



# Awareness Of Obstetric Danger Signs And Its Associated Factors Among Pregnant Women In Public Health Institutions, Mekelle City, Tigray, Ethiopia 2014

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**ABSTRACT:** Background: - Pregnancy is a normal process that results in a series of both physiological and psychological changes in expectant mothers. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and / or the fetus. Awareness of obstetric danger sign in pregnant women is the essential first step in accepting appropriate and timely health care service. However, there is high maternal death in developing country due to low awareness of obstetric danger sign during pregnancy and delivery. Yet its associated factors are little known in Ethiopia, where maternal morbidity and mortality is high. Objective: - This study was intended to assess awareness of obstetric danger signs and its associated factors among pregnant women who visit ante-natal care in mekelle city 2014 Methods: - Institutional based cross-sectional study was conducted from December 2013 to June 2014 and data was collected from January to February 2014. A total of 359 pregnant women, selected using systematic random sampling method, respondents were interviewed from two hospitals and two Health centers by 8 nurses. Structured pre-tested questionnaire was used to collect data. Data was entered into SPSS version 20 and cleaned before analysis. Bivariate and multi variable logistic regression analysis were carried out to see the association of each independent variables with the dependent variable. At 95% CI, variables having p value < 0.05 in the multi-variable logistic regression model was considered as associated factors. Result: Out of the total study participants 171(47.6%) were in the age group of 25-30, 140(39%) were in the age group of 18-24 and the rest were in the age group 37 and above. Regarding their religion majority 300(83.6%) of the study participants were orthodox, 56(15.6%) were Muslim and the remaining 3(0.8%) were catholic and protestant. Of all participants about 82.5% knew at least two danger sign . The odds of women who have 4-6 pregnancies were 2.976 times (AOR; 2.976 95% CI, ( 1.203-7.365) more likely to have awareness of obstetric danger signs compared to those women who have 1-3 pregnancies. Conclusion and recommendation: The associated factors of awareness towards obstetric danger sign were age, number of pregnancies, Partner educational status and occupation. Male based health education on obstetric danger signs should be introduced in all health institutions and the community should be mobilized through mass media by Mekelle city health office. This study indicated that the awareness of pregnant women about obstetric danger signs (during pregnancy, delivery and postnatal period) was high for one danger sign but low two danger and above and affected by Antenatal follow up. Therefore, the identified deficiencies in awareness should be addressed through maternal and child health services by designing and this study indicated that the awareness of pregnant women about obstetric danger.

**Keywords:** Awareness on obstetrics danger sign

## INTRODUCTION

Pregnancy is a normal process that results in a series of both physiological and psychological changes in expectant mothers. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and / or the fetus (1, 2). Danger signs are signs of serious complications and they are grouped under three phases: pregnancy, childbirth and postpartum. The commonest danger signs during pregnancy include vaginal bleeding, swollen hands and face, and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, prolonged labor, convulsions, and retained placenta. Danger signs during the postpartum period include severe bleeding following childbirth, loss of consciousness after childbirth, and fever (2). There are five obstetric causes that lead to four-fifth maternal death. These causes are preventable and manageable. The direct causes are severe bleeding (81%), sepsis (15%), unsafe abortion (13%), eclampsia (12%), obstructed labor (12%) and others (8%) like ectopic pregnancy, embolism, and indirect causes (19%), like malaria, Anemia and heart diseases (3). Globally, the total number of maternal deaths decreased from 543 000 in 1990 to 287 000 in 2010. Likewise, global maternal mortality ratio (MMR) declined from 400 maternal deaths per 100 000 live births in 1990 to 210 in 2010 (4). It has fallen by 47% between 1990 and 2010 (5). This indicates that the overall aim of million development goal (MDG 5) improving maternal health by reducing maternal mortality ratio to three quarter (75%) is very unlikely to be achieved by 2015, unless there are remarkable further reductions from 2011 to 2015 (6). Maternal mortality is the leading cause of premature death and disability among women of reproductive age in developing countries (7). Of the total 287 000 maternal death in 2010, developing countries account for 99% (284 000) of the global maternal deaths, the majority of which are in sub-Saharan Africa (162 000) and Southern Asia (83 000). These two regions accounted for 85% of global burden, with sub-Saharan Africa alone accounting for 56% (8). The MMR in developing regions was 15 times higher than in developed regions (9). Sub-Saharan Africa had the highest MMR at 500 maternal deaths per 100 000 live births. In sub-Saharan Africa (SSA), a woman's risk of dying from treatable or preventable complications of pregnancy and childbirth over the course of her lifetime is 1 in 22, compared to 1 in 7,300 in the developed regions (10). In Ethiopia, maternal mortality and morbidity levels are among the highest in the world (11).

