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Knowledge of Obstetric Fistula and Its Associated Factors among Women Attending Antenatal Care at a Comprehensive Specialized Hospital in Northwest Ethiopia: A Facility-Based Cross-Sectional Study

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Abstract

Obstetric fistula remains a serious public health issue in low-income countries, especially in sub-Saharan Africa. Although it is preventable, limited awareness and various sociocultural barriers contribute to its continued occurrence. This study aimed to assess women's knowledge of obstetric fistula and identify factors associated with that knowledge among antenatal care attendees at a comprehensive specialized hospital in Northwest Ethiopia. A facility-based cross-sectional study was conducted in 2025 among women attending antenatal care services. Data were collected through face-to-face interviews using a structured and pretested questionnaire. Descriptive statistics summarized participant characteristics, and binary logistic regression was used to identify factors associated with knowledge of obstetric fistula. Variables with a p-value less than 0.05 in the multivariable analysis were considered statistically significant. The overall level of knowledge about obstetric fistula among antenatal care attendees was low. Higher educational status, urban residence, previous obstetric complications, and exposure to health information were significantly associated with better knowledge. Strengthening health education and community awareness programs within antenatal care services is crucial to improve understanding and prevention of obstetric fistula in Northwest Ethiopia.

Keywords: Knowledge, Associated Factors, Obstetric Fistula, Antenatal Care, Northwest Ethiopia.

Abbreviations and Acronyms

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

Introduction

Obstetric fistula is an abnormal connection between the vagina and either the bladder or rectum, typically developing after prolonged or obstructed labor and resulting in continuous 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 that occurs in all developing countries, particularly in the northern half of sub-Saharan Africa (4). The national strategic plan of Ethiopia for the elimination of obstetric fistula (2021-2025) estimates that more than 140 thousand fistula patients exist in Ethiopia [5].

Ending obstetric fistula is one of the critical measures to achieve the third Sustainable Development Goal (SDGs) [6]. The World Health Organization set strategies to eliminate fistula through the 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 [7]. Poor knowledge of women on fistula and its associated factors is the main contributor to obstetric fistula [8]. Poor knowledge of women on obstetric fistula in developed countries is less than 10% (12). Poor knowledge of women on obstetric fistula in low- and middle-income countries is between 50% and 90% [9]. Poor knowledge of women on obstetric fistula in sub-Saharan countries is between 60% and 85%. In Burkina Faso 63.6% of women had poor knowledge of obstetrical fistula and its prevention methods [10]. Poor knowledge of women on obstetric fistula in Ethiopia is between 65% and 80%. Demographic Health Survey (EDHS 16), states 39% of women had good knowledge on obstetric fistula (5).Studies conducted in Northeast Ethiopia,42.2% of women had good knowledge on obstetric fistula [12].

Methods

Study Area and Period

This study was conducted at the University of Gondar Comprehensive Specialized Hospital from April 20 to May 20, 2025. The hospital serves a catchment population of over 12 million people and provides a wide range of health services to the community. In the area of sexual and reproductive health, the hospital is staffed by 180 midwives, 35 residents, and 12 specialists and subspecialists. The hospital offers comprehensive sexual and reproductive health services, including antenatal and postnatal care, labor and delivery, abortion and post-abortion care, family planning, reproductive health counseling, and the management of obstetric and gynecological complications.

Study Design

An institution-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 the University of Gondar Comprehensive Specialized Hospital during the study period.

Sample Population

All pregnant women who fulfilled the inclusion criteria and consented 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 of communicating during data collection time.

Sample Size and Sampling Procedure

Sample Size Determination

The sample size was determined using a single population proportion formula. By considering the following assumptions, the prevalence of women who had good knowledge of obstetric fistula in Northwest Ethiopia was 42.2%, with a 5% margin of error and a 95% confidence level. The final sample size was adjusted by adding a 10% non-response rate and thus turned out to be 413.

