

Factors associated with the knowledge of obstetric danger signs among pregnant women attending primary health care antenatal care clinics in Abha city

Ayoub Ali Alshaikh¹, Ahmed Shubayli Assiri², Fatima Riaz¹,
Saleh Ahmed Alshaikhi², Abdullah Ali Alarraf², Rishi K. Bharti¹,
Syed Esam Mahmood¹, Shehata Farag¹

¹Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha, Saudi Arabia, ²Family Medicine, Ministry of Health, Saudi Arabia

ABSTRACT

Introduction: Knowledge of obstetric danger signs would equip women to make the right decisions and appropriate actions timely to have better health care assistance which will impose a significant impact on maternal mortality and morbidity. Hence, this study aimed to know the factors associated with the knowledge of obstetric danger signs among pregnant women who attend the primary health care clinics, which is considered as the first gate to seek health care for pregnant women during antenatal checkups. **Methodology:** This is a cross-sectional study conducted among 400 pregnant women selected by simple random sampling technique who were attending antenatal clinics at primary health care centers at Abha City by using an interview-based questionnaire. Scores of <50%, 50-75%, and >75% were considered to be poor, intermediate, and good scores. Frequencies and percentages were used for descriptive variables, whereas for association, tests of significance (Chi square, *t*-test, and F-test) were applied. **Results:** Almost 70.8% of participants received health information on obstetric danger signs. The main sources of information were the Internet (23%), family, relatives or friends (17%), and health care providers. The highest participants' correct responses regarding obstetric danger signs were related to severe vaginal bleeding (93.5%), convulsions (76.8%), and decreased fetal movements (76.5%). Proportions of participants with poor knowledge showed an inverse and significant increase with their educational levels ($P < 0.001$). The highest percentage of poor knowledge grade was observed among participants with no children (54.6%). Participants who received previous information on danger signs had significantly better knowledge grades than those who have not received previous information ($P < 0.001$). **Conclusions:** Women's knowledge was suboptimal regarding obstetric danger signs. 30% of women did not receive information about danger signs. Health education provided on obstetric danger signs to pregnant women should be enforced to those who are illiterate, are unemployed, have a low family income, and are with no or less previous pregnancies.

Keywords: Awareness, obstetrics danger signs, pregnancy

Address for correspondence: Dr. Fatima Riaz,

Department of Family and Community Medicine, College of Medicine, King Khalid University, P.O. Box 641, Abha, Saudi Arabia.

E-mail: fatima.riaz786@yahoo.com

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Introduction

All women required access to antenatal care during pregnancy and labor and after child birth. All births should be supervised by skilled health professionals because appropriate management always makes the difference between mortality and morbidity.^[1]

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Antenatal care is provided to keep the mother and baby healthy; in high-risk pregnancy, the mother or fetus or both are at risk because of some medical conditions and develop complications during pregnancy and labor and after birth.^[2]

The most common danger signs during pregnancy include severe vaginal bleeding, body swelling, and blurring of vision; those during labor include severe vaginal bleeding, prolonged labor, convulsions, and retained placenta; and those during postpartum period include severe bleeding, loss of consciousness after childbirth, and fever. Therefore, bleeding is the most common cause of maternal death, accounting for about 1/3rd of maternal deaths.^[3]

Globally, maternal mortality is inappropriately high; 830 women/per day die because of obstetric complications, which are mostly preventable by the provision of good obstetric care.^[1]

The maternal mortality rate (MMR) varies from one country to another country. MMR of Bangladesh is 173,^[4] India has 113,^[5] USA has 17,^[6] UK has 10.7,^[7] and MMR in Saudi Arabia is about 12/100,000 live births.^[8] About 2/3rd of MMR was reported because of severe bleeding, infections, pre-eclampsia, eclampsia, and unsafe abortion, which can be reduced if pregnant mothers were able to identify obstetric danger signs and quickly seek medical advice.^[9,10]

The lack of awareness about obstetric danger signs leads to delayed provision of health care. Therefore, knowledge about danger signs of obstetric complications is an essential and primary step in provision of suitable and quick referral for obstetric care. Hence, increased mothers' knowledge is essential for reducing delayed seeking of health care.^[11,12]

All pregnant women should have sufficient knowledge regarding obstetric danger signs to detect high-risk pregnancy and to minimize obstetric complications. However, no previous studies related to assessment of mothers' knowledge about high-risk pregnancy have been conducted in Abha City. Therefore, this study aimed to assess pregnant women's knowledge about risk factors associated with obstetric danger signs in Abha city. We hypothesize that women had poor knowledge about obstetric danger signs; therefore, this study could become cornerstone in making reforms to enhance women's knowledge about danger signs which in turn decrease complications and reduce MMR.

