

Knowledge of obstetric danger signs and its associated factors in Arba Minch town, Ethiopia

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Abstract: Background: In many developing countries including Ethiopia, maternal morbidity and mortality still pose a substantial burden even if various programs are undertaken by public sectors as well as the non-governmental organizations (NGOs). Majority of maternal health sectors in developing countries consider knowledge of women about the obstetric danger signs as the first essential step in order to accept appropriate and timely referral to obstetric care. However, in Ethiopia little is known about the knowledge level of mothers about obstetric danger signs. Objective: To assess the level of knowledge about obstetrics danger signs among mothers who gave birth in the last three years prior to the survey in Arba Minch town, Ethiopia. Methods: A Community based cross-sectional study was conducted from December 20, 2013 to June 30, 2014 on a randomly selected sample of 390 women who had at least one delivery in the past three years. Multistage sampling technique was employed to select the study participants. A pre-tested structured questionnaire was used to collect quantitative data. Bivariate and multivariate data analysis was performed using SPSS version 20.0 statistical software. Result: Three hundred ninety mothers participated in the study making a response rate of 100%. From all respondents, 24.1% of them were knowledgeable while 75.9% were not knowledgeable about obstetric danger signs that occurred during pregnancy, labor and postnatal period. Conclusion: Educational status, age, monthly income, and decision making power were independently associated with knowledge of obstetric danger signs. Thus, provision of information, education, facilitate income generating mechanisms, and communication targeting women, family and the community on danger signs of pregnancy and childbirth was recommended.

Keywords: Arba Minch Town, Community Based, Cross sectional, Knowledge, Predictors, Obstetric, Danger Signs

1. Introduction

Avoidable mortality and morbidity remains a formidable challenge in many developing countries like Ethiopia. Every pregnant woman faces the risk of sudden, unpredictable complications that could end up with death or injury to herself or to her infant. Pregnancy related complications cannot be reliably predicted [1]. Each year, approximately 287,000 women die from complications related to pregnancy and childbirth, with 99% of these deaths occurring in developing countries. Maternal mortality ratio (MMR) in developing regions is 15 times (240/100,000 live births) higher than in developed regions (16/100,000 live births). Sub-Saharan Africa had the highest MMR (500 maternal

deaths per 100,000 live births) [2]. It has been reported that Ethiopia is one of the six countries that contribute about 50% of the maternal deaths; the others are India, Nigeria, Pakistan, Afghanistan and the Democratic Republic of Congo [3].

Around 80% of maternal deaths worldwide is caused by direct obstetric complications such as hemorrhage, infection, obstructed and prolonged labor, unsafe abortion and hypertensive disorders of pregnancy. Indirect causes such as malaria, diabetes, hepatitis, anemia and other cardiovascular disorders which are aggravated by pregnancy can also lead to maternal death [4].

Danger signs are mainly classified into three; commonest danger signs during pregnancy include severe vaginal bleeding, swollen hands/face and blurred vision. Major

danger signs during labor and childbirth include Severe vaginal bleeding, Prolonged labor (>12 hours), Convulsions and retained placenta. Major danger signs during postpartum period include severe vaginal bleeding, foul-smelling vaginal discharge and fever [5].

Evidence suggests that ensuring the accessibility and use of obstetric services and raising the awareness of women about obstetric danger sign could save 310,000 newborn lives a year, and also, improves early detection of problems and reduces the delay in decision to seek obstetric care [6].

However, like in many developing countries, knowledge of women about obstetric danger signs remains low in Ethiopia [7]. To alleviate this problem, Ethiopian government, create strong political will, applying multi-pronged approaches at local and national levels, organized capacity building efforts, and prioritization of funding for maternal health services utilizations, but the effect of large populations, health disparities still exist in vulnerable Ethiopian subgroups, including girls, rural dwelling mothers, and poor communities are major challenges for implementation of this strategy [8].

Although women's mortality rate in Ethiopia has slightly reduced, little is known about the current knowledge and influencing factors of obstetric danger sign in the study area. The study assessed the current level of knowledge and associated factors among women who gave birth in the past three years prior to the survey in Arbaminch town, Ethiopia.