Sampling Procedure

The schematic presentation of the sample size determination and sampling procedure is shown in Figure 1. Study participants were selected using a systematic random sampling technique from pregnant women who had attended antenatal care at least once at the University of Gondar Comprehensive Specialized Hospital and met the inclusion criteria. According to outpatient records, the hospital's average monthly antenatal care attendance was 912 women. Average monthly antenatal care attendance over the past six months, September to February (2017 E.C. / 2024–2025 G.C.), was 912.

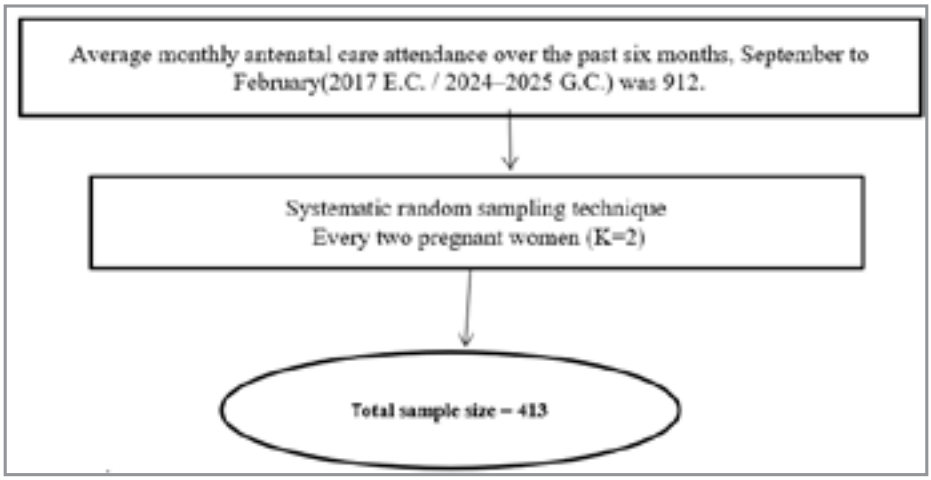

Figure 1: Schematic presentations of sample size and sampling producer on pregnant women attending antenatal care.

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 the beginning of obstetric complications.

Harmful Traditional Practices: female genital mutilation, early age at marriage, early childbirth, and sexual violence.

Operational Definition

Knowledge level was categorized into two by calculating the mean. Those who scored above the mean were considered to have good knowledge, and those who scored below the mean were considered to have poor knowledge [13].

Data Collection Techniques and Tools

Data were collected through face-to-face interviews using structured and semi-structured questionnaires. The questionnaire captured information on socio-demographic characteristics, utilization of reproductive health services, harmful traditional practices, health-seeking behaviors, access to transportation, media exposure, and women's knowledge of obstetric fistula. Data collection was facilitated using Kobo Toolbox.

Data Collection Procedure

Data were collected from April 20 to May 20, 2025, by two BSc midwifery staff members from the University of Gondar Comprehensive Specialized Hospital. Verbal informed consent was obtained from all participants prior to data collection. The data were collected using Kobo Toolbox. Initially, two pregnant women attending antenatal care were listed, and one was randomly selected using the lottery method. Subsequently, every second woman was included in the study through systematic sampling.

Data Quality Assurance

Data quality was maintained throughout all stages of data collection, coding, entry, analysis, and reporting. The questionnaire was initially 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 assess clarity and relevance. Data collectors received one day of training prior to data collection. During the data collection period, the supervisor reviewed the completed questionnaires daily to ensure completeness and consistency.

