

## Knowledge about Obstetric Danger Signs and Associated Factors among Women Attending Antenatal Care at Felege Meles Health Center, Addis Ababa, Ethiopia, 2018

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### Abstract

**Objective:** For every 100,000 live births, 450 women died during pregnancy, childbirth, or postpartum in developing countries. Maternal morbidity and mortality reduced if the mothers and their families can identify obstetric danger signs and quickly get health care. Therefore, this study was designed to assess knowledge of obstetric danger signs and associated factors among women attending antenatal care.

**Methodology:** Facility based cross-sectional study was conducted from April 1st to April 30, 2018 among 290 randomly selected antenatal care attendants. Epi Info version 7 and SPSS version 21 software were used for data entry and analysis respectively. Logistic regression was run to look for the association between dependent and explanatory variables; and using variables which have p-value  $\leq 0.25$  binary logistic regressions was fitted. Association presented in Odds ratio with 95% confidence interval and significance determined at a P-value less than 0.05.

**Result:** About three fourth 165 (76.7%), 139 (64.7%) and 152 (72.7%) of mothers were knowledgeable about danger sign during pregnancy, labor and delivery postpartum period respectively. vaginal bleeding was most recognized obstetric danger sign during pregnancy 193 (89.8%) and childbirth (72.6%). Blurred vision and loss of consciousness were the most commonly mentioned during postpartum period 159 (74%). The frequency of antenatal care visits was consistently found to be significantly associated with knowledge of mothers about obstetric danger signs during pregnancy (AOR = 2.2 (1.28 - 3.79), childbirth (AOR: 1.95; 95% CI: 1.17 - 3.25) and the postpartum period (AOR = 1.86; 95% CI: 1.1 - 3.15).

**Keywords:** Knowledge; Danger Sign; Antenatal Care; Addis Ababa; Ethiopia

### Abbreviations

ANC: Antenatal Care; AOR: Adjusted Odds Ratio; CI: Confidence Interval; EDHS: Ethiopian Demographic Health Survey; EDGS: Ethiopian Development Goals; ETB Ethiopian Birr; FMOH: Federal Ministry of Health; MMR: Maternal Mortality Ratio; MSC: Master of Science; ODS: Obstetric Danger Signs; OR: Odds Ratio; SDG: Sustainable Development Goal; SPSS: Statistical Product and Service Solutions

### Introduction

The danger signs are signs of serious Obstetric complications which may occur during pregnancy, labor and childbirth, and during the postnatal period [1]. When mothers do not recognize the danger signs in pregnancy, adverse effects can occur to the mother, the unborn baby, or the pregnancy itself [2].

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Even if maternal health has significantly improved in the 21<sup>st</sup> century, but too many women continue to die or suffer severe pregnancy complications every year [3]. Many of the complications that result in maternal deaths are unpredictable and can occur without warning at any time during pregnancy and childbirth [4]. Worldwide by the end of 2015, 303 000 women will have died during and following pregnancy and childbirth [5]. For every 100,000 live births, 450 women died during the three periods in developing countries [6]. Ethiopia also one of the country with a high Maternal mortality rate, 412 deaths per 100,000 live births in 2016 [7].

The Sustainable Development Goals has set a new transformative agenda for maternal health to reduce the global maternal mortality ratio (MMR) to less than 70 per 100 000 live births by 2030 [8]. The Ethiopian federal ministry of health also plans to reduce the MMR to 199/100,000 live births by 2020 [9]. Maternal morbidity and mortality reduced if the mothers and their families can identify obstetric danger signs and quickly get health care [10].

The national reproductive strategy of Ethiopia has seat a strategic plan as 80% of all families, including mothers should recognize at least three danger signs associated with pregnancy-related complications [11]. However, little is known about the current level of mothers' knowledge and associated factors in Ethiopia as research evidence from different parts of Ethiopia revealed. Therefore, this study designed to determine the level of knowledge about obstetric danger signs and associated factors among pregnant women attending antenatal care in Felege Meles health center, Addis Ababa, Ethiopia.

## **Methods**

A facility based, cross-sectional study design was conducted in Felege Meles Health Center, Addis Ababa from April 1<sup>st</sup> to April 30, 2018. All pregnant women attending the ANC service in Felege Meles Health Center were sourced populations. The sample size was calculated using single population proportion formula based on the following assumptions: Proportion of knowledge of danger signs during pregnancy = 21.9% [12], Significant = 0.05, at 95% confidence interval, Margin of error is 5% and 10% non response rate, the minimum sample size became 290 pregnant women. A systematic random sampling technique had been used to select study participants.

