

# ***Awareness on presentation of obstetric fistula and associated factors among reproductive age women in south eastern zone of tigray,ethiopia,2020.cross sectional study***

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## **Research**

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# Abstract

## Background

Worldwide, around one million girls and women are currently living with fistula. Less than 20,000 women with obstetric fistula are treated each year. Lack of awareness is a frequently mentioned barrier to seeking fistula treatment; many women suffering from obstetric fistula do not know what fistula is, as it is treatable, or where to get treatment. Even though obstetric fistula has likely weighed down women since the beginning of time, few researches proportionally exists.

## Methods

A community based quantitative cross-sectional survey was undertaken in south eastern zone of Tigray. A multistage random sampling technique was implemented to select total participants of 605 reproductive age women. Two districts were randomly selected and from those districts, 12 kebeles were selected randomly and the calculated sample size (605) was proportionally allocated to each selected kebeles. The data were collected by using face to face/interview with structured questionnaire from February 26-March 24/2020 after ensuring that all requirements of ethical considerations were fulfilled. The collected data were entered in to Epidata version 4.2 then exported to SPSS version20 for analysis. Descriptive statistics with frequency, percentage, table and graph and cross tabulation were used for presentation of result. Bivariable and multivariable analysis were used to examine the association. Odds ratios with 95% confidence interval and P-value <0.05 were used to determine the statistical association.

## Result

Overall, about 31.6% of respondents had good awareness on presentation of obstetric fistula. The major determinant factors identified to awareness on presentation of obstetric fistula were educational level (above secondary)[AOR(95%CI=2.9(1.42-9.6)),history of institutional delivery (for the index child)[AOR (95%CI=4.1(1.76-9.56))] and having prior information about obstetric fistula[AOR (95%CI=2.2(1.01-4.75)].

## Conclusion

In this study majority of reproductive age women in the study area had poor awareness regarding presentation of obstetric fistula. Several interventions like health education and information should be implemented to enhance the awareness of the community towards obstetric fistula.

## Plain English Summary

Obstetric fistula is an abnormal opening between a woman's genital tract and her urinary tract and rectum. The development of obstetric fistula is directly linked to obstructed labour which is one of the

major causes of maternal mortality. Each year between 50000 to 100000 women worldwide are affected by obstetric fistula. 605 respondents were asked about presentation of obstetric fistula and around 31.6% of them had good awareness regarding presentation on obstetric fistula. The major determinant factors identified to awareness on presentation of obstetric fistula were, level of education (above secondary), having history having prior information about obstetric fistula, institutional delivery (for the index child).

In Conclusion; majority of reproductive age women in the study area had poor awareness regarding presentation of obstetric fistula. Several interventions like health education and information should be implemented to enhance the awareness of the community towards risk factors for obstetric fistula.

## 1. Introduction

Obstetric fistula is abnormal passage way between the vagina and bladder or rectum may develop after prolonged and obstructed labor and lead to continuous urinary or fecal incontinence(1). Obstetric fistula can happen between the bladder and the vagina, between the rectum and vagina or both, leading to uncontrolled leakage of urine and/or feces(2).

The commonest type of obstetric fistula is Vesico-vaginal Fistula (VVF) which accounts 79% of cases but there are also cases of Recto Vaginal Fistula (RVF) 1-8% and combined (VVF and RVF) 1-23 %.Obstetrics fistula is related with numerous risk factors, and they appear to be escapable. This condition is related with young status at delivery, primi-parity, prolonged labor and home delivery(3).

In developed countries surgery and radiotherapy are the major risk factors for the situation, while obstetric complications are the main risk factors in developing nations, fistulas are also found in other parts of the world where fertility is high, the economic status of women is low, and obstetric services are poor, such as in Afghanistan, Pakistan, Bangladesh and parts of India (4).

