	no	9(8.2%)	101(91.8%)		
Did you have own income?	Yes	196(51.9%)	182(48.2%)	14.5(8.5–24.6)	0.000
	No*	32(91.4%)	3(8.6%)	1	
Did you ever give of childbirth?/parity	Yes	170 (48.3%)	182(51.7%)	3.8(1.96–7.42)	0.000
	No*	12(19.7)	49(80.3%)	1	
Did you get circumcision?	Yes	41 (23.2%)	136 (76.8%)	0.2 (0.1–0.3)	0.000
	No*	141 (59.8%)	95 (40.2%)	1	
Did you faced sexual violence?	yes	2(40%)	3(60%)	0.3(0.17–0.60)	
	no	180(44.6%)	228(56.4%)		
Occupational status	Non-government employee	19 (9.3%)	185(90.7%)	0.25 (0.13–0.50)	0.000

Variable	Category	Poor Knowledge n (%)	Good Knowledge n (%)	COR (95% CI)	P - value
	Government employee*	163 (78%)	46 (22%)	1	
Recidency	Yes	150(47.9%)	163(52.1%)	4.6(2.7-8.0	0.000
	No	81(81%)	19(19%)	1	

After adjusting for potential confounders in multivariable logistic regression analysis, six variables were independently associated with women's knowledge of obstetric fistula: parity (childbirth history), educational status, media exposure, circumcision status, and ever used contraceptive services and availability of transportation.

The odds of having good knowledge of obstetric fistula were 4.3 times higher among women who had given birth more than once compared to primiparous women, after adjusting for other factors (AOR = 4.3; 95% CI: 1.8-9.0). The odds of having good knowledge of obstetric fistula were 5.1 times higher among women who had ever used contraceptive services compared to those who had not (AOR = 5.1; 95% CI: 2.5–10.2). Similarly, women with access to transportation had 4.2 times higher odds of having good knowledge compared to those without such access (AOR = 4.2; 95% CI: 2.10–8.41).

Media exposure was also significantly associated with increased knowledge: women exposed to reproductive health information via media were 2.9 times more likely to have good knowledge compared to those who were not (AOR = 2.9; 95% CI: 1.9–7.4). Women who were exposed to reproductive health information through media had 2.9 times higher odds of having good knowledge of obstetric fistula compared to those who were not exposed (AOR = 2.9; 95% CI: 1.9–7.4).

In contrast, circumcised women had 75% lower odds of having good knowledge compared to uncircumcised women (AOR = 0.25; 95% CI: 0.14–0.44). Likewise, women who were unable to read and write had 78% lower odds of being knowledgeable compared to those who could read and write (AOR = 0.22; 95% CI: 0.07–0.70).

Table 6

Multi-variable analysis of factors associated with knowledge of obstetric -fistula among women who attend antenatal care at University of Gondar Compressive Specialized Hospital, 2025(413).

Variable	Category	Poor Knowledge n (%)	Good Knowledge n (%)	COR (95% CI)	AOR (95% CI)	P - value
Did you give birth/parity?	Yes	182(51.7%)	170 (48.3%)	3.8(1.96–7.42)	4.3(1.82–9.73)	0.001
	No*	49(80.3%)	12(19.7)	1	1	
Did you have own income?	Yes	196(51.9%)	182(48.2%)	14.5(8.5–24.6)	4.2(2.10–8.41)	0.001
	No*	32(91.4%)	3(8.6%)	1	1	
Did you get circumcision ?	Yes	136 (76.8%)	41 (23.2%)	0.2 (0.1–0.3)	0.25(0.14–0.44)	0.001
	No*	95 (40.2%)	141 (59.8%)	1	1	
Level of education	Unable to read and write	88 (92.6%)	7(7.4%)	0.15 (0.06–0.37)	0.22(0.07–0.70)	0.010
	Able to read and write*	143 (45.0%)	175(55.0%)	1	1	
Did you have media exposure on reproductive health services?	Yes	130(42.9%)	173 (57.1%)	14.9 (7.3–30.6)	2.9 (1.9–7.4)	0.006
	No*	101 (91.8%)	9 (8.2%)	1	1	
Did ever use contraceptives	Yes	165(55.6%)	132(44.4%)	7.3(4.1–12.8)	3.1(1.6–6.2)	0.01
	No	17(14.7%)	99(85.3%)			
Residency	Yes	150(47.9%)	163(52.1%)	4.6(2.7–8.0)	0.38(0.78–1.94)	0.25
	No	81(81%)	19(19%)	1	1	
Availability of transportation?	yes	161(66.8%)	80(33.2%)	14.5(8.5–24.6)	1.9(1.4–2.8)	0.02
	no	21(12.2%)	151(87.7%)	1		

Note

COR = Crude Odds Ratio, AOR = Adjusted Odds Ratio, CI = Confidence Interval and *= reference group, $p < 0.05$, Hosmers-Lemeshow model fit test = 0.49.