Methodology

Study area and setting: A cross-sectional study was designed, and data were collected from two Primary Health Care Centers in Abha City, that is, Al-Mansak and Al-Manhal PHC centers. The study was conducted over a period of 1 year from January 1, 2019 to December 31, 2019.

Inclusion and exclusion criteria: All pregnant women included in the sample were attending the antenatal clinic in primary health care centers (PHCCs), who gave consent to participate in the

study. All those women who were not pregnant or did not agree to participate in the study were excluded.

Sample size and sampling technique: The minimum sample size of 384 was calculated. The researcher followed a consecutive sample to include 400 pregnant women attending PHCC, following a simple random sampling technique. Questionnaire and data collection: Based on review of relevant literature, a self-administered questionnaire has been constructed by the researcher, which consisted of the following parts:

1. Socio-demographic variables: Age, nationality, residence, educational level, employment, and family monthly income.
2. Past obstetric history: Number of pregnancies, children, abortion, place of last delivery, and previous pregnancy complications.
3. Current pregnancy: Gestational age and number of previous antenatal care visits.
4. Knowledge about obstetric danger symptoms and signs: Knowledge about obstetric danger signs, sources of information, and identification of obstetric danger symptoms and signs.

Informed verbal consent was taken from the participants; data were collected by the researcher and the nursing staff working at PHCC through interviews from selected pregnant women attending the antenatal clinics.

Ethical approval

Ethical approval was obtained from the ethical review committee of King Khalid University. All study participants were assured of confidentiality and anonymity of their data.

Statistical analysis

The Statistical Package for Social Sciences (SPSS version 23) was used to analyze the data. For knowledge items, each correct answer was scored one point and the total summation of the discrete scores of the different items was calculated. Participants with a score of less than 50% were considered to have poor awareness, a score between 50 and 75% was considered an intermediate score, and a score of more than 75% was considered a good score.

Descriptive statistics (i.e., mean, standard deviation, frequency, and percentage) and the appropriate statistical tests of significance (e.g., Chi square, *t*-test, and F-test) were applied. *P*-values less than 0.05 were considered as statistically significant.

Results

Socio-demographic characteristics

Table 1 shows that the majority of the participants were <30 years old (56%) and were Saudi nationals (81.8%). A higher proportion of respondents (40.8%) had university level education. The majority of the participants were unemployed (92.5%) and urban dwellers (93.3%). A higher proportion had a monthly family income of <5000SR (55%).

Table 1: Socio-demographic characteristics of participants (n=400)

Characteristics	No.	%
Age groups		
• <30 years	224	56.0
• ≥30 years	176	44.0
Nationality		
• Saudi	327	81.8
• Non-Saudi	73	18.3
Educational status		
• Illiterate	49	12.3
• Primary	20	5.0
• Intermediate	46	11.5
• Secondary	122	30.5
• University	163	40.8
Employment status		
• Unemployed	370	92.5
• Employed	30	7.5
Residence		
• Urban	373	93.3
• Rural	27	6.8
Monthly family income		
• <5000 SR	220	55.0
• ≥5000 SR	180	45.0

Participant's obstetric history, current pregnancy status, and knowledge

Table 2 shows that a higher proportion of participants had 1–4 previous pregnancies (52%) and had 1–4 children (61.3%). Nearly (20%) had 1–4 previous abortions. More than half of participants had delivered at the governmental hospital. About 21.3% of participants had previous pregnancy complications.