Globally, around one million girls and women are currently suffering from obstetric fistula, Less than 20,000 women with obstetric fistula are treated each year. Obstetric fistula is a disease of poverty(5).Obstetric fistula occurs in all developing countries especially in the Northern half of Sub-Saharan Africa from Mauritania to Eritrea and in the developing countries of the Middle East and Asia(6).

Obstetric fistula prevention strategies classifies into primary prevention strategies (focused on contraception), secondary prevention strategies (ensuring women can access skilled care for delivery) and tertiary prevention strategies (early screening for fistula for most at risk women. Fistula is treatable as well as preventable. The success rates of obstetric fistula surgery in the literatures are between 70 to 90 per cent for simple fistulas, and between 30 and 60 per cent for complex or complicated cases. The world is standing by declaring May 23 as the International Day to end obstetric fistula and the decision to continue to use this Day each year to extensively raise knowledge and strengthen actions towards ending obstetric fistula(7).

Resolution adopted by the General Assembly on 25 September, 2015 (Sustainable Development Goal) states under Target 3.7: by 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs(8).

Obstetric fistula is a source of concern to medical practitioners in developing countries, awareness about it and the risk factors appear inadequate. There is need to appropriately inform women during their antenatal clinic visits about the risk factors for obstetric fistula and where to find care when faced with this challenge(9).

Obstetric fistula is considered to be the most worrying morbidity that affects women following childbirth. Medical consequences of fistula include incontinence, infection and possibly infertility. Social consequences of fistula are isolation, abandonment, disgrace and vulnerability(10).

Awareness is the ability to directly know and perceive, to feel, or to be heedful of events, More broadly, it is the state of being conscious of something(11).

Lack of awareness is a frequently mentioned barrier to seeking fistula treatment; many women who suffer from obstetric fistula do not know what fistula is, that their condition is treatable, or where to get treatment. Women with fistula and members of their community may also be misinformed about the causes of fistula, in some communities fistula is believed to be a curse or a punishment from God(12).

Occurrence of obstetric fistula is highly related with lack of awareness (misperception) on risk factors of obstetric fistula. Majority of respondents associated obstetric fistula directly with mistakes made by hospital personnel or problems during procedures other than other risk factors and this perception reduces health seeking behavior(13) .

Many of women are not aware of how to prevent obstetric fistula. If such women develop obstetric fistula during the process of childbirth it is also difficult for them to get treatment since they may not even be aware that it can be treated(10) .

Deficiency of knowledge on presentation of obstetric fistula hinders seeking treatment(14).

Even though obstetric fistula has likely weighed down women since the beginning of time, very little research proportionally exists. For obstetric fistula, there is a desperate need for rigorous and ethical research(15).

## **2. Methods**

### Study setting

Tigray regional state is one of the nine regional states of Ethiopia, which found in the northern part of Ethiopia. The capital city of Tigray is mekelle city which is 781 km far from Addis Ababa.

South eastern zone is one of the zones in the Ethiopian region of Tigray. It bordered on the south by southern zone, on the south east by Amhara region, on the north east by central zone, on the north by eastern zone and on the east by the Afar region. As the zone was created after the census of 2007, it is hard to find correct data about the population of zone. The estimated size of population according to 2007 census conducted by the CSA was 392,142, of which 21,125 or 5.39% were urban dwellers(16). South eastern zone contains four districts known as Endrta, HintaloWejerat, Samre and Degua Temben and a total of 87 kebeles. In each woredas Endrta has 17 kebeles, Hintalo wejerat 23. Samre 23, and Degua Temben has 25 kebeles and it has three primary hospitals, 24 health centers and around 73 health posts.

The study was conducted from February 26-March 24/2020 in south eastern zone of Tigray.

### Participants

Sampled Reproductive age women living in south eastern zone of Tigray and who fulfill the inclusion criteria were taken as the study population. All reproductive age group women who were mentally stable, those available at the time of data collection period, women who were not severely ill were included, While Reproductive age women who are health professionals or working on health and health related fields were excluded.