Around 80% of maternal deaths worldwide are brought by obstetric complication such as hemorrhage, infection, obstructed labor, unsafe abortion and high blood pressure. Severe bleeding which usually occurs after the mother has given birth is the single most feared complication claiming the lives of most mothers (12). It is obvious that women should be made aware of danger signs of obstetric complications during pregnancy, delivery and the postpartum (13, 14). The awareness is ultimately empowering them and their families to make prompt decisions to seek care from health facilities like ANC and skilled birth attendants (15). Moreover, in order for women to reach the place where appropriate care is provided, certain preparations prior to birth care is required. Birth preparedness for a woman entails identifying a skilled attendant/ health facility with delivery services, making transportation plans, saving money and identifying a blood donor (13). However, women in developing countries have shown less birth preparedness because of less awareness of obstetric danger sign. Studies conducted among women in Tanzania (15), Ethiopia (16) and Burkina Faso (17) indicate low levels of awareness of obstetric danger signs during pregnancy, delivery and postpartum. Similarly studies have also indicated low rates of birth preparedness among women in Kenya (19), Ethiopia (16, 19) and Burkina Faso (17). The low awareness of danger signs coupled with lack of preparedness contributes to the delay in seeking skilled care henceforth leading to high levels of maternal mortality and morbidity. Maternal morbidity and mortality could be prevented significantly if women and their families recognize obstetric danger signs and promptly seek health care. Raising awareness of pregnant women on the danger signs would improve early detection of problems and reduces the delay in deciding to seek obstetric care (20, 21). The national reproductive strategy of Ethiopia has given emphasis to maternal and newborn health so as to reduce the high maternal and neonatal mortality. The strategy focuses on the need to empower women, men families and communities to recognize pregnancy related risks, and to take responsibility for developing and implementing appropriate response to them. One of the targets in the strategies is to ensure that 80% of all families recognize at least three danger signs associated with pregnancy related complications by 2010 in areas where health extension program is fully implemented (22).

### **Statement of the problem :**

Raising awareness of pregnant women on the danger signs would improve early detection of problems and reduces the delay in deciding to seek obstetric care (23). High maternal mortality is one of the greatest public health problems in African region. It is estimated that 162,000 (56%) maternal deaths occur in sub-Saharan Africa. In Ethiopia, the levels of maternal mortality and morbidity are among the highest in the world and the current estimate of maternal mortality rate is 676 per 100, 000 live births and it is reported that Maternal deaths accounted for 21% of all deaths (24). The national health strategy of Ethiopia has given emphasis to maternal and newborn health so as to reduce the high maternal and neonatal mortality. The strategy focuses on the need to empower women, men families and communities to recognize pregnancy related risks, and to take

responsibility for developing and implementing appropriate response to them. One of the targets in the strategies is to ensure that 80% of all families recognize at least three danger signs associated with pregnancy related complications by 2010 in areas where health extension program is fully implemented (11). Therefore it is crucial to assess level of awareness of pregnant women on obstetrics danger sign and its associated factor to address them in the antenatal service. It is also little known in Ethiopia about the level of awareness and its associated factors on obstetric danger sign among pregnant women. Therefore, the purpose of this study was to provide such information by analyzing the data which was collected from the study participant between January to February, 2014 and in randomly selected public health institutions found in Mekelle City. Despite the fact that emphasis is given by the national strategy to raise awareness of obstetric danger signs little is known about the current level of awareness and the influencing factors in Ethiopia especially in Tigray region. This study therefore aims to fill this gap by assessing the current status of awareness of danger signs and its associated factors among pregnant women in Mekelle City, Tigray, Ethiopia.