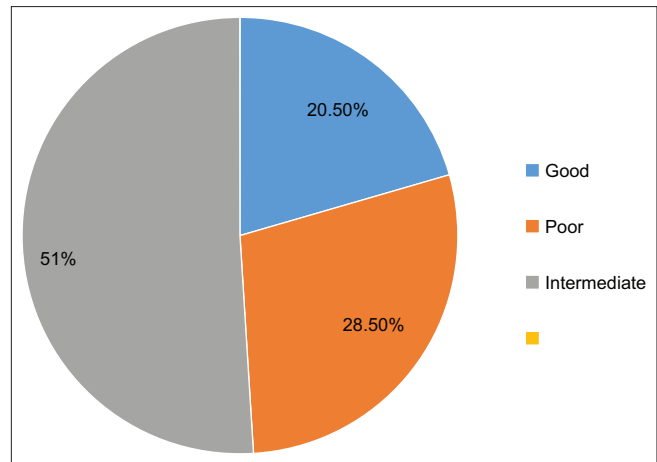
A higher proportion of women interviewed were in their third trimester (37.5%). Nearly 52.5% had ≥4 antenatal visits. The majority of participants received information on obstetric danger signs (70.8%). Their main sources of information were the Internet (23%), family, relatives or friends (17%), and health care providers at PHC center (16.8%). The highest participants' correct responses regarding obstetric danger signs were related to severe vaginal bleeding (93.5%), convulsions (76.8%), and decreased fetal movements (76.5%).

Participant's knowledge grades

Figure 1 shows that participants (28.5%) had a poor knowledge grade, 51% had a moderate knowledge grade and 20.5% had a good knowledge grade.

Association of Participants' knowledge grades according to socio-demographics, previous obstetric history, and current pregnancy status

Table 3 shows participants' knowledge grades regarding obstetric danger signs. Significant differences in knowledge grades regarding danger signs were found among Saudi and non-Saudi nationals ($P = 0.014$). Significant differences

**Figure 1: Knowledge grades regarding obstetric danger signs**

among knowledge grades were also found with different educational levels ($P < 0.001$). Employed participants had a significantly higher grade of good knowledge than unemployed ones ($P < 0.001$). Participants with a monthly income $>5,000$ SR had significantly higher knowledge than those with a monthly income < 5000 SR ($P < 0.001$). The knowledge grades regarding obstetric danger signs among participants increased significantly with their number of previous pregnancies ($P < 0.001$). Moreover, the knowledge grades differed significantly according to participants' number of children ($P < 0.001$). Participants' knowledge grades regarding obstetric danger signs differed significantly with their gestational age ($P < 0.001$) and number of antenatal care visits ($P = 0.001$). Participants who received previous information on obstetric danger signs had significantly better knowledge grades than those who have not received previous information ($P < 0.001$). Their knowledge grades differed significantly according to their sources of information ($P < 0.001$).

Discussion

The present study aimed to assess pregnant women's knowledge regarding obstetric danger signs in Abha City.

Knowledge of pregnant women regarding obstetric danger signs

Knowledge of pregnant women regarding obstetric danger signs is poor among the women. Many studies have been conducted throughout the world to know the knowledge of pregnant women regarding obstetric danger signs.

Findings of the present study also showed that the knowledge of pregnant women regarding obstetric danger signs was sub-optimal. Only 20.5% of pregnant women have good knowledge regarding obstetric danger signs. These findings are even lesser than the findings related to Egyptian and Ethiopian women. However, these findings are in accordance with those reported by several studies which reflected the pressing need to raise pregnant women's knowledge regarding obstetric danger

Table 2: Participants' obstetric history, status of current pregnancy, and knowledge regarding obstetric danger signs