### Sample size determination and sampling technique

The sample size was calculated using a single population proportion formula with the following assumption: Prevalence of awareness on risk factor for obstetric fistula was 50% ,95% of confidence interval(1.96), **5%** margin of sampling error tolerated, 5% of non-response rate, 1.5 design effect ,then the final sample size was 605. Multistage random sampling technique was used to select the total of 605 study participants.

In south eastern zone of Tigray there are four districts namely Endrta, Degua Temben, saharti samre and HintaloWejerat.

For this study two districts were selected using simple random method. Within each selected districts there are 87 kebeles so it is difficult to include all of them rather 30% of the total kebeles were selected randomly.

Within each kebele there were list of households which has reproductive age group women. This list was used as sampling frame to use simple random sampling. Then the calculated sample size (605) was proportionally allocated to each selected kebeles.

In the case of two or more reproductive age women in the same household, one mother was selected using the lottery method.

### Study Variables

#### **Dependent Variable**

Dependent Variable:

Awareness on presentation of obstetric fistula

#### **Independent Variables**

Socio-Demographic factors (Age, marital status Religion, women education, occupation, age of marriage and residence).

Obstetric factors (history of contraceptive use, history of induced abortion history of pregnancy, history of ANC, site of previous delivery).

Other factors (presence of health center, history of birth related complication, awareness on risk of complication, media exposure).

Definition of terms

### **Awareness**

Is a characteristics, outlook or understanding of an individual towards obstetric fistula presentation.

#### **Good Awareness on presentation of obstetric fistula**

Participants who scored mean score or above were assigned as they have good awareness on presentation of obstetric fistula.

#### **Poor Awareness on presentation of obstetric fistula**

Participants who scored less than the mean score were considered as having poor awareness on presentation of obstetric fistula.

Data Collection Tools And Techniques

For data collection a structured face to face questionnaire English version was adapted after review of different literatures and modified depending on the local situation and the research objective. Initially it was developed in English and it was translated to Tigrigna by an individual who was native to Tigrigna language. And it was translated back to English language by another individual in order to maintain its consistency. The questionnaire contained questions on socio demographic characteristics, source of health related information, History of contraceptive use, obstetric history, questions on risk factors, presentation and prevention of obstetric fistula. Three diploma midwife and four BSc level health professionals were recruited and trained as data collectors and 2 BSc level midwives were recruited & trained as supervisors.

Eligible participants were approached and requested to consent voluntarily to participate into the study. Upon consenting, a study number with a code was assigned for identification. Inclusion into the study was done by using proportion from the selected kebeles and then randomly select until the required sample size was achieved using face to face structured questionnaire. We have selected 12 kebeles randomly from the two districts and then random sampling technique was used to recruit households. List of house hold contains reproductive age a woman was used as sampling frame that is available with health extensions workers in each kebeles. The first house hold was selected by lottery method. For those who were two or more eligible reproductive age women in one house hold lottery method was used to select one of them.

#### **Data quality assurance and control**

The data collection instrument was pretested for accuracy of responses, language transparency, correctness of data collection tools, estimate the time required and the necessary amendment was considered based on it prior to the actual data collection. It was carried out one week proceeding to the actual data collection period, in five percent of non-study participants that fulfill the inclusion criteria. In addition, the data collectors were trained for one day on the techniques of data collection. The training

also included importance of disclosing the possible benefit and purpose of the study to the study participants before the start of data collection. Maintaining confidentiality of the participants throughout the whole process of data collection was discussed and ascertained during the training. The researcher was checked for completeness and consistency of questionnaires filled by the data collectors to ensure the quality of the data, and also visit the data collectors as many times as possible to check whether he/she collect the data appropriately. The researcher was also appraising the data during the data analysis stage to verify the completeness of the collected data.