Pre-tested and structured interviewer administered questionnaire was used to collect data. Three diploma midwives and two Bsc midwife supervisors were recruited and trained for three days in ways of data collection. The questionnaire was pretested on 5% of samples before the actual data collection. After data collection, each questionnaire was checked for completeness and consistency. Then, Data was cleaned, coded and entered into Epi-info version 7 and exported to SPSS version 21 for analysis. Logistic regression was run to look for the association between dependent and explanatory variables; and using variables which have p-value  $\leq 0.25$  binary logistic regressions was fitted. Association presented in Odds ratio with 95% confidence interval and significance determined at P-value less than 0.05.

## **Operational definition**

**Knowledgeable about key danger signs:** A woman was considered as knowledgeable when she mentioned spontaneously at least three key danger signs of pregnancy, child birth and postpartum respectively [12].

## **Results**

### **Socio-demographic characteristics**

A total of 290 pregnant women participated with a response rate of 100%. The mean age of the participants was 26.9 years, with a standard deviation of +4.487 and with a maximum and minimum age of 40 and 15 years, respectively. Eighty eight (30.3%) of the participants were Amhara and 152 (52.4%) were Orthodox Christian. One hundred and Sixty five (56.9%) of respondents had a monthly income of 500 ETB and 91 (31.4%) was an educational level of secondary school. The majority of the participants 275 (94.8%) was married and 143 (49.3%) of women were a housewife. One hundred thirty four (46.2%) and 97 (35.3%) of the participant's husband were private employers and secondary school respectively (See table 1).

Characteristics	Category	Frequency (N)	Percent (%)
Age of mother	15 - 24	80	27.6
	25 - 34	183	63.1
	>= 35	27	9.3
Religion	Orthodox	153	52.8
	Catholic	16	5.5
	Protestant	48	16.6
	Muslim	73	25.2
Ethnicity	Amhara	88	30.3
	Oromo	78	26.9
	Tigray	24	8.3
	Guragie	61	21.0
	Others <sup>1</sup>	39	13.4
Marital status	Married	275	94.8
	Others <sup>2</sup>	15	5.2
Educational status of women	Unable to read and write	27	9.3
	Read and write	28	9.7
	Primary school	63	21.7
	Secondary school	91	31.4
	Diploma and above	81	27.9
Women occupation	House wife	143	49.3
	Government employee	56	19.3
	Private employee	70	24.1
	Other <sup>3</sup>	21	7.2
Husband occupation (n = 275)	Private	134	48.7
	Governmental	68	24.7
	Merchant	54	19.6
	Others <sup>4</sup>	19	6.9
Husband education (N = 275)	Unable to read and write	11	4.0
	Read and write	17	6.2
	Primary	56	20.4
	Secondary	97	35.3
	Diploma and above	94	34.2
income per month in ETB	< 500**	165	56.9
	501 - 1000**	17	5.9
	1001 - 1500**	15	5.2
	1501 - 2000**	22	7.6
	>= 2001**	71	24.5

**Table 1:** Distribution of study subjects by socio-demographic characteristics in Felege Meles Health Center, Addis Ababa, Ethiopia, April 2018 (n = 290)

Others<sup>1</sup> dorze and silte, Others<sup>2</sup> unmarried, widowed and separated, Others<sup>3</sup> merchant and daily laborer, \*\*birr, Others<sup>4</sup> farmer and driver.

**Obstetric characteristics**

Majority 179 (61.7%) of the women were pregnant between the age of 20 -29 years. More than half 152 (54.8%) of participants have ≤ 2 children. Eighty one (27.9%) of the respondents had a history of spontaneous abortion. From the total number of pregnant mothers who had a previous history of pregnancy, 211 (72.8%) had ANC follow up for their last pregnancy. Among the total respondents, 192 (66.2%) paid less than four visits to the ANC for their current pregnancy. One hundred twenty four (42.8%) of mothers gave birth at Governmental Hospital. More than half 166 (57.2%) decided the place of last delivery by themselves. Two hundred (69.0%) of participants mentioned that time to reach the nearby health facility on foot took 15 - 30 minutes (See table 2).