2. Methods and Materials

2.1. Study Area

The study was conducted in ArbaMinch town which is the capital city of Gamo Gofa zone. It is located at 505 km from Addis Ababa and 275 km south west of Hawassa. It is found at an altitude of 130 above sea level with the average temperature of 29 degree Celsius.

The town has 1 zonal hospital & 2 governmental health centers, and also, private health institution like 4 medium clinics, 9 lower clinic, 3 diagnostic laboratory, 1 drug whole seller, 2 pharmacy, 9 drug store/shop/, 2 dental clinic, and 3 drug venders [9].

2.2. Study Design and Population

A quantitative community based cross-sectional study was conducted among randomly selected reproductive age group of mothers who gave births in the past three years preceding the data collection time. Mentally and/or physically incapable mothers were excluded from the study.

2.3. Sample Size Determination and Sampling Procedure

The required sample size for the study was calculated by using single population proportion formula i.e. $n = (Z\alpha/2)^2 P(1 - P)/d^2$. Proportion of knowledge about obstetric danger sign was 45.9% [7], margin of error, confidence interval, design effect and non-response rate were assumed to be 19%, 5%, 95%, 1.5 and 10%, respectively.

Where: n_i = Sample size; $Z(\alpha/2)$ = confidence interval; P = knowledge proportion (0.459.); D = marginal of error.

$$\text{Thus, } n_i = \frac{(1.96)^2 \cdot 0.19(1-0.19)}{(0.05)} = 236$$

Finally, taking 10 % non-response rate and 1.5 design effect, the sample size was 390.

Arbaminch town was purposively selected as a study area. A multi-stage sampling technique was used to select the study participant by considering a design effect. The town is clustered in to 11 kebele. From those clusters, 4 kebele were selected by random sampling methods as Primary Sampling Unit. Proportional sample size allocation was performed for each selected kebele. In each kebele, a starting point was alternately identified at the centre or periphery with the help of kebele leader. The data collectors moved in opposite direction choosing every other household until 390 women who met the inclusion criteria were interviewed. The interval value was calculated by dividing sample size with house hold number of the kebele. Then, reproductive age women were selected from the four kebele by systematic sampling technique as Secondary Sampling Unit. When two or more women were encountered in one household, one woman was selected by lottery method. Finally, eligible reproductive age women (15-49 years) who had history of delivery in the last three years were interviewed from each selected households.

2.4. Data Collection Tool and Procedure

After reviewing of the relevant literature, the questionnaire was developed as appropriate to address the study objectives. Then, five percent of total sample respondents were interviewed at the pretest outside the selected study area. After this, the questionnaire was edited accordingly, and incorporates socio demographic characteristics, reproductive characteristics, obstetric danger signs, and birth preparedness. Finally, by using the final Amharic version of the questionnaire face to face interview was conducted by six data collectors (who are MSC nurses, speak Amharic, and Gamo language) between February 28, 2014 to April 5, 2014.

2.5. Data Quality Control

Questionnaire was prepared in English and translated to Amharic, and re translated back to English to check its consistency; pretests of tool was done; intensive training of data collectors for three day was given; the collected data was carefully checked for completeness, outlier and missing value as well as consistencies; and supervision of data collectors was made two times per day.

2.6. Data Processing and Analysis

Data was cleaned, edited, coded and entered into Epi-info version 3.5.1, and transferred in to SPSS version 20 for analysis. Univariate analysis was computed for each independent variable to assess their individual proportion. Variables value less than 0.25 in bivariate logistic regression

analysis transferred to multiple logistic regression model to adjust confounder's effects, and a *p* value less than 0.05 was considered as significantly associated in this model. Finally, the results were presented by tables, figures and texts based on the data obtained.

2.7. Ethical Consideration

The study was approved by the Scientific Ethical Review Committee of Arbaminch University, and then ethical clearance was obtained. Permission to conduct the research was also obtained from Gamo Gofa zone health office before data collection. Informed consent was obtained from mothers after explanation of the purpose of the study, and the part they took in the research. Any involvement was after their complete verbal consent. Mothers were told that they had the right to withdraw from the study at any time during the interview.

Table 1. Socio-demographic and reproductive characteristics of mothers in Arbaminch town, Gamo Gofa Zone, Ethiopia, 2014 (*n*=390).