#### Data Processing and Analysis

After data collection, Epi data version 4.2 was used for entry and then exported to SPSS version 20 for analysis. Binary logistic regression model was used to determine the factors associated with obstetric fistula. Those variables which were clinically important and having a  $P < 0.25$  in bivariate analysis were the candidate variables for the final multi-variable binary logistic regression model. The crude and adjusted measures of effect odds ratio were determined with 95%CI and  $P < 0.05$  was used to declare statistical significance. Goodness of fit of the final model was assessed using Hosmer and Lemeshow Goodness of fit test and multicollinearity was checked. Finally the result was presented using tables, figures, and texts.

### 3. Results

## Socio-demographic Character of the study participants

In this study, 605 reproductive age women had interviewed and the response rate was 100%. The mean age and standard deviation of the respondents were  $30.7 \pm 9.313$  (range; 15-49 years). Around, 24% of participants who had Good awareness on presentation for obstetric fistula were found in the age of 40-44 years. The result revealed that total of (90%) participants who had good awareness regarding presentation of obstetric fistula were orthodox followers. Concerning marital status of respondents, around 103(54%) of participants who were found with good awareness on presentation of obstetric fistula were married. It was found that 66(35%) of reproductive age women found with good awareness on presentation of obstetric fistula were those with above secondary educational level. With regard to their occupation, 26% of respondents who had good awareness regarding presentation of obstetric fistula were those government employed (Table 1)

Table 1  
Socio-demographic characteristics of respondents among reproductive age women in south eastern zone of Tigray, Ethiopia 2020, (N=605).

Variable	Category	Awareness on Presentation of obstetric fistula	
		Good	Poor
Age(years)	15-19	29(15%)	61(15%)
	20-24	33(17%)	71(16%)
	25-29	33(17%)	48(14%)
	30-34	35(18%)	60(15%)
	35-39	12(6%)	39(8%)
	40-44	45(24%)	104(24%)
	45-49	4(3%)	31(8%)
Religion	Orthodox	172(90%)	376(91%)
	Muslim	19(10%)	38(9%)
Marital status	Single	61(32%)	119(29%)
	Married	103 (54%)	264(63%)
	Divorced	20(11%)	19(4%)
	Widowed	7(4%)	12(3%)
Ethnicity	Tegaru	191(100%)	409(99%)
	Others	1(0%)	4(1%)
age during marriage	<15	24(19%)	89(30%)
	15-19	69(53%)	163(55%)
	20-24	37(28%)	43(15%)
Educational level	Not educated	27(14%)	259(63%)
	Primary education	42(22%)	38(9%)
	Secondary education	56(29%)	74(18%)
	Above secondary	66(35%)	43(10%)
Occupation	House wife	25(13%)	86(21%)
<b>Note:</b> Others* in ethnicity refers to Amhara and Afar			

	Farmer	35(18%)	172(42%)
	Student	45(24%)	66(16%)
	Merchant	20(11%)	27(7%)
	Daily laborer	5(3%)	25(6%)
	Government employed	50(26%)	33(7%)
	Private employed	11(6%)	5(1%)
Monthly income	<1000 birr	97(51%)	274(66%)
	1000-2000 birr	36(19%)	103(25%)
	>2000 birr	58(30%)	37(9%)
Residence	Urban	91(48%)	124(30%)
	Rural	100(52%)	290(70%)
<b>Note:</b> Others* in ethnicity refers to Amhara and Afar			

## Awareness On Presentation Of Obstetric Fistula

Reproductive age women who had good awareness on presentation of obstetric fistula were 191(31.6%). (Figure 1)

## Obstetric factors

Three hundred eighty eight (64%) respondents were heard about obstetric complication, and from the total 165(86%) respondents who had Good awareness regarding presentation of obstetric fistula were those participants who had ever heard about obstetric complication. About history of birth complication, 66(53%) of those who had good awareness on presentation of obstetric fistula were those with history of birth complication. from the total study participants, 319(52.7%) of them used modern contraceptive, Of the total 135(71%) participants found with good awareness regarding presentation of obstetric fistula were those who had history of modern contraceptive use. Around 73.4% of reproductive age women had history of ANC, and 110(89%) of those found with good awareness on presentation of obstetric fistula were those who had history of ANC follow up. This study has shown that (61.9%) of the respondents had history of institutional delivery, besides to that, 110(89%) of participants who had good awareness on presentation of obstetric fistula were found with those participant who had history of institutional delivery. (Table2)