Discussion

Knowledge of respondents on fistula

In this study, 55.9% of women had poor knowledge about obstetric fistula. This is lower than the national estimate reported in the 2016 Ethiopian Demographic Health Survey (EDHS), where 61% of women had poor knowledge on fistula (5). The discrepancy may stem from methodological differences: our study was facility-based and cross-sectional, while the EDHS was a nationwide community-based survey encompassing a broader demographic.

In this study knowledge of women about fistula is better than that of studied at Tigray (57.8%) (36), this might be due to differences in socio-demographic and factors access to reproductive health services and the health infrastructure. Conversely, the level of knowledge of women on fistula in this study is lower than that found in studies conducted in Bangladesh (80%), Pakistan (65–70%), and India (60%) (16, 17, 18). Such differences may reflect disparities in health education systems, literacy rates, and health service outreach efforts.

Women who were unable to read and write were 78% less likely to have good knowledge about obstetric fistula, aligning with findings from Southwest Ethiopia (19). This reinforces the idea that literacy is key to accessing and understanding reproductive health information. Literate women are more likely to seek information, engage in dialogue with healthcare providers, and utilize services.

Women who ever used contraceptives were positively associated with knowledge of fistula. Women who ever used contraceptives were 3.1 times more likely to be knowledgeable about fistula. This is higher than findings from Ghana (8), this difference may be due to higher contraceptive service utilization in this study than Ghana, and women who ever used contraceptives were more likely to be counseled on fistula. Similarly, women who had given birth were over four times more likely to be knowledgeable, echoing findings from Northern Ethiopia and Ghana (20, 21). The facility delivery rate is higher in this study than in Ghana and Northern Ethiopia and women who gave birth were more likely contacted health workers during pregnancy and delivery, which improving access to fistula information. Media exposure was another strong predictor. Women with access to reproductive health messages through media were nearly three times more likely to have good knowledge. This supports findings from Injibara and suggests that media campaigns can play a powerful role in improving awareness, especially in settings with limited formal education.

Availability of transportation to health facility was significantly associated with knowledge. Women who had availability of transportation were 1.9 times more likely to be knowledgeable on fistula. This aligns with studies from Niger (22), where physical access to facilities and transport options influence care-seeking behaviors and awareness.

Finally, harmful traditional practices, such as female genital mutilation, were linked to poor knowledge. Circumcised women were 75% less likely to be knowledgeable about obstetric fistula, similar to findings

from Ghana (23).This may be due to social marginalization, restricted autonomy, and lower access to education and reproductive health services often experienced by circumcised women.

Conclusion

This study revealed that the overall knowledge of obstetric fistula among women was low.Women who had given birth,who had ever used contraceptives,availability of transportation,occupational status and circumcision have a significant association with knowledge of obstetric fistula.These findings highlight the need for targeted interventions, especially among unemployed and circumcised women.Strengthening maternal health services such as abortion services, improving access to timely health care, and integrating fistula education into routine reproductive health services could significantly enhance women’s knowledge and help reduce the burden of obstetric fistula.

Abbreviations

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CI	Confidence Interval
COR	Crude Odds Ratio
EDHS	Ethiopian Demographic Health Survey
ETB	Ethiopian Birr
FGM	Female Genital Mutilation
IPH	Institute of Public Health
PNC	Postnatal Care
SDG	Sustainable Development Goal
WHO	World Health Organization

Declarations

Ethical Approval and consent to participants

All method were conducted according the ethical standards of the declaration Helsinki. The study was conducted under the Ethiopian Health Research Ethics Guidelines. Ethical clearance was obtained from the University of Gondar's Ethical Review Committee with Ref-IPH/3261/17.A formal letter of administrative and case team manager approval was obtained from University of Gondar Comprehensive Specialized Hospital . Informed consent was taken from each of the study participants.

Consent to publication

Not applicable.

Availability of data and material

The data sets used and analyzed during this study was available from corresponding author.

Competing interest

No competing interest.

