



Awareness and Health Care Practice of Mothers' About Obstetric Danger Signs at Haramaya District, Eastern Ethiopia

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Abstract: Mother's awareness of potential obstetric danger signs during pregnancy, child birth and immediate post-delivery are crucial to influence their decisions to seek immediate health care. However, their awareness and health care practice were not well known in Haramaya district. Thus, this study was to assess mother's awareness of obstetric danger signs and their health care seeking practice. Community based cross sectional study was conducted in June, 2012 on 757 mothers who gave birth for the last two years and reside in Haramaya District. Sample size was estimated by using a single population proportions formula. Multistage sampling method was used to select study subjects. Data was collected by interview using structured questionnaires. Bivariate and multivariate were used to analyze predictors. Results: Only 86 (11.3%) of respondents mentioned three and above key obstetric danger signs during pregnancy. About half of 402(53%) of respondents did not aware for at least one obstetric danger signs. 234 (31%) respondents were reported to have experienced one or more key danger signs but 31.2% of them did not sought for medical treatment. Mothers who followed primary education 2.7 times [AOR 2.7; 95% CI 1.5-7.2], and secondary and above education 2.4 times [AOR 2.4; 95% CI 1.3-5.4] more likely to have awareness on obstetric danger signs during pregnancy as compared to those didn't attained formal education. Mothers who attended antenatal care were 4.28 times [AOR 4.28; 95% CI 2.01-9.12] more likely of having awareness on obstetric danger sign than mother who did not attended ANC. Similarly, the odds of giving birth at health institutions increased the level of awareness about obstetric danger signs about three fold [AOR 3.23; 95% CI 1.821-5.742] than those who giving birth at home. Conclusion: Awareness of mothers on obstetric danger signs in the study area and health seeking practice were low. Thus, community education and information during antenatal Care utilization, institutional delivery services and postnatal care about obstetric danger signs and its consequence if the mother will not seeking care are important steps in improving the awareness and health seeking practice.

Keywords: Antenatal Care, Awareness Maternal Health, Obstetric Danger Signs

1. Introduction

Maternal and newborn mortality remains a major public health challenge in developing countries, and little progress made towards the achievement of millennium development goals [1]. The Maternal mortality ratio (MMR) in developing regions 240/100,000 live birth was 15 times higher compared to developed regions. Sub-Saharan Africa has the highest MMR at 500 maternal deaths per 100 000 live births [2]. In Ethiopia, 676 per 100 000 live birth maternal mortality is

among the highest in the world [3].

The history of successes in reducing maternal and newborn mortalities showed that skilled professional care during and after childbirth can make the difference between life and death for both women and their newborn babies [4]. Sharp decline in maternal mortality rates after 1930s in developed country were due to standard of maternal care provided by skilled birth attendants [5, 6] Evaluation of safe motherhood initiative program in 1997 also concluded that a skilled attendant to assist childbirth is the single most critical

intervention to reduce maternal mortality [7].

Obstetric danger signs life-threatening and serious conditions related to pregnancy, if not treated on time it could result in loss of mothers and the babies. These key danger signs during pregnancy, include severe vaginal bleeding, swollen hands/face and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, pro-longed labor, convulsions, and retained placenta. Key danger signs during the postpartum period include severe bleeding; foul smell vaginal discharge and fever. These life threatening complications are treatable and avoidable, if women with the complications can identify the risk can be averted [8].

Factors that affect maternal and neonatal mortality and morbidity are generalized in to three delays: delays in deciding to seek care, delays in reaching care, and delays in receiving care. These delays have many causes [9]. Awareness about the significance of symptoms and signs of obstetrics complications may lead to timely access to appropriate emergency obstetric care and crucial to prevent the first and second delay [8].

Therefore, women's awareness of potential danger signs of pregnancy, childbirth and the postpartum period is crucial to influence their decisions to have immediate care seeking taken place, followed by immediate medical attention which improve early detection of problems and reduces the delay in deciding to seek obstetric care [10-12].