Table 2: Obstetric factors of respondents among reproductive age women in south eastern zone of Tigray, Ethiopia 2020

Variable	Category	Awareness presentation of obstetric fistula	
		Good	Poor
Heard obstetric complication(N=605)	YES	165(86%)	223(54%)
	NO	26(14%)	191(46%)
History of induced Abortion(N=391)	YES	54(44%)	84(32%)
	NO	70(56%)	183(68%)
History of birth complications(N=391)	YES	66(53%)	116(43%)
	NO	58(47%)	151(57%)
Contraceptive history (N=605)	YES	135(71%)	184(44%)
	NO	56(29%)	230(56%)
Types of contraceptive use(320)	Injection	45(33%)	85(46%)
	Pill	27(20%)	43(23%)
	Implant	44(33%)	51(28%)
	IUCD	7(5%)	2(1%)
	Condom	12(9%)	4(2%)
Ever been pregnant(N=605)	YES	123(64%)	266(64%)
	NO	68(36%)	148(36%)
Age during first pregnancy (N=391)	15-19 years	49(40%)	155(58%)
	20-24	55(44%)	99(37%)
	25-29	20(16%)	13(5%)
No of pregnancy (N=391)	1-3 times	90(73%)	134(50%)
	4-7 times	24(19%)	80(30%)
	8-11 times	10(8%)	53(20%)
History of ANC for the index pregnancy (N=391)	YES	110(89%)	177(66%)
	NO	14(11%)	90(34%)
Place of delivery(for the index child)	Institution	110(89%)	132(49%)
	Home	14(11%)	135(51%)

## Other factors for awareness on obstetric fistula

Four hundred eighty nine (80.8%) of the respondents were responsible in deciding to visit health facility by themselves. And 168(88%) of the study participants who had Good awareness on presentation of obstetric fistula. Out of the total respondents, 345(57%) head of the house were husbands, and around 95(49.7%) of respondents who had good awareness on, presentation of obstetric fistula were found to those husband head of house hold. All (100%) of the participants had health facility in their kebele, and about distance to reach health facility, 211 (35%) take them  $\leq 30$  minute to visit health facility. About 81(42.4%) of respondents with good awareness on, presentation of obstetric fistula were those who traveled  $\leq 30$  minutes to reach health facility (**Table3**)

Table 3: Other factors of respondents among reproductive age women in south eastern zone of Tigray, Ethiopia 2020

Variable	Category	Awareness on presentation of obstetric fistula	
		Good	Poor
Who is responsible for you in deciding to visit health facility?	Participant	168(88%)	321(75.5%)
	Husband	13(6.8%)	65(15.7%)
	Mother	7(3.7%)	19(4.6%)
	Father	3(1.6%)	9(2.2%)
Who is the head of household? (N=605)	Participant	55(28.8%)	95(22.9%)
	Husband	95(49.7%)	250(60.4%)
	Father	31(16.2%)	54(13%)
	Mother	10(5.2%)	15(3.6%)
House hold head education (N=455)	Not educated	47(34.6%)	154(48.3%)
	Primary education	29(21.3%)	101(31.7%)
	Secondary education	28(20.6%)	42(13.2%)
	Above secondary	32(23.5%)	22(6.9%)
Distance to health facility(605)	<=30 minute	81(42.4%)	130(31.4%)
	>30 minute	110(57.6%)	284(68.6%)
source of health related information (N=605)	Radio	42(22%)	160(38.6%)
	Television	26(13.6%)	41(9.9%)
	HEWs	64(33.5%)	123(29.7%)
	Health facility	51(26.7%)	80(19.3%)
	Others	8(4.2%)	10(2.4%)