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Figures

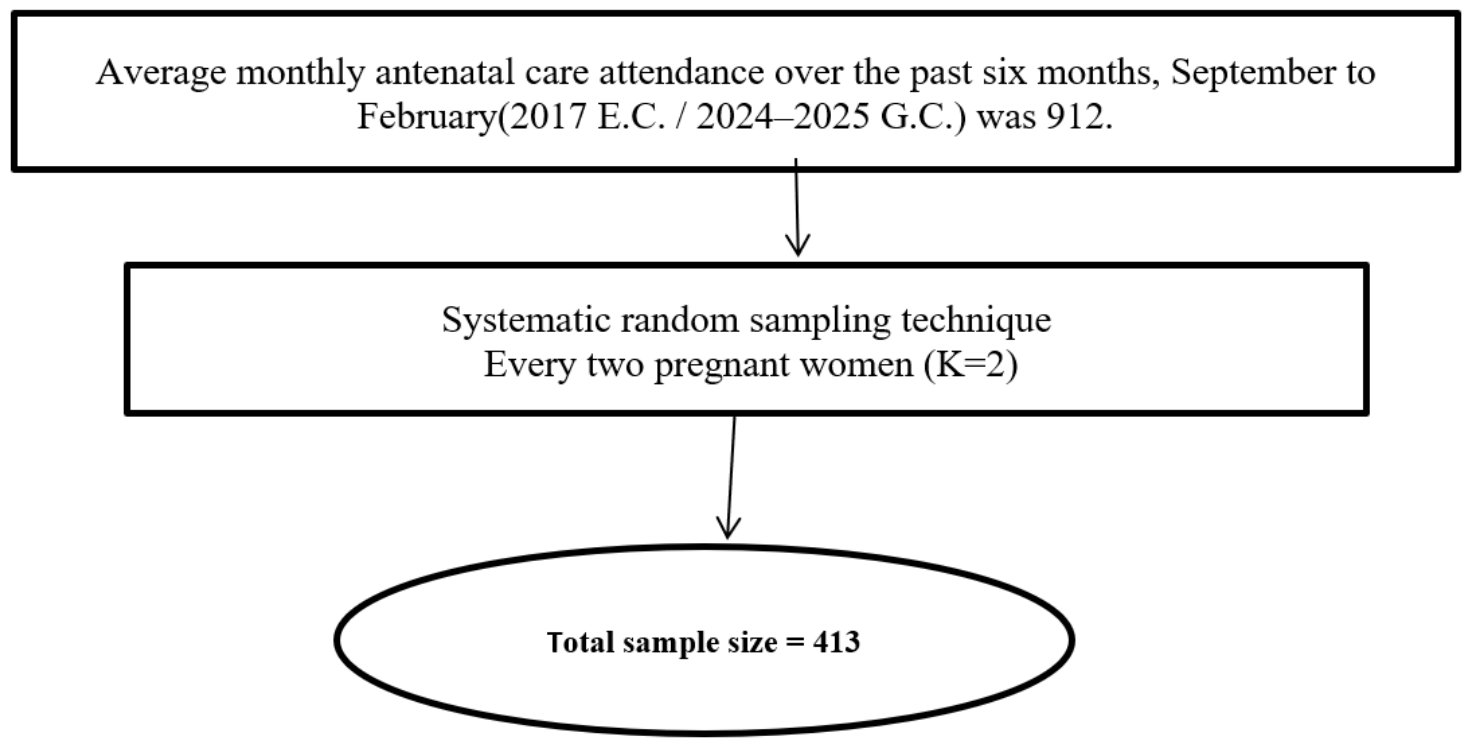


Figure 1

Schematic presentation of sample size determination and sampling procedure for pregnant women attending antenatal care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2025.

Knowledge of Obstetric Fistula (Frequency and Percentage)