The government of Ethiopia (GOE) in 2006 planned to ensure that 80% of all families recognize important obstetric danger signs related to pregnancy in areas where health extension program is fully implemented; to increase the proportion of births attended by skilled health personnel from 6 percent to 60 percent; Increase national antenatal care coverage levels from 28 percent to 70 percent; [13]. However, Ethiopia continues to score poor record of WHO recommended four and more antenatal care visit (19%) and delivery at a health facility by skilled health providers (10%) in 2011[3]. Even though about 80% maternal and neonatal death occurs during childbirth and within the first week after child birth, only 7 percent of women received postnatal care in the first two days [3, 4, 14].

The study conducted in Northern part of Ethiopia also revealed, a small proportion 10.9%, 2.2% and 5.2% of the respondents had knew vaginal bleeding, blurred vision and swollen hands/face key danger signs during pregnancy, respectively. Key danger signs during labor/childbirth 16.5%, 11%, 7.1% and 0.6%, of the respondents spontaneously mentioned severe vaginal bleeding, prolonged labor, retained placenta and convulsions as danger signs respectively. 16.7%, 1.1% and 1.5% of the respondents spontaneously mentioned severe vaginal bleeding, high fever, and foul smelling vaginal discharge as danger signs during postpartum period, respectively [15].

The gap between the planned and expected in awareness on danger sign and maternal health care seeking practice in the country need investigation. Therefore this research assesses of mother's awareness on obstetric danger signs and

their health care seeking practice when they experienced obstetric danger sign.

2. Materials and Methods

2.1. Study Area and Period

The study was conducted in Haramaya district, East Hararge, Oromia Region, Eastern part of Ethiopia which is located 507 km East of Addis Ababa in June, 2012.

2.2. Study Design

community based cross sectional study was conducted.

2.3. Study Populations

All mothers who gave birth for the last two years and reside in Haramaya district were source populations. Mothers who randomly selected were study populations.

2.4. Sample Size Determination and Sampling Techniques

Sample size was estimated by using single population proportions formula, we made the following assumptions: proportion of mother awareness of obstetric danger sign($p=0.36$) [16], 5% marginal of error, 95% confidence level, design effect of two and by considering 10% non-response rate the final sample size was 779. Multistage sampling method was used to select study subjects. Four kebeles (the lowest units of administration in Ethiopia) were selected randomly (one from urban and three from rural). Then, women who gave birth in the last two years were reviewed from health extension records in selected kebeles and simple random sampling were used to select the study subject.

2.5. Operational and Term Definitions

2.5.1. Awareness on Key Danger Signs of Pregnancy

In this research a woman was considered as having awareness if she can mention at least three key danger signs for pregnancy.

2.5.2. Awareness on Key Danger Signs of Labor/Childbirth

In this research a woman was considered as having awareness if she can mention at least three key danger signs for Labor/childbirth spontaneously or after prompting.

2.5.3. Awareness on Key Danger Signs of Postpartum

In this research a woman was considered having awareness if she can mention at least the three key danger signs for postpartum spontaneously or after prompting

2.5.4. Experienced of Obstetric Danger Sign(s)

Any sign of obstetric danger sign(s) reported by woman which may occur in women during pregnancy, delivery or within 6 weeks after delivery.

2.6. Data Collection

A safe motherhood questionnaire developed by the

Maternal and Neonatal Program of JHPIEGO, an affiliate of John Hopkins University was used [8]. The questionnaires consist of awareness about obstetric danger sign, socio-demographic data such as age, educational status, occupation, family size; reproductive health characteristics such as gravidity, parity and antenatal follow up, health care practice and reason for not seeking care. Eight Diploma holders midwife/nurse female data collectors and two Bachelor of Science degrees (BSc) holder health professionals fluent to local language Afaan Oromo were recruited. The data was collected by face to face interview.

2.7. Data Quality Control

Questionnaire for data collection was prepared in English and translated to Afan Oromo. Its consistency checked by re translating back to English. Training was given for two days for data collectors and supervisors about study objectives and data collection procedures. Data collection procedures were supervised by supervisors and principal investigator and checked for completeness and coherence at the site of data collection.