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 in text, tables, and graphs. Bivariable logistic regression analysis was conducted to examine the association between each independent variable and the dependent variable, with results expressed as crude odds ratios (COR) and 95% confidence intervals (CI). Variables with p-values <0.25 in the bivariable analysis were included in the multivariable logistic regression model to control for potential confounders. Statistical significance was set at $p < 0.05$, and results were reported using adjusted odds ratios (AOR) with 95% CI. Model goodness-of-fit was assessed using the Hosmer-Lemeshow test ($p = 0.49$), and multicollinearity was evaluated with a variance inflation factor (VIF) of 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

The majority of respondents were aged 35–39 years (44.1%), with most residing in urban areas (75.8%) (Table 1). Most participants were married (90.6%), and educational attainment varied, with 24.5% having college-level education or higher and 23.0% unable to read and write. Regarding occupation, 42.4% were government employees and 34.4% were housewives, while 91.5% reported having their own source of income. Monthly income ranged from less than 3,500 ETB (26.7%) to 5,000–10,000 ETB (36.6%) (Table 1).

Table 1: Socio-demographic characteristics of women who attended ANC at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2025 (n = 413).

Variable	Category	Frequency (n)	Percentage (%)
Age of respondents	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	Urban	313	75.8
	Rural	100	24.2
Marital status	Married	374	90.6
	Single	5	1.2
	Widowed	10	2.4
	Separated	14	3.4

	Divorced	10	2.4
Educational status	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	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
Own source of income	Yes	378	91.5
	No	35	8.5
Monthly income (ETB)	<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, and frequencies marked with an asterisk (*) are sub-sample sizes based on relevant follow-up questions.

Reproductive Health, Harmful Cultural Practices, Accessibility of Transportation and Information, and Health-Seeking Behavior Related to Characteristics of the Study Participants

The majority of participants (86.0%) reported marrying between the ages of 18 and 24, and 85.2% had experienced childbirth (Table 2). Among those who had given birth, 44.6% had their first child between ages 20 and 24, and 68.0% delivered in a health facility. Most women were multiparous (59.7%), with 69.9% attending antenatal care (ANC) for their previous childbirth, although only 32.1% completed four or more visits. Postnatal care (PNC) utilization was low, with 71.9% not attending follow-up. Contraceptive use was reported by 71.9%, predominantly Depot Provera (33.0%) and implants (24.7%). Only 2.9% had a history of abortion. Health service decisions were mainly made jointly with their husbands (68.7%), yet timely care for obstetric complications was reported by only 41.9%. Most participants (73.4%) were exposed to reproductive health information through media, and 42.9% had undergone circumcision. Experience of sexual violence was rare (1.2%) (Table 2).

Table 2: Reproductive health service utilization, health-seeking behavior, harmful cultural practices, transportation accessibility, and media exposure among women attending ANC at University of Gondar Comprehensive Specialized Hospital, Ethiopia, 2025 (n = 413).

Variable	Category	Frequency (n)	Percentage (%)
Age at first marriage	<18	19	4.6
	18–24	355	86.0
	25–30	29	7.0
	>30	10	2.4
History of childbirth	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 (1 delivery)	114	32.3
	Multiparas (2–4 deliveries)	210	59.7
	Grand multiparas (≥5 deliveries)	28	8.0
ANC follow-up for previous childbirth (n = 352)	Yes	246	69.9

	No	106	30.1
Number of ANC visits (n = 246)	<4	169	77.9
	4–8	77	32.1
PNC follow-up for previous childbirth (n = 352)	Yes	99	28.1
	No	253	71.9
Number of PNC visits (n = 99)	1	35	35.7
	2	60	61.2
	3	3	3.1
History of contraceptive use (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
History of abortion (n = 413)	Yes	12	2.9
	No	401	97.1
Decision-maker for health service utilization (n = 413)	Myself & husband	284	68.7
	Husband only	7	1.4
	Myself only	96	23.0
	Myself, husband & father	17	4.1
	Myself, husband & mother	5	1.2
	Myself, husband, father & mother	8	1.6
Timely health service utilization at obstetric complications (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
Availability of transportation (n = 413)	Yes	241	58.4
	No	172	41.6
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
Circumcision status (n = 413)	Yes	177	42.9
	No	236	57.1
Experience of 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< 1-sample sizes based on relevant follow up-sample-up questions