## MATERIAL AND METHODS

This study was conducted from December 2013 to June 2014 in Mekelle City, the capital city of Tigray Region. It is located 783kms north of Addis Ababa, the capital city of Ethiopia, with a latitude and longitude of 13°29'N 39°28'E coordinates. Source Population all pregnant women who attended ANC service during data collection period in 8 selected public health institutions which were found in Mekelle City. Sample Size was computed based on single population proportion formula using a research conducted on awareness about obstetric danger sign among pregnant women in Aleta Wondo, Sidama Zone (33) was used to calculate the sample size with the assumptions of 95% level of confidence and 5% margin of error. It was include 10% of none response rate. Where,  $n$  is the required sample size  $Z_{1-\alpha/2}$  is the level of confidence; ( $\alpha = 0.05$ ,  $Z_{\alpha} = 1.96$ )  $P$  is population proportion; ( $p = 30.4\%$ )  $d$  is margin of error ( $d = 0.05$ ) Calculated sample size is 326 Then by adding 10% of non response rate of the calculated sample size, the expected sample size of the study was 359 pregnant women. One hospital (Ayder referral hospital) and four health centers (Mekelle and Adi-ha, Kasssch, Semen) was selected using simple random sampling method from 4 governmental hospitals and 8 health centers respectively. Study participants from these health facilities were selected using systematic random sampling method from each health facilities depending on the number of pregnant women who attained the ANC. Then after, every  $K$ th individuals was select to participate in the study. The first individual was select using simple random method. One day training was given for data collectors and supervisors on how to collect data, interviewing techniques, objective of the study content and application of questionnaires. To ensure quality of data, the questionnaire was pretested at one health facility in 10% of the total sample size and a necessary correction was taken. Continuous supervision was done at the spot by the primary investigator to monitor the data collection process. Finally before beginning the analysis, accuracy of data was verified during the time of data entry into SPSS.

The dependent variable was Awareness on obstetrics danger sign and Independent variables Socio-Demographic variables: It includes Age, Level of education, marital status, Religion, Residence, Ethnic group, Occupation, Monthly income, Partner Age, Partner level of education, and Partner occupation Obstetric Variables: It includes Parity, Gravidity, and Number of ANC visits.

Study participant were informed about the purpose of study; anticipate benefit and full right to refuse part or all of the study. The information from study subjects was kept confidential and anonymous.

The data were entered and analyzed using SPSS version 20 statistical package. Data cleaning was performed to check for frequency, accuracy, and consistency and missed values and variables. Any error identified was corrected. Frequencies, proportions and summary statistics were used to describe the study population in relation to relevant variables. Bivariate and multivariate logistic regression analysis was carried out to see the effect of each independent variable on the dependent variable. 95% odds ratio was computed and variables having  $p$  value less than 0.05 in the multivariate logistic regression model was considered as significantly associated with the dependent variable. A CI was considered statistically significant when the interval between the upper and lower values did not include one.