2.8. Data Processing and Analysis

The data was coded, entered in to computer and cleaned using Epi-info version 3.5.1 and transported to SPSS version 16 for analysis. First descriptive statistics and binary logistic regression was used to assess the association of mothers awareness about obstetric danger signs with exploratory variables. Factors for which significant ($P \leq 0.2$) bivariate association observed were retained for subsequent multivariate analyses using logistic regressions. Adjusted odds ratios (OR) with 95% confidence intervals (CI) were calculated.

2.9. Ethical Consideration

Before commencement of data collection, ethical approval was obtained from the Institutional Research and Ethical Review Committee (IRERC) of College of Health and Medical Science, Haramaya University. College of Health and Medical Science sent an official letter to Haramaya district health bureau. Then at the time of interview, informed written consent of all study participants was obtained.

3. Results

3.1. Socio-Demographic Characteristics

A total of 757 mothers responded to the questionnaire, this gives a response rate 97.2%. The age of respondents ranged from 16 to 40 years (mean \pm SD =24.6 \pm 4.3 years). Almost all respondents were Muslim (97.5%), and Oromo (95.6%) ethnicity. Nearly three quarter (74%) of the respondents had not attended formal education. The numbers of children respondents have ranged from 1 to 11 (3.3 \pm 1.9) (Table 1).

Table 1. Socio-Demographic characteristics mother at haramaya district, Eastern Ethiopia, June 2012.

Characteristics	numbers	percentages
Age of respondent		
16-25	507	67.0
26-35	226	29.8
>35	24	3.2
Residence		
Urban	197	26.03
Rural	560	74.97
Religion		
Muslim	738	97.5
Christian	19	2.5
Ethnic group		
Oromo	724	95.6
Amara	15	2.0
Others*	18	2.4
Marital status		
Married	707	93.4
Divorced	23	3.1
Widowed	14	1.8
Separated	13	1.7
Educational status		
No formal education	560	74.0
Primary	148	19.6
Secondary and above	49	6.4
Family size		
1-5	448	59.2
6-10	293	38.7
>10	16	2.1
Number of children		
1-3	140	18.5
4-5	313	41.3
>5	304	40.2

3.2. Reproductive Health Characteristics

Mothers, 323 (42.7%) had ANC follow up at least once for the most recent pregnancy. 23.9% of them attended four and above ANC visit by then, only about one tenth mothers 13.2% birth at health institutions (Table 2).

Table 2. A reproductive health characteristic of Women's at Haramaya district, Eastern Ethiopia, June 2012.

Characteristics	number	percentage
Parity		
1-4	530	70.0
≥ 5	227	30.0
Gravidity		
1-4	552	72.9
≥ 5	205	27.1
ANC visits		
Yes	323	42.7
No	434	57.3
Number of ANC visit		
Partially followed	246	76.1
Fully followed	77	23.9
Presence of complications		
Yes	245	31
No	512	69
Place of delivery		
Home	657	86.8
Health institutions	100	13.2
Modes of delivery		
Spontaneous vaginal delivery	725	95.7
Cesarean section	14	1.9
Instrumental delivery	18	2.4

3.3. Mothers' Awareness of Key Obstetric Danger Signs

Awareness of three or more key obstetric danger signs during pregnancy, delivery and postpartum were 11.36%,

13.08% and 14.53%, respectively. Moreover, 53%, 52.2% and 47.2% of respondents didn't have awareness for at least one obstetric danger signs during pregnancy, delivery and postpartum respectively (Table 3).