Knowledge of Respondents on Obstetric Fistula

Knowledge of Obstetric Fistula

Out of 413 study participants, 182 women (44.1% ± 4.8%) reported having heard of obstetric fistula. Among those, the majority (137; 75.3%) correctly identified fistula as a hole involving the vagina, rectum, and bladder. Participants primarily learned about fistula through health facilities and media (106; 58.2%), followed by health facilities alone (23; 12.6%) (Table 3). Regarding knowledge of causes, 136 women (74.7%) were aware of the causes of obstetric fistula. The most commonly cited causes included a combination of prolonged labor, early marriage, and female genital mutilation (47; 34.5%), and prolonged labor combined with home delivery (42; 30.9%) (Table 3). Most participants (153; 84.1%) were aware of the signs and symptoms of obstetric fistula, with 80 (52.3%) identifying both urine and fecal incontinence, and 46 (30.0%) recognizing fecal incontinence with foul-smelling vaginal discharge (Table 3).

Table 3: Knowledge of obstetric fistula, risk factors, signs and symptoms, prevention methods, and treatment centers among women attending antenatal care at University of Gondar Comprehensive Specialized Hospital, Ethiopia, 2025 (n = 413)

Variable	Category	Frequency (n)	Percentage (%)
Awareness of fistula (n = 413)	Yes	182	44.1
	No	231	55.9
Understanding meaning of fistula (n = 182)	Hole between vagina and rectum	30	16.5
	Hole between vagina and bladder	15	8.2
	Hole between vagina, rectum, and bladder	137	75.3
Source of information 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
Knowledge of cause of fistula (n = 182)	Yes	136	74.7
	No	46	25.3
Possible causes of fistula (n = 136)	Prolonged labor	6	4.4
	Prolonged labor & Early marriage	14	10.3
	Prolonged labor, Early marriage & FGM	47	34.5
	Early marriage & FGM	23	16.9
	Home delivery	2	1.5
	Early marriage	2	1.5
	Prolonged labor & Home delivery	42	30.9
Knowledge of signs and symptoms (n = 182)	Yes	153	84.1
	No	29	15.9
Signs and symptoms of fistula (n = 153)	Fecal incontinence	9	5.9
	Urine incontinence	9	5.9
	Urine & fecal incontinence	80	52.3
	Urine incontinence & foul-smelling discharge	9	5.9
	Fecal incontinence & foul-smelling discharge	46	30.0

Who is at higher risk (n = 182)	Women delivering at home & age <18	79	43.4
	Primipara & women delivering at home	37	20.3
	Primipara & age <18	33	18.2
	Age <18	17	9.3
	Women delivering at home	16	8.8
	I don't know	59	32.4
Is fistula preventable? (n = 182)	Yes	108	59.3
	No	1	0.6
	I don't know	73	40.1
Prevention methods (n = 182)	Using reproductive health services	28	25.9
	Delay early childbirth & using RH services	8	7.4
	Delay early childbirth & avoid home delivery	9	8.3
	Delay early childbirth & avoid early marriage	55	50.9
	Delay early childbirth	4	3.7
	Delay early childbirth & avoid harmful traditional practice	2	1.9
	I don't know	2	1.9
Is fistula treatable? (n = 182)	Yes	101	55.5
	I don't know	81	44.5
Treatment centers (n = 101)	Health facility	75	74.3
	Health facility & Religious center	10	9.9
	Health facility & Traditional healer	14	13.7
	Traditional healer & Religious center	1	1.0
	Religious center	1	1.0