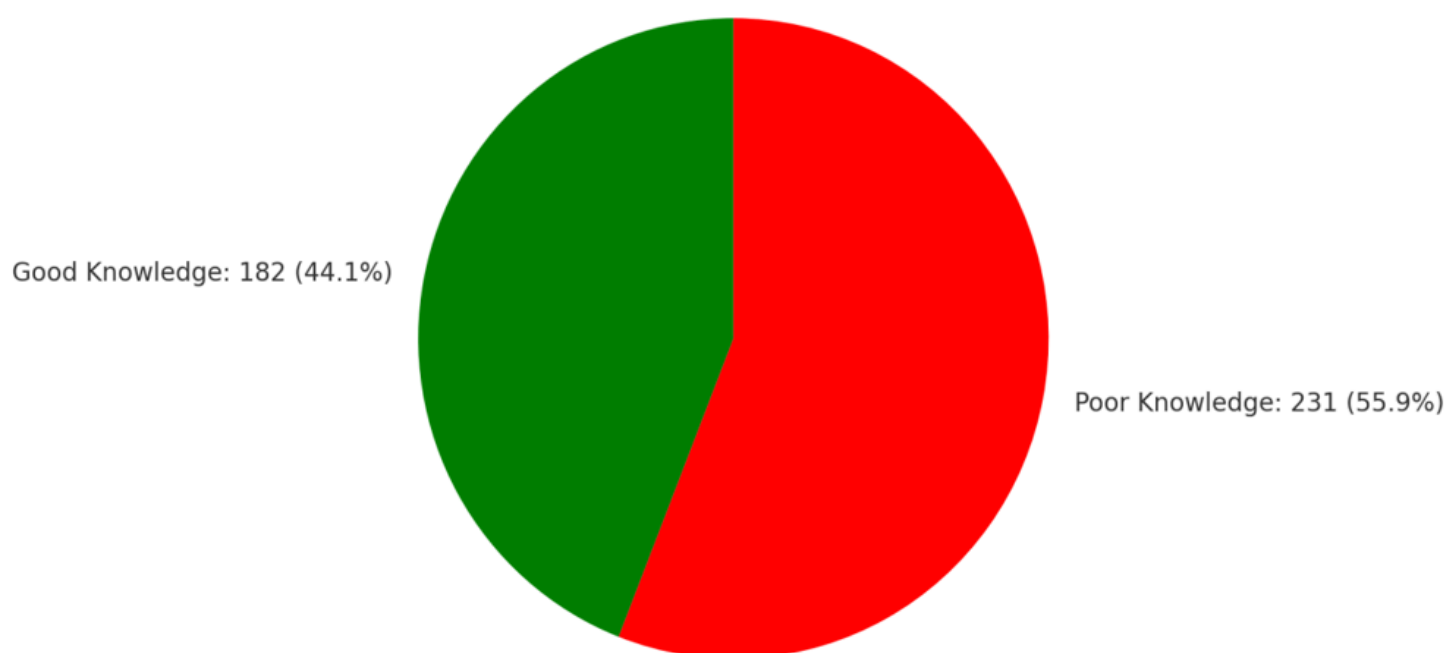


Figure 2

Knowledge of obstetric fistula among women attending antenatal care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2025.

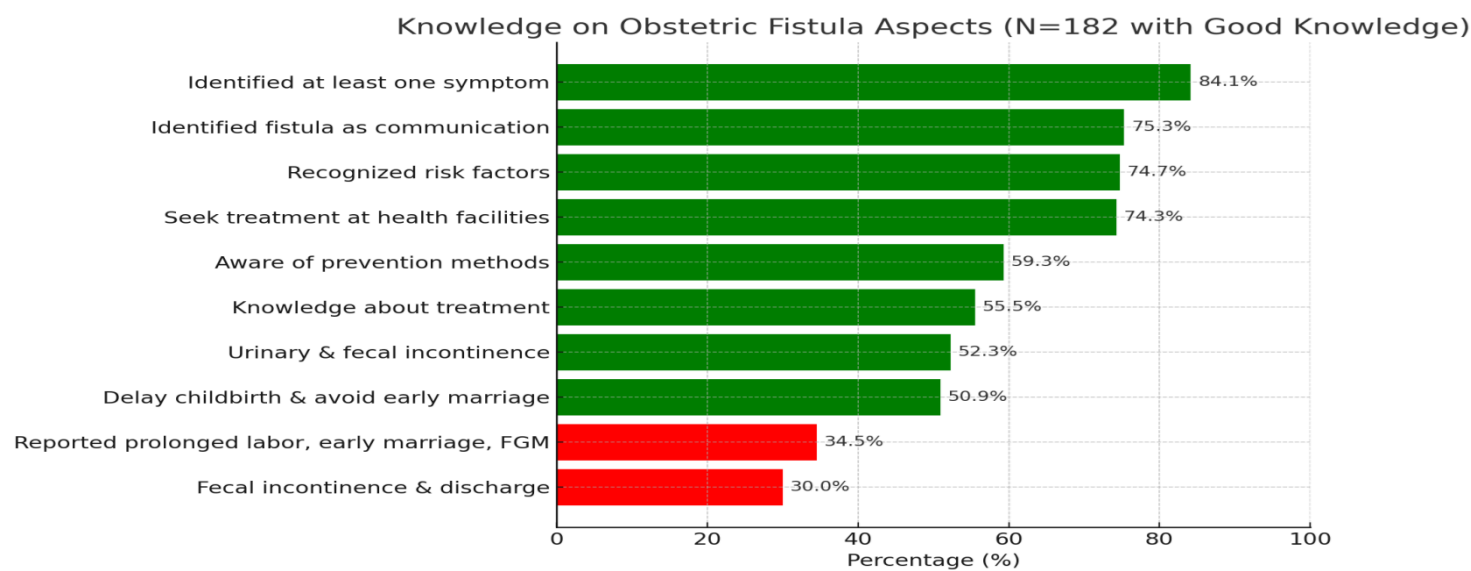


Figure 3

Knowledge of risk factors, signs and symptoms, prevention, and treatment of obstetric fistula among women attending antenatal care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2025.