Table 3. Characteristics of study participants by knowledge of danger sign, Haramaya District, 2012.

characteristics	Danger sign Awareness during pregnancy		Danger sign Awareness during delivery		Danger sign Awareness during post natal	
	yes	no	yes	no	yes	no
Age						
15-25	53	472	47	478	71	454
26-35	30	190	49	171	33	187
>35	3	9	3	9	6	6
Educational status						
No formal education	43	520	43	520	71	492
Primary (1-8)	25	120	39	106	19	126
Secondary and above	18	31	17	32	20	29
marital						
married	69	635	78	626	103	601
Others	17	36	21	32	7	46
number of children						
1-3	65	393	64	394	59	399
4-6	18	230	33	215	44	204
7 and above	3	48	2	49	7	44
religion						
Muslim	76	662	89	649	101	637
Christian	10	9	10	9	9	10
parity						
1-3	56	357	56	357	52	361
4-6	26	235	31	230	37	224
>6	4	79	12	71	21	62
ANC visit						
No	16	418	17	417	20	414
yes	70	253	82	241	90	233
Place of delivery						
Home	40	534	37	537	54	520
Health institution	46	137	62	121	56	127
Mode of delivery						
Normal	78	647	91	634	101	624
CS	7	7	7	7	8	6
Assisted by instrument	1	17	1	17	1	17

Mothers' Awareness on Specific Key Obstetric Danger Signs

The most frequently mentioned key danger signs was severe vaginal bleeding; during pregnancy 23.5%, delivery 29.8% and postpartum period 32.7% (Table 4).

Table 4. Proportion of Women's awareness on key obstetric danger signs at Haramaya district, Eastern Ethiopia, June 2012 (N=757).

Obstetric danger sign	Awareness of danger signs					
	Pregnancy		delivery		after delivery	
	n	%	n	%	n	%
vaginal bleeding	178	23.5	232	29.8	255	32.7
convulsion	84	11	121	15.5	104	13.4
Sever head ache	97	12.5			131	16.8
Blurred vision	88	11.6			34	4.4
Hand/face edema	26	3.3				
retained placenta			98	12.8		
prolonged labour			188	24.1		
Offensive vaginal discharge					25	3.2
high grade fever	115	14.8			231	29.7
others*	74	9.7	58	7.7	38	5.02
I don't know	402	53	395	52.2	357	47.2

*multiple response applicable.

3.4. Factors Associated with Mothers' Awareness on Obstetric Danger Signs

As compared to mothers who did not attained formal education, those mothers who followed primary education were 2.99 times and secondary and above education 2.38 times more likely aware on obstetric danger signs during pregnancy [AOR 2.99; 95% CI (1.264-7.074)], and [AOR 2.38; 95% CI 1.025-5.551], respectively. Mothers those who attend ANC during their pregnancy were 4.28 times, 5.72 times and 6.42 times more likely to aware of obstetric danger signs during pregnancy, child birth, and postpartum period compared to mothers who did not attended ANC [AOR 4.28; 95% CI 2.01-9.12], [AOR 5.72; 95% CI 3.05-10.71], and [AOR 6.42; 95% CI 3.67-11.21], respectively. In addition, As compared to women who did not giving birth at health institutions during their pregnancy, those who giving birth at health institutions were 3.23 times, 2.43 times and 2.38 times more likely to aware of obstetric danger signs during pregnancy, delivery and postpartum period [AOR 3.23; 95% CI 1.82-5.72], [AOR 2.43; 95% CI 1.33-4.44], [AOR 2.38;

95% CI 1.34-4.22], respectively (Table 5).

Table 5. Factors associated with mothers' awareness on obstetric danger sign at Haramaya district, Eastern Ethiopia, June 2012.

Characteristic	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
	Pregnancy danger sign Awareness	Delivery danger sign awareness	After delivery danger sign awareness
Marital status			
Married	1	1	1
Others*	4.219(1.889-9.423)*	4.163(1.888-9.177)*	.469(.182-1.206)
Educational status			
No formal education	1	1	1
Primary	2.990(1.264-7.074)*	1.462(.596-3.587)	1.270(.535-3.014)
Secondary and above	2.385(1.025-5.551)*	.476(.196-1.152)	1.600(.654-3.913)
Gravidity			
1-2	.261(.083-.816)	1.148(.506-2.606)	3.262(1.658-6.419)*
3-4	.368(.115-1.172)	1.074(.458-2.522)	1.949(.982-3.868)
5 and above	1	1	1
ANC visit			
No	1		
Yes	4.285(2.013-9.123)*	5.721(3.053-10.719)*	6.418(3.674-11.211)*
Place of delivery			
Home	1	1	1
Health institution	3.234(1.821-5.742)*	2.437(1.335-4.449)*	2.382(1.344-4.223)*
Mode of delivery			
SVD	1	1	1
CS and instrumental	8.2(1.2-20.4)*	27.9 (6.5-32.6)*	7.2 (0.7-18.3)