## RESULTS AND DISCUSSION

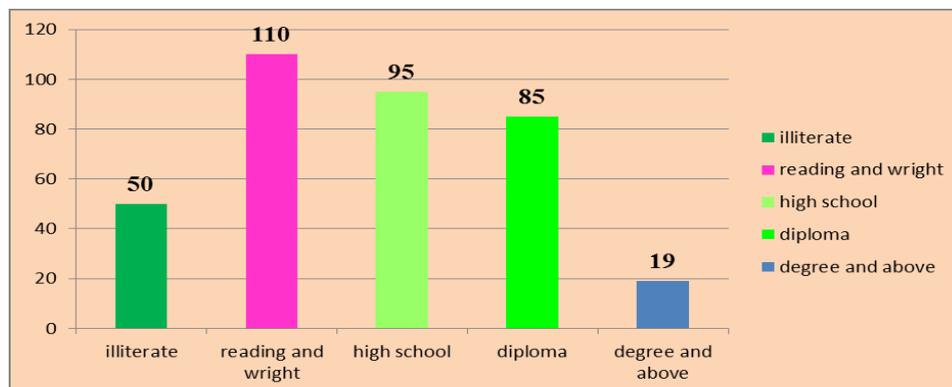
### Result

A total of 359 women were participated in the study and the response rate was 100%. Out of the total study participants 171 (47.6%) participants were in the age group of 25-30. Regarding their religion 300(83.6%) of the study participants were orthodox and the least 3(0.8%) were catholic and protestant. Looking for their residence 276(76.9%) participants were urban residence. Regarding their number of pregnancy 284(79.1%) had 1-3 pregnancies and 2(0.6%) had seven and above number of pregnancies in their life time (Table 1).

Table 1. Socio-demographic characteristics of women who attend ANC in public health institutions in Mekelle city 2014 (n=359)

Variables	Categories	Frequency	Percent
Age	18-24	140	39.0
	25-30	171	47.6
	31-36	44	12.3
	37 and above	4	1.1
Ethnicity	Tigray	351	97.8
	Amhara	8	2.2
Religions	Orthodox	300	83.6
	Muslim	56	15.6
	Catholic and protestant	3	0.8
Marital status	single	13	3.6
	Married	343	95.6
	Divorce	3	0.8
Total birth	0-3	328	91.3
	4-6	29	8.1
	7 and above	2	0.6
Residence	Rural	83	23.1
	Urban	276	76.9
Monthly income	100-500	119	68.3
	501-1000	117	16.1
	1001-2000	97	13.3
	2001&above	26	3

Fig 1. Out of the total study participants 50 (13.9%) were illiterate, 110 (30.6%) could read and write, and 85 (23.7%) were diploma in their educational status



The study assessed the awareness of obstetric danger signs among women, who attend ANC in public health institutions in Mekelle city and showed that 296 (82.5%) participants knew at least two danger signs. Out of the total study participants 246 (68.5%) were aware of vaginal bleeding, 76(21.2%) and were knew aware of loss of consciousness, 111(30.9%) were knew severe vomiting, 60(16.7%) were knew high fever 110(30.5%) were knew high blood pressure. Looking for their swelling of face arm and feet 271(75.5%) were knew no swell. Of the total study participants 298(83%) did not know lower abdominal pain. When we see the status of severe vaginal bleeding 251(69.8%) knew severe vaginal bleeding during delivery. (Table2).

Table 2. Awareness of study participants on obstetric danger sings(pregnancy, delivery postnatal) in public health institution found in Mekelle city Tigray Ethiopia ( n=359).2014

Obstetric danger sing	During pregnancy		During delivery		During postnatal		
	Number	%	Number	%	Number	%	
Vaginal bleeding	No	113	31.5	108	30.1	112	31.2
	yes	246	68.5	251	69.8	247	68.8
Loss of consciousness	No	257	71.6	274	76.3	283	78.8
	yes	102	28.4	85	23.7	76	21.2
Severe headache	No`	248	69.1				
	yes	111	30.9				
High fever	No	299	83.3				
	yes	60	16.7			359	100
Severe headache	No	250	69.6			283	78.8
	yes	109	30.4			76	21.2
Lack of blood (anemia)	No	231	64.3				
	yes	128	35.7				
High blood pressure	No	249	69.4				
	yes	110	30.5				
swelling of face,arm and feet	No	271	75.5				
	yes	88	24.5				
Decrease fetal movement	No	272	75.8				
	yes	87	24.2				
Lower abdominal pain	No	298	83				
	yes	61	17				
Prolonged labour	No			220	61.3		
	yes			139	38.7		
Retained placenta	No			184	51.3		
	yes			175	48.7		
Difficulty of breath	No					275	76.6
	yes					84	23.4
Foul smelling vaginal discharge	No					229	63.8
	yes					130	36.2