Obstetric history	No.	%
Number of previous pregnancies		
• 0	99	24.8
• 1-4	208	52
• > 4	93	23.3
Number of children		
• 0	108	27
• 1-4	245	61.3
• > 4	47	11.8
Number of previous abortions		
• 0	317	79.3
• 1-4	80	20
• > 4	3	0.8
Place of last delivery		
• Never gave birth	99	24.8
• Governmental hospital	202	50.5
• Private hospital/clinic	99	24.8
Previous pregnancy complications		
• Never gave birth	99	24.8
• Yes	85	21.3
• No	216	54
Gestational age		
• First trimester	104	26
• Second trimester	146	36.5
• Third trimester	150	37.5
Number of antenatal visits		
• < 4	190	47.5
• ≥4	210	52.5
Receiving previous information about obstetric danger signs		
• No	117	29.3
• Yes	283	70.8
Sources of information about obstetric danger signs		
• Internet	92	23
• Family, relatives or friends	68	17
• Health care providers at PHC center	67	16.8
• Books, newspapers or magazines	37	9.3
• Mass media	19	4.8
Obstetric danger signs	No.	%
Foul smelling vaginal discharge	217	54.3
Drops of vaginal bleeding	295	73.8
Severe vaginal bleeding	374	93.5
Severe nausea and vomiting	137	34.3
Sudden weight loss	203	50.7
Rapid weight gain	124	31
A severe headache	183	45.8
Blurring of vision	208	52
Edema of face, hand, and feet	204	51
Dizziness with palpitation	192	48
Loss of consciousness	285	71.3
Convulsions	307	76.8
High fever	209	52.3
Dyspnea interferes with normal activity	199	49.8
Acute abdominal pain	282	70.5
Suddenly increased fetal movements	71	17.8
Decreased fetal movements	306	76.5
Amniotic fluid leakage without labor	275	68.8

signs.^[13] Otaiby *et al.*^[14] found that <1% of pregnant women had good antenatal knowledge. Only 26% of pregnant women in Egypt had good knowledge about the obstetric danger signs.^[15] In Ethiopia, only 31.8% of females had good knowledge,^[16] whereas in the Somali region of Ethiopia, only 15.5% of pregnant women correctly knew at least two key danger signs during pregnancy.^[17] In Hyderabad, India, only 10% of pregnant women had good knowledge.^[18] In rural Tanzania, 6.9% of women knew at least three obstetric danger signs related to pregnancy.^[19] Therefore, it is quite common in many countries to find low levels of knowledge regarding obstetric danger signs among pregnant women.

Frequency of antenatal visits and knowledge

During each antenatal visit, not only pregnant women have their physical checkup and laboratory investigations done but also counseling provided information about the progress of pregnancy, growth of the baby, mode of delivery, and danger signs related to the mother and the baby. Women were also told to contact the doctors if they observed any danger signs as a result health care immediately provided to the pregnant females, which may lead to reduction of mortality and morbidity. In the current study, 52.5% of participants reported >4 antenatal visits. This finding is in accordance with that reported in Ethiopia,^[20] where 42.2% of pregnant women had >4 antenatal visits. In Riyadh, Saudi Arabia, 41.1% of pregnant women had at least five ANC visits,^[13] whereas in Egypt, 20.1% of pregnant women had >4 antenatal visits.^[15] However, in Uganda, as high as 67.6% of women had at least four antenatal care visits.^[11] The low percentage of pregnant women achieving >4 antenatal visits in the present study may be attributed to the inadequate exposure to health education by health care providers at the PHC centers, which has been received by only 16.8% of pregnant women.

Strategies to improve knowledge regarding obstetric danger signs

Health education is the key to improving the health status of any population not only for the communicable and non-communicable diseases but also to have a great role in pregnancy. The provision of health education to pregnant women during antenatal care visits is an effective strategy to prevent morbidity and mortality. Therefore, every consultation at PHCC should be addressed optimally so that the pregnant women get the maximum benefits from them. Information related to "obstetric danger signs" must be repeatedly addressed at every antenatal care visit.^[21]

Role of primary health care in improving knowledge of obstetric danger signs

Primary health care is the cornerstone in determining the health status of any population. A stronger primary health care setup in any country reflects the health status of the population of that particular country directly. Health provision services provided by PHCC regarding antenatal care also affects the health of pregnant women. The reduction in MMR can be achieved through improving antenatal care to identify high-risk pregnancies during

Table 3: Association of participants' knowledge grades regarding danger signs according to their socio-demographics, previous obstetric history, and current pregnancy status