* = $p < 0.05$ **widowed, divorced, separated SVD spontaneous vaginal delivery, CS cesarean section

3.5. Proportions of Mothers Experienced Obstetric Danger Signs

Two hundred thirty four (234) respondents were reported to have faced one or more key danger signs. Key danger signs faced were 30(13%), 115(49.2%) and 89(37.8%) during the most recent pregnancy, child birth and postpartum period respectively. Of 30 women who faced problem during pregnancy, 11(36.7%) faced high grade fever, 7(23.3%) experienced vaginal bleeding and the rest 12(40%) faced others danger signs like; severe head ache, face swelling and severe abdominal pain. Out of 115 mothers who faced delivery related problem 57(49.6%) faced prolonged labor, 26(22.6%) faced retained placenta and the rest 32(27.8%) face other dangers signs like severe vaginal bleeding and convulsion. Of 89 mothers who faced problem during postpartum period 31(34.8) faced high grade fever, 27(30.3%) breast pain, 18(20.3%) and the rest 13(14.6%) faced other dander signs.

3.6. Health Care Seeking Practice and Reason Mentioned for not Seeking Care

Of mothers who experienced complication of which 159 (68.8%) were sought treatment at health institutions, 58 (25.1%) were not treated or stayed at home and the rest 14 (6.1%) went to cultural or religious healers. As shown in figure 1, out of 72 mothers, who were not sought for medical treatment, 21 (29.3%) were due to lack of money while 16(22.2%) were due to perceiving that problem was harmless.

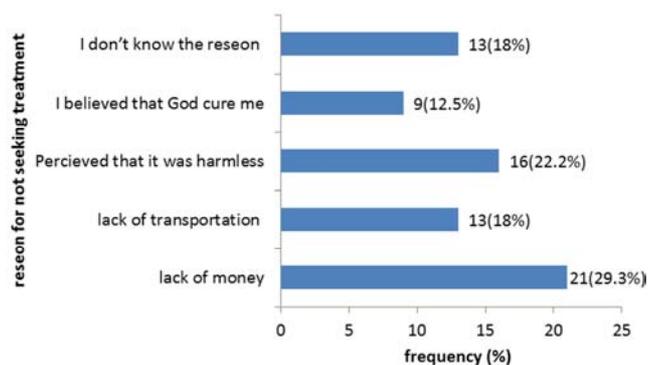


Figure 1. Reasons of mothers not seeking medical treatment for experienced obstetric danger signs, at Haramaya district, Eastern Ethiopia, June 2012 (N=72).

4. Discussion

Mothers' awareness of obstetric danger signs was low. Having ANC follow up on the most recent pregnancy, giving birth at health institution, maternal educational status and giving recent birth by caesarian section and instrumental delivery were associated with higher likelihood of mothers' good awareness on obstetric danger signs. Significant numbers of mothers did not sought for treatment obstetric complications. Financial obstacles, lack transportation and perceiving that problem was harmless were the major reasons for not seeking medical treatments.

Awareness of mothers on danger sign in this study was very low. Less than 15% of the mothers mentioned three and more key obstetric danger signs. Almost half of the women were not aware of at least one obstetric danger sign. Low awareness to maternal danger sign may also contribute for maternal health care utilization which is very low in the

country. Because, women's awareness of potential danger signs is crucial to influence their decisions to have immediate obstetric care, and reduces the delay in deciding to seek obstetric care [11, 12]. This finding is similar with study in Tanzania [17]. Similar finding also reported from Egypt [18]. Lower than study in Uganda (18.7%) mentioned three and above key danger signs [19] and in Ghana, 86.7% [20] of mothers mentioned at least one obstetric danger sign. These differences in awareness level could be due to a difference in socio demographic, cultural, and health interventions.