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

Factors Associated with Women's Knowledge about Obstetrics Fistula

Bivariable logistic regression analysis indicated several factors were significantly associated with women's knowledge of obstetric fistula at p-value < 0.25 (Table 4). Women who had ever used contraceptives were more likely to have good knowledge compared to those who had not (COR = 7.3; 95% CI: 4.1–12.8, p < 0.001). Educational level showed a strong association, with women unable to read and write having lower odds of good knowledge compared to those able to read and write (COR = 0.15; 95% CI: 0.06–0.37, p < 0.001). Availability of transportation and media exposure were also positively associated with good knowledge (COR = 14.5; 95% CI: 8.5–24.6 and COR = 14.9; 95% CI: 7.3–30.6, respectively, p < 0.001). Other significant factors included having one's own source of income (COR = 14.5; 95% CI: 8.5–24.6, p < 0.001), parity (COR = 3.8; 95% CI: 1.96–7.42, p < 0.001), circumcision status (COR = 0.2; 95% CI: 0.1–0.3, p < 0.001), occupational status, and residency. These findings highlight that socio-demographic characteristics, reproductive history, and access to resources are important determinants of women's knowledge of obstetric fistula.

Table 4: Bivariable analysis of factors associated with knowledge of obstetric fistula among women attending antenatal care at University of Gondar Comprehensive Specialized Hospital, 2025 (n = 413)

Variable	Category	Poor Knowledge n (%)	Good Knowledge n (%)	COR (95% CI)	P-value
History of abortion	Yes	170 (48.3)	182 (51.7)	3.8 (1.96–7.42)	0.21
	No*	12 (19.7)	49 (80.3)	1	–

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	–
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	–
Media exposure	Yes	173 (57.1)	130 (42.9)	14.9 (7.3–30.6)	0.000
	No*	9 (8.2)	101 (91.8)	1	–
Own source of income	Yes	196 (51.9)	182 (48.2)	14.5 (8.5–24.6)	0.000
	No*	32 (91.4)	3 (8.6)	1	–
Parity (ever given birth)	Yes	170 (48.3)	182 (51.7)	3.8 (1.96–7.42)	0.000
	No*	12 (19.7)	49 (80.3)	1	–
Circumcision	Yes	41 (23.2)	136 (76.8)	0.2 (0.1–0.3)	0.000
	No*	141 (59.8)	95 (40.2)	1	–
Experience of sexual violence	Yes	2 (40.0)	3 (60.0)	0.3 (0.17–0.60)	–
	No*	180 (44.6)	228 (56.4)	1	–
Occupational status	Non-government employee	19 (9.3)	185 (90.7)	0.25 (0.13–0.50)	0.000
	Government employee*	163 (78.0)	46 (22.0)	1	–
Residency	Urban	150 (47.9)	163 (52.1)	4.6 (2.7–8.0)	0.000
	Rural*	81 (81.0)	19 (19.0)	1	–

Multivariable logistic regression analysis identified several independent predictors of women's knowledge of obstetric fistula (Table 5). Women who had ever given birth were significantly more likely to have good knowledge compared to those who had not (AOR = 4.3; 95% CI: 1.82–9.73, p = 0.001). Similarly, having one's own source of income was positively associated with good knowledge (AOR = 4.2; 95% CI: 2.10–8.41, p = 0.001). Circumcision status was inversely associated, with circumcised women less likely to have good knowledge than non-circumcised women (AOR = 0.25; 95% CI: 0.14–0.44, p = 0.001). Educational level remained a significant predictor, with women unable to read and write having lower odds of good knowledge (AOR = 0.22; 95% CI: 0.07–0.70, p = 0.010). Exposure to media on reproductive health services (AOR = 2.9; 95% CI: 1.9–7.4, p = 0.006), and ever use of contraceptives (AOR = 3.1; 95% CI: 1.6–6.2, p = 0.01) were also positively associated with good knowledge. Availability of transportation showed a modest but significant positive association (AOR = 1.9; 95% CI: 1.4–2.8, p = 0.02). Residency was not significantly associated with knowledge in the adjusted model. These findings suggest that socio-demographic factors, reproductive history, access to resources, and exposure to health information are key determinants of women's knowledge of obstetric fistula.