## General awareness on obstetric fistula

Reproductive age women who have ever heard about obstetric fistula were 368(60.8%). And around 284(85%), 238(93%) and 170(89%) of study participants who had good awareness on prevention, risk factors and presentation for obstetric fistula respectively were those who had prior information about

obstetric fistula. On source of information about obstetric fistula, 196 (53.3%) was media and 129(54.2%), 96(56.5%) and 151(52%) of women with good awareness regarding risk factors, presentation and prevention for obstetric fistula were got information from media. (Table4)

Table 4

Awareness on obstetric fistula among reproductive age women in south eastern zone of Tigray, Ethiopia 2020

Variable	Category	Awareness presentation of Obstetric fistula	
		Good	Poor
Have ever heard obstetric fistula?(N=605)	YES	170(89%)	198(48%)
	NO	21(11%)	216(52%)
Symptom of obstetric fistula u heard(N=368)	Urine incontinency	110(65%)	96(49%)
	Fecal incontinency	1(0.6%)	4(2%)
	Urine and fecal incontinency	15(8.8%)	16(8.1%)
	Foul smelling vaginal liquid	6(3.5%)	9(4.3%)
	Urine incontinency and smelling	6(3.5%)	10(5.1%)
	Urine, fecal incontinency and smelling	7(4.1%)	3(1.5%)
	I don't know	25(14.5%)	60(30%)
From where you got information about obstetric fistula?(N=368)	Health facility	59(34.7%)	75(37.6%)
	Family, relative and friends	8(4.7%)	17(8.4%)
	Media	96(56.5%)	100(51%)
	Victims of fistula	7(4.1%)	6(3%)

## Associated factors of Awareness on presentation of Obstetric Fistula

Binary logistic regression was done to identify significant factors with the awareness on presentation of obstetric fistula then those factors with p-value of less than 0.25 during bivariate analysis had been taken to multivariable analysis. The variables significantly associated in bivariate analysis were, Educational

level, place of delivery for index child ,Prior information About obstetric fistula, residence, distance to health facility, Frequency of pregnancy, History of birth complication and History of ANC(for the index pregnancy).The multivariable binary logistic regression analysis showed the following outcome: Educational level, place of delivery (for the index child),Prior information about obstetric fistula were independently associated with awareness on presentation of obstetric fistula, Reproductive age women who had above secondary educational level were 2.9 times more likely to have good awareness on presentation of obstetric fistula as compared to those reproductive age women who were not educated [AOR(95%CI=2.9(1.42-9.6)].women who had history of institutional delivery (for the index child) were 4.1 times more likely to have good awareness on presentation of obstetric fistula as compared to those who had had experience of home delivery[AOR (95%CI=4.1(1.76-9.56)]. Reproductive age women who had prior information about obstetric fistula were found to be 2.2 times more likely to have good awareness on presentation of obstetric fistula as compared to those who had not [AOR (95%CI=2.2(1.01-4.75)] .

**(Table5)**

*Table5: Associated factors of Awareness on presentation of Obstetric Fistula among reproductive age women in south eastern zone of Tigray, Ethiopia 2020.*