Variable	Frequency (N)	Percent (%)
<b>Age at first pregnancy</b>		
< 20	92	31.7
20 - 29	179	61.7
≥ 30	19	6.6
<b>Number of pregnancy</b>		
1 - 3	255	87.9
≥ 4	35	12.1
<b>Number of children</b>		
No child	124	42.8
≤ 2	152	52.4
≥ 3	14	4.8
<b>History of stillbirth</b>		
Yes	12	4.1
No	278	95.9
<b>history of spontaneous abortion</b>		
Yes	81	27.9
No	209	72.1
<b>Number of total abortion</b>		
1 - 2	64	79
≥ 3	17	21
<b>Final decision where to deliver</b>		
Yourself	166	57.2
Husband	59	20.3
Both	66	22.4
<b>ANC follow up of past pregnancy</b>		
Yes	211	72.8
No	79	27.2
<b>Frequency of ANC care visit</b>		
< 4	192	66.2
≥ 4	98	33.8
<b>Place of last delivery</b>		
Never gave birth	123	42.4
Governmental	118	40.7
Private	31	10.7
Others <sup>5</sup>	18	6.2
<b>Distance of health facility</b>		
15 - 30'	200	69.0
30 - 60'	66	22.8
≥ 60'	24	8.3

**Table 2:** Distribution of study subjects by their Obstetric characteristics in Felege Meles Health Center, Addis Ababa, Ethiopia, April 2018 (n = 290).

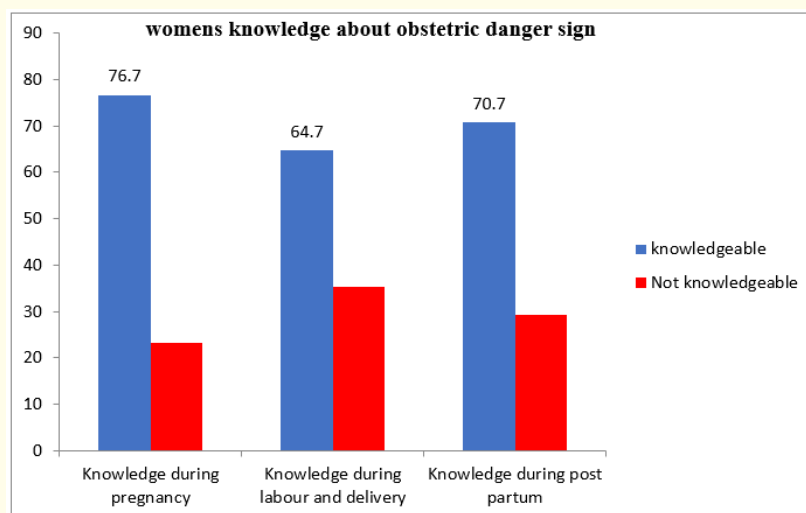
**Knowledge about obstetric danger signs (ODS)**

Out of the 290 respondents, 215 (74.1%) reported that they had the information about ODS. For those who have heard about ODS; the major source of information was health personnel 172 (80%) followed by friends 23 (10.7%) and media 20 (9.3%) respectively. Among those who heard about ODS most common mentioned danger signs during pregnancy and labour and delivery were vaginal bleeding 193 (89.8%), 156 (72.6%) respectively Accordingly, mothers also mentioned ODS which occur during the post-partum period include severe blurred vision and loss of consciousness were the most commonly mentioned 159 (74.0%) (See table 3).

Variable	Yes (N) (%)	No (N) (%)	Don't know (N) (%)
<b>Knowledge during pregnancy</b>			
Vaginal bleeding	193 (89.8)	12 (5.6)	10 (4.7)
Leakage of fluid	82 (36.1)	90 (41.9)	43 (20)
Persistent headache	153 (71.2)	35 (16.3)	27 (12.6)
Decreased or absent fetal movement	152 (70.7)	36 (16.7)	27 (12.6)
Severe abdominal pain	142 (66)	38 (17.7)	35 (16.3)
<b>Knowledge during labor and delivery</b>			
Vaginal bleeding	155 (72.1)	47 (21.9)	12 (5.6)
Loss of consciousness	152 (70.7)	31 (14.4)	32 (14.9)
Prolonged of labour	120 (55.8)	33 (15.3)	62 (28.8)
Delayed placenta	133 (61.9)	10 (4.7)	72 (33.5)
Convulsion	100 (46.5)	47 (21.9)	68 (31.6)
<b>Knowledge during post partum period</b>			
Foul smelling discharge	134 (62.3)	28 (13)	53 (24.7)
Loss of consciousness	159 (74)	20 (9.3)	36 (16.7)
Convulsion	117 (54.4)	38 (17.7)	60 (27.9)
Blurred vision	159 (74)	19 (8.8)	37 (17.2)
Swelling of hand and face	152 (70.7)	23 (10.7)	40 (18.6)

**Table 3:** Knowledge of women about obstetric danger signs during pregnancy labour and delivery and post-partum period (N = 215).