Variables	Response option	Frequency (%)
Age in years	15-19	31(7.9)
	20-24	98(25.1)
	25-29	110(28.2)
	30-34	64(16.4)
	35+	87(22.3)
Marital status	Married	222(56.9)
	Divorced	67(17.2)
	Single	58(14.9)
	Widowed	43(11.0)
Religion	Protestant	106(27.2)
	Orthodox	198(50.8)
	Muslim	60(15.4)
	Catholic	26(6.7)
Educational status	No education	75(19.2)
	Primary	145(37.2)
	Secondary	81(20.8)
	More> secondary	89(22.8)
Occupational status	Housewife	163(41.8)
	Farmer	51(13)
	Governmental employer	72(18.5)
	Private employer	80(20.5)
	Merchant	24(6.2)
Monthly income	Below 500 Birr	217(55.6)
	500-1000 Birr	70(18)
	1001-1500 Birr	53(13.58)
Role in the family	Above 1500 Birr	50(12.82)
	Leader	247(63.3)
Number of pregnancy	Member	143(36.7)
	One	103(26.4)
Number of alive children	Two and above	287(73.6)
	One	117(30)
Place of delivery	Two and above	273(70)
	Home	152(39.9)
	Health institution	238(61.1)

3. Results

3.1. Socio-Demographic and Reproductive Health Characteristics of the Respondents

All 390 mothers participated in the study with a response rate of 100%. The mean age of mothers was 28.4 years. Majority of the respondents (196) were Orthodox Christian. The majority of the participants were Gamo ethnic group. Seventy five (19.2%) were illiterate, 93 mothers graduated from higher institution. Among the interviewed mothers, the majority (41.2%) were housewives. One hundred fifty two (39%) were government or private employees, 51 (13.1%) were farmers, and 24(7.3%) were merchants as shown in. Two hundred seventeen earn 500 Ethiopian birr monthly and the rest earn 500 and above. Two hundred forty seven (63.3%) had leader role in the family.

The majority of the mothers (73.6%) had history of two and above pregnancy in the last three years which is slightly similar with the number of live children in the family. About 152 delivered their last child in home or traditional birth attendance home, and the rest 238 delivered at health institution. Majority (60%) of participants said below thirty minute is required to reach the health institution (table 1).

3.2. Knowledge of Obstetrics Danger sign

Three hundred thirty nine (87%) participants said obstetric danger sign can endanger the life of the mothers. One hundred eighty four (47.2%) of women knew at least one key danger signs during pregnancy, 193(49.5%) during delivery and 73% during postpartum. Hundred eighteen (81.6%), 330(84.6%), and 320(82.1%) of women said that obstetric danger sign leads to death during pregnancy, delivery, and postpartum time respectively. Only 24.1% women were knowledgeable of seven or more key danger signs during pregnancy, labor, and postnatal period (table 2).

Table 2. Knowledge of obstetrics danger sign

Level of knowledge	Percent
Knowledgeable	24.1%
Not knowledgeable	75.9%

3.3. Factors Associated with Knowledge of Obstetrics Danger signs

In multivariate logistic regression analysis, age, educational status, income, and decision making power were significantly associated with knowledge of obstetric danger signs.

Age of the mother showed strong statistical association with knowledge on obstetric danger sign. Fifteen to nineteen years of age mothers were about 13 times (AOR=12.66, 95% CI: [1.58 101.15]) more knowledgeable than 20 year and above. Similarly, the odds of educated mothers increased level of knowledge about obstetric danger signs three fold (AOR=2.611, 95%CI: [1.094-6.234])

than uneducated mothers.

Monthly income had been an important predictor of knowledge on obstetric danger signs. Mothers who earned 500 Ethiopian birr and above were 2 times (AOR: 2.198, 95%CI: [(1.094-4.117)]) more likely to have knowledge on obstetric danger signs.

Decision making power of respondents' was highly

associated with knowledge of the mothers about obstetric danger signs. The mothers who decided services utilization by themselves were three times (AOR: 3.011, 95%CI: [1.607-5.044]) of having knowledge on obstetric danger sign than those mother's service utilization decided by other persons (table 3).

Table 3. Factors associated with mothers knowledge on obstetric danger signs in Arbaminch town, Gamo Gofa Zone, Ethiopia, 2014 (n=390).