Variable	Category	Awareness on presentation of obstetric fistula		COR(95%CI)	AOR(95%CI)
		Good	Poor		
Educational level	Not educated	27(14%)	259(63%)	1	1
	Primary education	42(22%)	38(9%)	1.6(.657-2.244)	0.61(0.28-1.34)
	Secondary education	56(29.4%)	74(18%)	7.3(4.152-9.39)**	1.23(.57-2.94)
	Above secondary Education	66(34.6%)	43(10%)	14.7(8.24-17.25)**	<b>2.9(1.42-9.6)**</b>
place of delivery (for the index child)	Institution	110(88.7%)	132(49.4%)	8(4.38-14.73)**	<b>4.1(1.76-9.56)**</b>
	Home	14(11.3%)	135(50.6%)	1	1
Prior information About obstetric fistula	YES	170(89%)	198(47.8%)	8.83(5.4-14.5)**	<b>2.2(1.016-4.75)*</b>
	NO	21(11%)	216(52.2%)	1	1
Residence	Urban	91(47.6%)	124(30%)	2.13(1.495-3.03)**	1.35(.682-2.661)
	Rural	100(52.4%)	290(70%)	1	1
Distance to health facility	<=30minute	81(42.4%)	130(31.4%)	1.61(1.13-2.3)*	1.48(.348-1.316)
	>30minute	110(57.6%)	284(68.6%)	1	1
Frequency of pregnancy	1-3 times	90(72.6%)	134(50.1%)	3.6(1.7-7.4)*	0.8.9(.474-1.684)
	4-7 times	24(19.4%)	80(30%)	1.6(.704-3.593)	1.051(.433-2.553)
	8-11 times	10(8%)	53(19.9%)	1	1
History of birth complication	YES	66(53.2%)	116(43.4%)	1.5(.966-2.272)	1.2(.716-1.99)
	NO	58(46.8%)	151(56.6%)	1	1
History of ANC(index)	YES	110(88.7%)	177(66.3%)	4(2.2-7.4)**	1.14(.499-2.611)
	NO	14(11.3%)	90(33.7%)	1	1

Note:\*=significant at p-value<0.05, \*\*=significant at p<.001 &1=reference

## 4. Discussion

Community based cross-sectional study was carried out to assess the awareness status on presentation of obstetric fistula and associated factors among reproductive age women living in south eastern zone of Tigray regional state.

The finding of this study indicated the awareness status of reproductive age women on presentation of obstetric fistula and the effect of reproductive age women's education, place of delivery for the index child and prior information about obstetric fistula on awareness on presentation of obstetric fistula.

About reproductive age women 31.6%(95%CI=28%-35%)had good awareness on presentation of obstetric fistula; this result was lower than the study conducted in Ghana(17) which was 45.8%. But it was higher than a study conducted in Bangladesh(18) which was 12%.This difference could be due to difference in study setting, because the study in Bangladesh was conducted in rural areas where there is poor access to share health related information due to shortage of infrastructure. But our study was carried out including reproductive age women living in urban where there is expected to have good infrastructure and media to share information about obstetric fistula.

Factors which affect awareness on presentation of obstetric fistula were identified. Reproductive age women with higher than secondary level of education had statistically significant association with awareness on presentation of obstetric fistula [AOR (95%CI=2.9(1.42-9.6))] as compared to women who were not educated. This finding was consistent with the study conducted in Ethiopia Oromia region(19).

Women who had history of institutional delivery had statically significant association on awareness on presentation of obstetric fistula [AOR (95%CI=4.1(1.76-9.56))] as compared to those who had had experience of home delivery. This finding was also consistent with study conducted in Amhara region Ethiopia(20).

Moreover the odds of awareness were higher among those who prior heard about obstetric fistula by 2.2 times as compared to those who did not hear before [AOR (95%CI=2.2(1.01-4.75)]. This might be justified as; having prior information about something can shape one's awareness, so those who ever heard about obstetric fistula have better awareness.

## 5. Conclusions

Generally this study has disclosed that awareness on presentation for obstetric fistula among reproductive age women was poor. Level of education, place of delivery for the index child, and prior information about obstetric fistula were significant predictors for awareness of reproductive age women regarding presentation of obstetric fistula.