Generally, 165 (76.7%), 139 (64.7%) and, 152 (72.7%) of mothers were knowledgeable for an ODS which could occur during pregnancy, at childbirth and the postpartum period respectively (See figure 1).



**Figure 1:** Women's knowledge about obstetric danger signs.

### Factors associated with knowledge of ODS

After controlling the effect of other variables Women's age at first pregnancy, a number of a child and number of antenatal care visits were significantly associated with Knowledge of mothers on ODS.

Women age at first pregnancy (AOR = 2.12 and 95% CI = 1.24, 3.64), ANC visit  $\geq 4$  times (AOR = 2.2 (1.28, 3.79) and number of children  $\leq 2$  (AOR: 1.89; 95% CI: 1.12, 3.19) were factors associated with Knowledge of danger signs occurring during pregnancy. The variables that associated with Knowledge of danger signs during labor were the Frequency of ANC visits (AOR: 1.95; 95% CI: 1.17, 3.25), ANC follow up of past pregnancy (AOR = 1.99; 95% CI: 1.15, 3.47) and Distance of health facility (AOR = 0.21; 95% CI: 0.07, 0.6). Accordingly the variables that were independently associated with knowledge about the danger signs of the postnatal period were Mothers' education (AOR: 3.32; 95% CI 1.26, 8.79), Age at first pregnancy (AOR = 4.02; 95% CI: 1.28, 12.64), Frequency of ANC visit (AOR = 1.86; 95% CI: 1.1, 3.15) and ANC follow up of last pregnancy (AOR = 2.68; 95% CI: 1.52, 4.73) (Table 4).

Variable	AOR (95% CI) for knowledge about obstetric danger signs		
	During pregnancy	During labor	During postnatal period
<b>Educational status of women</b>			
Unable to read and write	1	1	1
Read and write	1.343 (0.426,4.232)	1.573 (0.476,5.195)	1.239 (0.398,3.851)
Primary school	1.750 (0.642, 4.770)	1.558 (0.541, 4.484)	2.171 (0.818, 5.764)
Secondary school	2.474 (0.936,6.539)	2.296 (0.835,6.316)	2.160 (0.847,5.510)
Diploma and above	3.176 (1.165,8.660)	2.267 (0.788,6.524)	3.321 (1.256,8.786)*
<b>Age at first pregnancy</b>			
< 20	1	1	1
20 - 29	2.121 (1.235,3.640)*	1.487 (0.870,2.541)	1.588 (0.914,2.762)
$\geq 30$	3.242 (1.063,9.884)*	2.507 (0.873,7.199)	4.021 (1.279,12.641)*
<b>Number of child</b>			
No child	1	1	1
1 - 2	1.889 (1.118,3.190)*	1.276 (0.466,3.651)	1.925 (0.980,3.784)
$\geq 3$	0.605 (0.184,1.982)	1.230 (0.253,5.970)	1.985 (0.536,7.353)
<b>Frequency of ANC visit</b>			
<4	1	1	1
$\geq 4$	2.204 (1.281,3.790)*	1.950 (1.171, 3.246)*	1.863 (1.102, 3.148)*
<b>ANC follow up of past Px</b>			
Yes	1.097 (0.491,2.449)	1.997 (1.151,3.465)*	2.679 (1.518,4.727)*
No	1	1	1
<b>Distance of health facility (on foot)</b>			
<30'	1	1	1
30 - 60'	1.051 (0.557, 1.981)	0.675 (0.379, 1.202)	1.137 (0.621,2.084)
$\geq 60'$	0.990 (0.364,2.694)	0.210 (0.074,0.598)*	1.136 (0.438,2.949)

**Table 4:** Factors associated with Knowledge of women about obstetric danger signs in Felege Meles Health Center, Addis Ababa, Ethiopia, April 2018 (n = 290).

## Discussion and Conclusion

In this study, about three fourth 165 (76.7%), 139 (64.7%) and 152 (72.7%) of mothers were knowledgeable about danger sign during pregnancy, child birth and postpartum period respectively which is significantly higher than study conducted Yirga Cheffe and Raya Kobo district, which is 49.1% and 46% women were knowledgeable during pregnancy, 52.9% and 27.8% during childbirth and 44.7% and 26.4% during post-partum period, respectively [12,13]. Also, it's higher than study from Goba district and Dilla University Referral hospital, which is (31.9% and 58%), (27% and 51%) and (22.1% and 45%) during pregnancy, childbirth and post-partum period respectively [14,15]. The difference could be due to the difference in socio-demography of the participants, the time difference, measurement difference and could be due to the health policy being applied is increasing the awareness about obstetric complications for early seeking of health care.