Bivariate logistic regression analysis was done between dependent (Awareness of obstetrical danger signs) and various independent variables to see the association. In the bivariate logistic regression analysis age of mother, occupation of women, number of pregnancies, and level of partner educational status were significantly associated with the dependent variable awareness of obstetrics danger sign at p-value less than 5% (Table 3). In the multivariate logistic regression analysis age of mother, occupation of women, number of pregnancies, and level of partner educational status were significantly associated with awareness of obstetric danger signs. Controlling other variables any age of mother was significantly associated with awareness of obstetric danger signs. Mothers who were found in the age group of 25-30 years were 52.4% (AOR; 0.476, 95% CI 0.235-0.967) less likely to have awareness of obstetrical danger signs compared to those who were in the age group of 18-24 years. Controlling other variables number of pregnancies was significantly associated with awareness of obstetric danger signs. The odds of women who have 4-6 pregnancies were 2.976 times (AOR; 2.976 95% CI, (1.203-7.365) more likely to have awareness of obstetric danger signs compared to those women who have 1-3 pregnancies (Table 3).

Table 3. Association between dependent and independent variables of the study participants

Variables	Categories	Obstetrics anger sing		COR (95%)	AOR (95%)
		Yes (%)	No (%)		
Age	18-24	32(22.9%)	108(77.1%)	1	1
	25-30	19(11.1%)	152(88.9%)	0.422(0.227-0.783)*	0.476(0.235-0.967)*
	31-36	11(25.0%)	33(75.0%)	1.125(0.511-2.474)	0.817(0.257-2.602)
	37and above	1(25.0%)	3(75.0%)	1.125(0.113-11.191)	0.861(0.062-12.048)
Occupation	Farmer	2(8.7%)	21(91.3%)	1	1
	GO employer	6(6.9%)	81(93.1%)	0.228(0.081-0.644)*	0.232(0.072-0.753)*
	House wife	32(23.9%)	102(76.1%)	0.965(0.460-2.025)	0.791 (0.364-1.720)
	Privet business	3(9.1%)	30(90.9%)	0.308(0.080-1.177)	0.275(0.066-1.151)
	Daily laborer	7(24.1%)	22(75.9%)	0.979(0.341-2.814)	0.815(0.274-2.421)
Number of pregnancy	1-3	44(15.5%)	240(84.5%)	1	1
	4-6	19(26.0%)	54(74.0%)	1.919(1.039-3.545)*	2.976(1.203-7.365)*
	7 and above	0(0.0%)	2(100.0%)	0.000 (0.000-1.234)	0.000(0.000-1.456)
Partners educational status	Illiteracy	1(3.6%)	27(96.4%)	1	1
	Read and write	20(20.2%)	79(79.8%)	6.835(0.875-53.381)	5.741(0.702-46.935)
	High school	22(25.6%)	64(74.4%)	9.281(1.190-72.375)*	8.939(1.067-74.888)*
	Diploma	15(15.6%)	81(84.4%)	5.000(0.631-39.647)	8.853(1.012-77.419)
	Degree and above	5(10.0%)	45(90.0%)	3.000(0.333-27.059)	6.570(0.643-67.105)

N.B –The numbers with asterisk (\*) showed that statistical significant association between dependent and independent variables at p-Value less than 5%