## Abbreviations

ACSH-Ayder comprehensive Specialized Hospital, AOR-Adjusted odds ratio, COR-crude odds ratio, CI-Confidence interval, CS-Cesarean section, CSA-Central Statistical Agency,

EDHS-Ethiopia Demographic health survey, FGD-Focused Group Discussion,

NGOs -None Governmental Organizations, OF-Obstetric Fistula, SBAs-Skilled Birth Attendants

SPSS-Statistical package for social science, SSA-Sub-Saharan Africa, TBAs-Traditional Birth Attendants, VVF-Vesico- Vaginal Fistula, WHO-World Health Organization

## **Declarations**

## **Ethical consideration**

Before the actual data collection letter of permission was obtained from Mekelle University, health Science College and school of Nursing to Tigray health bureau and then to south eastern zone Districts health Bureaus, the objective of the study was explained to the study participants. Privacy and confidentiality of the study participants were maintained by using study codes on data documents without identifiers on the study instruments except serial numbers. Furthermore, the study participant involvement was based on their willingness.

### **Consent for publication**

Not applicable

### **Availability of data and materials**

The datasets used during the current study available from the corresponding author on reasonable request.

### **Computing interest**

The authors declare that they have no competing interests.

### **Funding**

Mekelle University was our fund agent to conduct this study. The role of Mekelle University was providing appropriate training to develop the proposal, funding money to our data collectors and following how the study is going on, finally, our University provides us basic training which was helpful for our study.

### **Authors' contributions**

All authors performed statistical analysis, and drafted the paper, in paper writing, the data analysis and read and approved the final paper.

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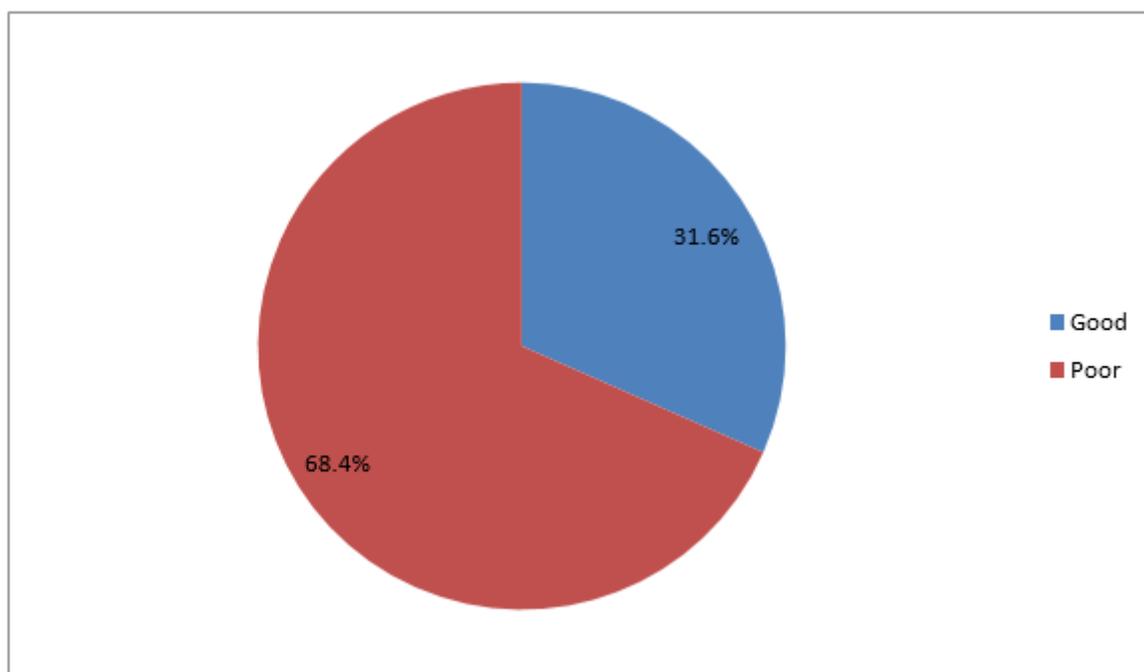
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## Figures



## Figure 1

the status of reproductive age women's Awareness on presentation of obstetric fistula in south eastern zone of Tigray, Ethiopia 2020, (N=605).

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