Sociodemographic Characteristics	Poor		Intermediate		Good		P
	No.	%	No.	%	No.	%	
Age groups							
• <30 years	68	30.4	114	50.9	42	18.8	
• ≥ 30 years	46	26.1	90	51.1	40	22.7	0.502
Nationality							
• Saudi	84	25.7	177	54.1	66	20.2	
• Non-Saudi	30	41.1	27	37	16	21.9	0.014
Educational status							
• Illiterate	36	73.5	3	6.1	10	20.4	
• Primary	10	50	10	50	0	0	
• Intermediate	15	32.6	21	45.7	10	21.7	
• Secondary	31	25.4	56	45.9	35	28.7	
• University	22	13.5	114	69.9	27	16.6	<0.001
Employment status							
• Unemployed	108	29.2	195	52.7	67	18.1	
• Employed	6	20	9	30	15	50	<0.001
Residence							
• Urban	109	29.2	188	50.4	76	20.4	
• Rural	5	18.5	16	59.3	6	22.2	0.486
Monthly family income							
• <5000 SR	83	37.7	105	47.7	32	14.5	
• ≥5000 SR	31	17.2	99	55	50	27.8	<0.001
No. of previous pregnancies							
• 0	54	54.5	31	31.3	14	14.1	
• 1-4	31	14.9	141	67.8	36	17.3	
• > 4	29	31.2	32	34.4	32	34.4	<0.001
No. of children							
• 0	59	54.6	32	29.6	17	15.7	
• 1-4	40	16.3	150	61.2	55	22.4	
• > 4	15	31.9	22	46.8	10	21.3	<0.001
No. of previous abortions							
• 0	93	29.3	164	51.7	60	18.9	
• 1-4	21	26.3	40	50	19	23.8	
• > 4	0	0	0	0	3	100	0.013
Place of last delivery*							
• Governmental hospital	36	17.8	123	60.9	43	21.3	
• Private hospital/clinic	24	24.2	50	50.5	25	25.3	0.214
Earlier pregnancy complications*							
• Yes	16	18.8	50	58.8	19	22.4	
• No	44	20.4	123	56.9	49	22.7	0.945
Gestational age							
• First trimester	42	40.4	26	25	36	34.6	
• Second trimester	26	17.8	103	70.5	17	11.6	
• Third trimester	46	30.7	75	50	29	19.3	<0.001
No. of ANC visits							
• Less than 4	68	35.8	79	41.6	43	22.6	
• 4 or more	46	21.9	125	59.5	39	18.6	0.001
Receiving previous information							
• No	78	66.7	32	27.4	7	6	
• Yes	36	12.7	172	60.8	75	26.5	<0.001
Sources of information							
• Internet	6	6.5	55	59.8	31	33.7	
• Family, relatives or friends	23	33.8	36	52.9	9	13.2	
• Health care providers	4	6	44	65.7	19	28.4	
• Books, newspapers or magazines	0	0	24	64.9	13	35.1	
• Mass media	3	15.8	13	68.4	3	15.8	<0.001

*P-values ≤0.05 taken as statistically significant

antenatal visits at PHCC. Moreover, comprehensive counseling and providing the information regarding delivery to the mothers efficiently reduce mortality and morbidity during antenatal care visits, which play an important role in women's health.^[19] Therefore, primary health care providers should be encouraged to provide health education on obstetric danger signs to all pregnant women during their antenatal care visits.

Frequency of obstetric danger signs observed during antenatal visits

The present study showed that the participants' highest correct responses regarding obstetric danger signs were related to severe vaginal bleeding, convulsions, and decreased fetal movements, whereas the least identified obstetric danger signs were rapid weight gain and suddenly increased fetal movements. It is to be considered that there are several misbeliefs among most pregnant women who may feel happy when they frequently feel their excess fetal movement and may consider themselves very healthy when they experience excessive weight gain. Similarly, in Ethiopia, vaginal bleeding was the most frequently identified obstetric danger sign during pregnancy.^[20] Bogale *et al.*^[21] also found that severe vaginal bleeding was the most frequently identified obstetric danger sign, whereas convulsions and blurred vision were the least identified signs. Nurgi *et al.*,^[15] in Ethiopia, found that severe vaginal bleeding was the most frequently identified obstetric danger sign during pregnancy.^[16] In Tsegedia District, Ethiopia, the least identified obstetric danger sign was blurred vision. Maseresha *et al.*, in the Somali region of Ethiopia, reported that severe vaginal bleeding was the most frequently identified obstetric danger sign during pregnancy, whereas convulsions were the least identified obstetric danger signs.^[17] In Uganda, severe vaginal bleeding was the most frequently identified obstetric danger sign, whereas the least identified sign was blurred vision.^[11]