Variables		Knowledge of obstetric danger sign			
		Not knowledgeable	Knowledgeable	COR(95% CI)	AOR(95%CI)
Age(year)	15-19	30	1	10.4(1.41-77.99)	12.66(1.58-101.15)
	20 and above 20	266	93	1.00	1.00
Marital status	Married	183	39	0.438(0.273-0.702)	1.775(0.981-3.213)
	Unmarried	113	55	1.00	1.00
Educational status	Un educated	67	8	1.00	2.611(1.094-6.234)
	Educated	229	86	3.145(1.451-6.820)	1.00
Occupational status	House wife	134	29	1.00	0.987(0.518-1.880)
	Others	162	65	1.84(1.131-3.038)	1.00
Monthly income	Below 500 EB	188	29	1.00	1.00
	500 and above	108	65	3.902(2.702-6.417)	2.198(1.094-4.117)
Graduation from higher institution	Yes	62	31	1.857(1.112-3.102)	1.103(0.586-2.076)
	No	234	63	1.00	1.00
Role in family	Leader	188	61	1.062(0.654-1.425)	0.869(0.474-1.591)
	Member	108	33	1.00	1.00
Time taken from home to health institution	Above 30 minute	138	18	1.00	1.00
	30 and below it	158	76	3.688(2.102-6.471)	0.421(0.235-1.755)
Decision maker about the service utilization	Self	201	34	3.734(2.926-6.073)	3.011(1.605-5.044)
	Other person	95	60	1.00	1.00

4. Discussion

The results of this study showed that knowledge of obstetrics danger signs was diverse across pregnancy, childbirth, after delivery or postnatal periods, and the level of knowledge was low (24.1%). This level of knowledge is slightly similar with the study conducted in Aleta Wondo Ethiopia [7]. This could be due to low level of maternal health services utilization, and low educational level of the mothers. On the other hand, the result is lower than the study carried out in Indonesia, Egypt, and India [10,12, 13, 14]. This difference could be due to variation in socio demographic characteristics, geographical variations, health services coverage and use of different sampling technique for the selection of participants.

Age has an effect on knowledge of obstetrics danger sign. People in the age group of 15-49 were more knowledgeable than elders. This finding is different from the study conducted in Indonesia, Tanzania, Egypt, and India [10, 11, 12, 13, 14, 15, 16, 17]. This difference might be due to educational status difference of the study participant i.e. in this finding younger age mothers are more educated than old age mothers. Thus, it enhances autonomy of the mothers for service seeking behavior.

Educated mothers were knowledgeable about obstetric danger signs than uneducated mothers. The result is in line with the study carried out in Indonesia, Tanzania, and

Egypt [10, 11, 12]. This might be related to the fact that educated women have better power to make their own decision in matters related to their health.

Maternal monthly income is other predictor that affects the level of knowledge of the women about obstetric danger signs. This result is in line with the study carried out in Nepal and Uganda [15, 16]. The reason for this positive association can be due to the need of money to utilize the health related service at any time the women want.

Decision making power of the women on their health services utilization affects their level of knowledge about obstetrics danger signs. Mothers who are autonomous in deciding their health service utilization were knowledgeable as compared to those whose health care decision is made by others. This result is similar with the study conducted in Jordan, and Nigeria [17, 18, 19]. This can be due to the autonomy of the women to take any action at any time to their health related matters. The other possible reason might be autonomous women can contact the health professionals, and attend maternal related conferences without any interferences.

5. Conclusion

According to the result of this study, younger age, high level of education, monthly income, and decision making power were the predictors of knowledge of the mothers about

obstetric danger signs in pregnancy, labor and post-partum period. These factors pointed the need for a plan to increase the knowledge of the reproductive age group mothers about obstetric danger signs. This information will help the services providers for improving the quality of maternal health care services. Thus, provision of information, education, facilitate income generating work to the women, and also, communication targeting women, family and the general community on danger signs of pregnancy and childbirth was recommended.

List of Abbreviation

EDHS: Ethiopian Demographic and Health Survey; MDG: Millennium Development Goals; NGO: Non-Governmental Organization; WHO: World Health Organization.

Competing Interest

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

Authors' Contribution

All authors were involved in the conception, designing, drafting, and approved the final version of the manuscript.

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