Mothers who attend Diploma and above were 3.32 times more likely to be knowledgeable about danger signs during the postpartum period than mothers who were unable to read and write (AOR: 3.32; 95% CI 1.26, 8.79). Association of education with knowledge of ODS was also been reported from other studies [13,16-18]. This might be due to the fact that educated women can easily read and understand information regarding ODS and may be motivated to know about health and risk factors, due to that they might have the interest to read, listen and watch any information sources.

Women whose age is from 20 - 29 years at first pregnancy were 2 times more likely to know the danger signs occurring during pregnancy than women whose age is < 20 years (AOR = 2.12 and 95% CI = 1.24, 3.64). It might be explained as women in this age group are more vulnerable to achieve higher education and this may help them to become psychologically and physically ready to accept information and have better knowledge of ODS. On the other hand Women whose age  $\geq 30$  years at first pregnancy were 4 times more likely to know the danger signs occurring during postpartum period than women whose age is < 20 years women (AOR = 4.02; 95% CI: 1.28, 12.64) This might be explained by women who are in these age groups were at high risk to be pregnant and give birth which could make them to seek health care and acquire knowledge on ODS.

Mothers' who visit the ANC clinic  $\geq 4$  times were 2.2 times more likely to be knowledgeable about danger signs during pregnancy than mothers' who had < 4 (AOR = 2. 2; 95% CI: 1.28, 3.79). In addition, Mothers' who visit ANC clinic  $\geq 4$  times were 1.95 times more likely to be knowledgeable about danger signs during childbirth than their counterparts (AOR = 1. 95; 95% CI: 1.17, 3.25). Accordingly, Mothers' who visit the ANC clinic  $\geq 4$  times were 1.86 times more likely to be knowledgeable about danger signs during the postpartum period than their counterparts (AOR = 1. 86; 95% CI: 1.1, 3.15). This is in line with a finding from Raya Kobo district [13]. This might be explained as antenatal care visit is a critical time to counsel women about possible serious ODS. When the women had repeated visits; she had an opportunity to gather more information about the ODS.

Women's who had  $\leq 2$  children were almost 2 times more likely to be knowledgeable about danger signs during pregnancy than women's who never give birth (AOR: 1.89; 95% CI: 1.12, 3.19). This may be due to the fact that women who experience previous childbirth were more likely to differentiate abnormalities and recognize more from her exposure and also she is more likely to receive health information about the problems.

Mothers' who had ANC follow up for the last pregnancy were 2 times more likely to be knowledgeable about danger signs during childbirth than mothers' who didn't have an ANC follow up (AOR: 1.99; 95% CI: 1.15, 3.47). In addition, mothers' who had ANC follow up for the last pregnancy were 2.68 times more likely to be knowledgeable about danger signs during the postpartum period than their counterparts (AOR: 2.68; 95% CI: 1.52, 4.73). This study is in line with other similar studies [18,19]. This might be due to the fact that the ANC is an ideal time for the mothers to hear about ODS and it provides a chance to get an important opportunity for information, education, and communication.

On the other hand, women who traveled on foot more than 60 minutes to reach health facilities for health service utilization were 79% less likely to be knowledgeable about danger signs during labour and delivery than mothers' who traveled < 30 minutes (AOR: 0.21; 95% CI: 0.07, 0.6). This is consistent with studies done in Yirga Cheffe district [15]. This might be due to women who were far from health institutions might have less access to get information about their health; including the ODS [20-24].

## **Limitations**

This study does have some inherent limitations. First, the study design makes it difficult to determine the direction of causality and there is a risk of social desirability bias and interviewer bias. In addition, this study was not triangulated which might be difficult to get new factors and suggested to be studied in the future.

## **Ethics Approval and Consent to Participate**

Ethical clearance and approval letter to conduct the study was obtained from Kea Med University College review board and a letter of cooperation was taken from Kea Med University College to Felege Meles health center. Written consent was obtained from the study participants after explaining the study objectives and procedures and their right to refuse not to participate in the study any time they want was assured. Confidentiality of the information was ensured by coding. The interview was undertaken privately in a separate area. The only authorized person was getting access to raw data.

## **Consent for Publication**

Not applicable.

## **Availability of Data and Materials**

The data that support the findings of this study are available, but some restrictions may apply to the availability of these data as there are some sensitive issues. However, data are available from the corresponding authors upon reasonable request.

## **Competing Interests**

The authors declare that they have no competing interests.

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## **Authors' Contributions**

TL was involved in the conception, design, analysis, interpretation, report and manuscript writing. TT and TB were involved in the design, analysis, interpretation and report writing. All authors read and approved the final manuscript.

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