Findings of the present study showed that participants' knowledge grades regarding obstetric danger signs were significantly better among Saudi women. The observed significantly better knowledge among Saudi women can be explained by the fact that in KSA, Saudi women have wider relations and easier approaches to health care facilities than non-Saudi women.

Therefore, there is a need that PHC providers should give more attention to younger primary gravida through counseling and health education, where they do not have any experience.

Bogale *et al.*,^[21] in Ethiopia, also reported that knowledge of educated and employed pregnant women about obstetric danger signs was better than that of uneducated women and housewives.

In Egypt, it was reported that pregnant women's knowledge grades were better with higher education, employed women, higher parity, and those who perform their antenatal visits.^[15]

Al-Ateeq *et al.*,^[12] in Riyadh, explained that educated mothers usually pay attention toward more antenatal care visits during

their pregnancy and attended the first visit earlier compared with less educated mothers.^[13]

Rashad and Essa in Egypt explained that employment seems to influence the level of women awareness about signs of obstetric complications and working women have better opportunities to share experiences with others than housewives.^[15]

In current study, participants who received health education had better knowledge than those who did not receive health education. This result could be explained by the fact that women who had more antenatal care visits receive more health education sessions and are more capable of observing obstetric danger signs and asking for help.

Results of the present study showed that participants' knowledge grades differed significantly according to their source of information, with a good knowledge grade among those who obtained their information from the books and journals, the Internet, and health care providers. Al-Ateeq *et al.*^[12] reported that the source of information for 66% of pregnant women was their family members or friends, whereas 53.7% received their information from health care providers during their antenatal care visits. They explained that in the Saudi culture, most women feel more comfortable to discuss their problems with their friends or relatives.^[13]

These findings indicate that it is very necessary to receive the correct health information messages from their proper sources.

MMR in Saudi Arabia is very low despite poor knowledge regarding obstetric danger signs among women. The reason behind is the strong antenatal care provided free of cost to all pregnant women through primary health care centers where every woman can approach and receive care.^[22]

Knowledge of obstetric danger signs is an essential step for an appropriate and timely referral.^[23] Therefore, sufficient knowledge of obstetric danger signs is fundamental to mothers for proper provision of maternal and newborn care services. Poor knowledge of danger signs delays cares to seek and ultimately leads to greater risk of death.^[24]

The cross-sectional nature of this study cannot confirm the causality association between the compared variables. This study was conducted only in two PHCCs of Abha city, which was not the true representative of the whole population; therefore, results of this study cannot be generalized to all pregnant women in Saudi Arabia. Therefore, there is a need to conduct such studies in multiple regions before developing guidelines for the improvement of knowledge regarding danger signs among pregnant women. However, this study could play a pivotal role for some other future regional studies on this topic.

Conclusion

It is concluded that pregnant women's knowledge is sub-optimal regarding obstetric danger signs. About 30% of pregnant women do not receive information about obstetric danger signs. Their main sources of their information are the Internet and their family, relatives, and friends. Health care providers at PHC centers are the source of information for only 16.8% of pregnant women. Vaginal bleeding is the most correctly identified obstetric danger sign among pregnant women, followed by convulsions and decreased fetal movements, whereas the least correctly identified obstetric danger signs are sudden increased fetal movements and excessive weight gain. Pregnant women with poor knowledge about obstetric danger signs are those who are less educated, are unemployed, have a low family monthly income, have less previous pregnancies or children, and do not receive health education about obstetric danger signs. PHC providers should be encouraged to address health education on obstetric danger signs to pregnant women during each antenatal care visit.

Ethical approval

Was taken from the Institutional Review Board (IRB) for conducting the study

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Conflicts of interest

There are no conflicts of interest.

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