### Discussion

The study was aimed to assess awareness of obstetric danger signs among women who attend ANC in selected health institutions found in Mekelle city. The study revealed that the level of awareness of obstetric danger signs among women who attend ANC in selected health institutions found in Mekelle city was 82.5%. This was higher than that of a study done in India which showed that awareness of mothers about obstetric danger signs was 70.62% (27). This difference might be due to the fact the socio-economic and cultural differences between the two nations. Another possible reason might be due to the Ethiopian government health policy main focus is on maternal and child health. The Ethiopian government is working a lot on maternal health through the so called Urban and Rural health extension workers which help the main health sector in improving maternal health through home to home assessment and give care to pregnant women and any information on the danger signs of pregnancy. This finding was also higher than that of Tanzania which showed that 571 (51.1%) of the women knew at least one obstetric danger sign, the percentage of women who knew at least one danger sign related to pregnancy was 26%, in relation to delivery 23%, and to the period after delivery 40% (29). This difference also might be due to the Tanzanian government concern on maternal health was low. The finding of this study has also indicated that sever bleeding, swell of face or arm and feet, lower abdominal pain, prolonged labor were the commonest signs recognized by the clients as danger signs of pregnancy; 69.8%,35.7%,83% and 38.7% respectively. This was similar with a study done in Iraq which showed that heavy bleeding, hypertension and anemia were the commonest signs recognized by the clients as danger signs; 67%, 60%, 58% and 45% respectively. Only 11% recognized prolonged labor as danger signs (28). The reason for the similarity might be the population and the government has good attitude towards maternal health.

This study indicated that there was a statistical significant association between age of mother, number of pregnancies, partner educational status and type of job of the mother with obstetric danger signs. Age of mother was significantly associated with awareness of obstetric danger signs. Mothers who were found in the age group of 25-30 years were 52.4% (AOR; 0.476, 95% CI 0.235-0.967) less likely to have awareness of obstetrical danger signs compared to those who were in the age group of 18-24 years. The odds of women who have 4-6 pregnancies were 2.976 times (AOR; 2.976 95% CI, (1.203-7.365) more likely to have awareness of obstetric danger signs compared to those women who have 1-3 pregnancies. The statistical significant association between ages, number of pregnancy with obstetric danger signs was consistent with a study 23 conducted in Tanzania which showed that higher level of education was the most important predictive associated factor for increased awareness of danger signs. Other associated factor with increased awareness included age and number of deliveries, (34). This similarity might be due to the fact that the two countries have improved and expanded their educational system and are on the right track to achieve the MDG 3 and 4 by 2015 G.C. Various descriptive studies conducted in Tanzania, Iraq and Ethiopia showed that the determinant factors of awareness on obstetric danger signs were being urban residence, number of antenatal visits and when the mother had been informed of having a risk factors or complication during antenatal care (34,35, 36) respectively. But this study has not showed any significant association between these variables. The reason might be the accessibility of health facilities in both urban and rural areas almost similar by this time especially in Ethiopian and Tanzania.

## CONCLUSION

The associated factors of awareness towards obstetric danger sign were age, number of pregnancies, Partner educational status and occupation of mother. This study indicated that the awareness of pregnant women about obstetric danger signs (during pregnancy, delivery and postnatal period) was high for one danger sign but low two danger and above and affected by Antenatal follow up. Therefore, the identified deficiencies in awareness should be addressed through maternal and child health services by designing and this study indicated that the awareness of pregnant women about obstetric danger.

### Recommendations

- ❖ Male based health education on obstetric danger signs should be introduced in all health institutions and the community should be mobilized through mass media by Mekelle city health office.
- ❖ Age based health education on obstetric danger signs should be encouraged in all health institutions in Mekelle city.
- ❖ In order to reduce multi-deliveries of the women institutional delivery should strengthen in the future by the Tigray regional health bureau through the urban and rural health extension workers.
- ❖ The government in collaboration with local NGOs should work on increasing public awareness of obstetric danger signs through social networks, education and outreach programs is a very important measure that should be undertaken through reliable local resources within communities.
- ❖ Empowerment of women, in their health through intensive health education on maternal health.

### Limitation of the study

- Recall bias as natures of cross-sectional study design.
- Participant biased to give accurate information since they are afraid of social discrimination.

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