Vaginal bleeding was the most recognized obstetric danger sign, and was mentioned by 23.5%, 29.8% and 32.7% of respondents during pregnancy, delivery and after delivery respectively. Excessive vaginal bleeding and prolonged labor were easily identified, severe and frequently occurs. This may contribute most commonly recognized danger sign. Similar to our study, higher awareness of vaginal bleeding were reported by different studies [19, 21, 22]. Additionally, about 24% of mothers aware of prolonged labor as obstetric danger sign and it was the most recognized danger sign during delivery as reported in Haiti [23].

In this study educational status was found to associate with awareness on obstetric danger signs during pregnancy. Even though education enhance awareness of danger sign, more than three quarter of mother's were not attending any formal education and only few of them attend secondary and above level in the study area that hence, attention should be given for illiterate pregnant women while to address their specific needs. Higher level of education was associated with increased awareness of obstetric danger signs. Similar finding was reported from different studies [17, 18, 24]. However, some studies reported contradictory finding [16].

In this study, 42.7% of mothers were having at least once ANC visit. This is much less than study in Uganda (68%) [19], Sudan (83.3%) [25], Tanzania (94%) [26] and Ghana (95%) [20] of mothers had at least once ANC visit. And, only 10% of the mothers fully followed ANC as per WHO recommendation but 16.2% in Sudan [25] and 62.1% in Nepal [27]. Having ANC follow up for the last recent pregnancy increased the likelihood of good awareness on Obstetric danger signs by 4.28 folds, 5.72 folds and 6.41 folds during pregnancy, delivery and after delivery respectively. Similarly, different study reported ANC attendance increases mothers' awareness of obstetric danger signs [28, 29]. In addition having four or more ANC visit increases the odds of mothers' awareness on obstetric danger signs. This finding is consistent with another study [21]. This might be because ANC provide opportunity to educate women and their family about danger signs related to pregnancy [30]. Evidences also revealed that information obtained during effective implementation of ANC enhances the awareness of maternal danger signs [10, 16, 21].

Only 13.2% of the respondent gave the last recent birth at health institutions. This very low and even incomparable with other African countries: 99.8% in Ghana [20], 97% in Kinshasa [31] and 57.2% in Kenya [32]. Giving birth at health institution was associated with increased likelihood of

good awareness on obstetric danger signs. Moreover, mothers who gave birth by caesarian section and instrumental delivery were more aware of obstetric danger signs than who gave birth by spontaneous vaginal delivery. This might be due to mothers gave birth by caesarian section and instrumental delivery when they faced obstetric complication. Therefore, they easily remembered the problem they faced. Facing pregnancy related complication for the last pregnancy increases the likelihood of good awareness of obstetric danger signs. Study in Egypt also indicated similar finding [18].

Out of mothers who faced obstetric complication, significant numbers of mothers (31.2%) were not sought for medical treatment. This is might be due to the awareness of mothers on obstetric danger signs in the study area is low. The reasons raised were financial obstacles, lack transportation and perceiving that problem was harmless. This is consistent with another study [33].

5. Conclusions

Awareness of mothers on obstetric danger signs in the study area is low. Mothers who had primary and secondary education have more likely of awareness on obstetric danger sign during pregnancy than those who did not attended any formal education. In addition, having ANC follow up, and giving birth at health institution were associated with higher likelihood of mothers' awareness of obstetric danger signs. Significant numbers of mothers were not sought for medical treatment when they experienced obstetric complications. Financial obstacles, lack of transportation and perceiving that problem was harmless were the major barriers for not seeking medical treatments. Thus, community education and information during antenatal Care utilization, institutional delivery services and postnatal care about obstetric danger signs and its consequence if the mother will not seeking care are important steps in improving the awareness and health seeking practice.

Competing Interest

The author(s) declare that they have no competing interests.

Authors' Contribution

TA has conceived the study, carried out the overall design and execution of the study, performed data collection, performed statistical analysis and involved in draft of the manuscript. FA has critically revised the design, performed statistical analysis and drafted the manuscript. Both authors read and confirmed the manuscript for submission.

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