Table 5: Multivariable analysis of factors associated with knowledge of obstetric fistula among women attending antenatal care at University of Gondar Comprehensive Specialized Hospital, 2025 (n = 413)

Variable	Category	Poor Knowledge n (%)	Good Knowledge n (%)	COR (95% CI)	AOR (95% CI)	P-value
Parity (ever given birth)	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	–
Own source of 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	–
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	–
Educational level	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	–
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	–
Ever used 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)	1	1	–
Residency	Urban	150 (47.9)	163 (52.1)	4.6 (2.7–8.0)	0.38 (0.78–1.94)	0.25
	Rural*	81 (81.0)	19 (19.0)	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	1	–

*Reference category

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 demonstrated poor knowledge about obstetric fistula. This proportion is slightly lower than the national estimate reported in the 2016 Ethiopian Demographic and Health Survey (EDHS), where 61% of women were found to have limited knowledge on fistula (5). The discrepancy may be attributed to methodological differences, as the present study was facility-based and cross-sectional, whereas the EDHS was a nationwide, community-based survey encompassing a broader demographic [14].

Compared to findings from Tigray, where 57.8% of women had poor knowledge (18), knowledge in this study appears higher, potentially reflecting differences in socio-demographic characteristics, access to reproductive health services, and the health infrastructure. Conversely, the level of knowledge observed in this study is lower than that reported in Bangladesh (80%), Pakistan (65–70%), and India (60%) (16,17,18), likely due to disparities in health education systems, literacy rates, and outreach of health services [15-20].

Educational attainment was a significant determinant of knowledge. Women who were unable to read and write were 78% less likely to have good knowledge of obstetric fistula, consistent with findings from Southwest Ethiopia. This underscores the importance of literacy in accessing, comprehending, and utilizing reproductive health information. Literate women are more likely to seek health information, engage in discussions with healthcare providers, and utilize available services.

Use of contraceptive services was positively associated with knowledge of fistula. Women who had ever used contraceptives were 3.1 times more likely to be knowledgeable about fistula, which is higher than findings from Ghana. This difference may reflect higher contraceptive service utilization in the current study, where counseling during contraceptive visits may have contributed to increased awareness. Similarly, women who had given birth were over four times more likely to be knowledgeable, aligning with studies from Northern Ethiopia and Ghana. The higher facility delivery rate in this study likely facilitated greater interaction with healthcare providers, enhancing exposure to information about obstetric fistula.

Media exposure was another strong predictor. Women who accessed reproductive health messages through media were nearly three times more likely to have good knowledge, corroborating findings from Injibara and highlighting the potential of media campaigns to improve awareness, particularly in populations with limited formal education.

Availability of transportation to health facilities was significantly associated with knowledge. Women with access to transportation were 1.9 times more likely to be knowledgeable, consistent with studies from Niger, emphasizing that physical access and mobility influence care-seeking behaviors and health awareness.

Finally, harmful traditional practices, such as female genital mutilation, were linked to lower knowledge. Circumcised women were 75% less likely to be knowledgeable about obstetric fistula, similar to findings from Ghana [21-23]. This may reflect social marginalization, restricted autonomy, and reduced access to education and reproductive health services commonly experienced by women subjected to such practices.

Conclusion

The findings of this study indicate that the overall knowledge of obstetric fistula among women remains low. Women who had previously given birth, those who had ever used contraceptives, women with access to transportation, occupational status, and circumcision were significantly associated with their level of knowledge about obstetric fistula. These results underscore the need for targeted interventions, particularly for unemployed and circumcised women. Strengthening maternal health services,

including abortion care,improving access to timely healthcare, and integrating comprehensive fistula education into routine reproductive health services are essential strategies to enhance women's knowledge and contribute to reducing the burden of obstetric fistula.

Declaration

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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