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RESEARCH ARTICLE

KNOWLEDGE AND FACTORS ASSOCIATED WITH OBSTETRIC DANGER SIGNS AMONG PREGNANT WOMEN IN AL-NAWARIAH PRIMARY HEALTH CARE CENTER, MAKKAH AL-MUKARRAMAH, 2016, (A CROSS-SECTIONAL STUDY).

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Obstetric Danger Signs, Pregnant Women, Knowledge, Antenatal care.

Abstract

Background: The maternal mortality was inappropriately high, delay of seeking care was one of the key factors leading to maternal mortality, which associated with lack of knowledge about obstetric danger signs.

Objectives: To assess the knowledge and associated factors with obstetric danger signs during pregnancy among pregnant women attending Al-Nawariah Primary Health Care Center, Makkah Al-Mukarramah, Saudi Arabia, 2016.

Methods: This study was a cross-sectional including 137 participants, a validated self-constricted questionnaire was distributed among all pregnant women attending Antenatal Clinic in Al-Nawariah Primary Health Care Center during one month period.

Results: Concerning the level of knowledge about obstetric danger signs, 41(30%) of participants had poor knowledge, 67(49%) had a moderate knowledge and 29(21%) had good knowledge. The main obstetric danger sign was vaginal bleeding 128(93%). Those who were older, those who were more educated, those who were employees and those with high monthly income had significantly higher scores than others ($p=0.010$, $p<0.001$, $p=0.018$, $p<0.001$) respectively. Those who had a higher number of pregnancies and children and those who delivered in private hospital or clinic had significantly higher scores than others ($p<0.001$, $p=0.004$, $p<0.007$) respectively. Women who received health education had significantly higher scores ($p<0.001$), and the main source of information about obstetric danger signs was the books and journals 5(38.5%).

Conclusions and Recommendation: The level of knowledge about obstetric danger signs was suboptimal. Not all pregnant women attending Primary Health Care Center received health education. More educational program about obstetric danger signs needs to be implemented to increase knowledge.

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Introduction:-

Care of pregnant women is based mostly on the objective that each pregnancy should result in a healthy mother and baby. Though most pregnancies will progress adequately with no or minimal intervention, there is frequently the need to identify those high-risk pregnancy groups for whom a better degree of care required.(1)

Globally, the maternal mortality was inappropriately high, about 830 women die each day due to pregnancy or childbirth complication. In 2015, the average maternal mortality rate was 216 per 100,000 live births in developing countries, compared with developed countries it was 12 per 100,000. This high number reflects inequity in access to health services. The leading causes of maternal deaths were severe vaginal bleeding, infections, pre-eclampsia, eclampsia and unsafe abortion.(2)(3)

Most maternal deaths were preventable, as the health care solutions to avoid complications are well known. All women need access to antenatal care during pregnancy, during childbirth, and after childbirth. It is of particular importance that all births attended by skilled health professionals as appropriate management make the difference between life and death.(4)

Maternal morbidity and mortality reduced if the mothers and their families can identify obstetric danger signs and quickly get health care.(5)

During pregnancy, the commonest danger signs include severe vaginal bleeding, swollen hands/face and blurred vision, while during labor and childbirth, key danger signs include severe vaginal bleeding, prolonged labor, convulsions, and retained placenta. The danger signs during postpartum period include severe bleeding, loss of consciousness after childbirth, and fever. Therefore, hemorrhage is the most important cause of maternal mortality, accounting for about one-third of maternal deaths.(6)

At 2015, in Jeddah, Saudi Arabia, Bukhari et al., recommended to raise awareness about the factors associated with obstetric danger signs, husbands should include with their wives in receiving counseling about obstetric danger signs.(7)

At 2014, Nurgi et al., a study conducted in Debre Birhan City Administration, Ethiopia, to assess knowledge, attitude and practice of mothers toward obstetric danger signs. The knowledge and attitude of study participants are not acceptable found that 68% of women were poor knowledge about obstetric danger signs.(8)

The lack of awareness of danger signs during pregnancy, labor, and puerperium contributes to delayed receiving the essential health care. Therefore, knowledge of the danger signs of obstetric complications is the necessary primary step in accepting suitable and quick referral to obstetric care. Increased mothers' knowledge is essential for reducing delayed seeking of health care. Both individuals and communities should be recognized pregnancy-related risks to react well once such problems occur.(9)(10)

This study aimed to assess the knowledge and associated factors with obstetric danger signs during pregnancy among pregnant women attending Al-Nawariah Primary Health Care Center, Ministry of health, Makkah Al-Mukarramah, Kingdom of Saudi Arabia, 2016.

Methodology:-

This study is a cross-sectional study conducted among all pregnant women attending Antenatal Clinic (ANC) in Al-Nawariah Primary Health Care Center (PHCC), located in the North Sector of Makkah Al-Mukarramah (Al-Zahir Sector), "Makkah Al-Mukarramah" City.

After obtaining the official approval from Family Medicine Program Director as well as the Health Directorate, as well as the approval of Al-Nawariah PHCC Director, the researcher started to collect the data from interviewed pregnant women registered at the ANC. Data was collected by distributing a self-constructed questionnaire developed by the researcher after performed validation and reliability. It is consists of main five parts: the first part: socio-demographic data, including: (age, nationality, residence, educational level, occupation and family monthly income). The second part: past obstetric history, including: (The number of pregnancies, the number of children, the number of abortions, place of last delivery and the previous complications during pregnancy). The third part:

current pregnancy, including: (gestational age and number of ANC visiting). The fourth part: the source of information, including: (Pregnant perception about obstetric danger signs, previous obstetric danger signs information received and sources of information). And the fifth part: 18 questions about knowledge of obstetric danger signs, where The participant's responses were either: yes or no.

Statistical analysis:-
All collected data were coded and entered into a personal computer. Data entry and statistical analysis performed by using the Statistical Product and Service Solutions (SPSS, version 22.0) and appropriate statistical tests were applied. Descriptive statistics (i.e., frequency, percentage, mean and standard deviation) calculated. Chi-square test was applied to compare participants knowledge grades according to different independent variables (i.e., socio-demographic characteristics, past obstetric history, current pregnancy and source of information) were conducted. P-value of**<0.05** was considered as statistically significant. Age was categorized as the age of 35 years, and above is predispose respondents to have high-risk pregnancies.(17)

Regarding knowledge questions (1-18), a score of (1) was given to the right answer. The right answer is (yes) for all questions except the question number (1) the right answer is (no). Summation of scores computed and the total score was 18, and the range was (0 -18). Then the score was transformed to a percentage. Which was categorized into good, who will get >75 or (>13.5) as a mean score. The moderate, who will get between 50 to 75 or (9.2 - 13.4) as a mean score and the poor, who will get <50 or (<9.2) as a mean score, as the score used in Rashad and Essa study.(14)

Validity and reliability:-
The self-constructed questionnaire which was developed by the researcher after reviewing the relevant literature to collect the necessary data which has been revised and validated by four consultants: two from family medicine, one from Obstetrics and Gynaecology and one from Public Health.

The reliability of variables included in the study questionnaire was assessed using the Cronbach's alpha coefficient. The questionnaire proved a high reliability which was equal 0.849.

Before starting the actual field work, a pilot study was conducted on 10% of the sample (14 pregnant women) attending other PHCC (Al-Adel PHCC). The purpose of conducting this pilot study was to assess the methods, the feasibility, and duration needed for each interview and no any modification were considered.

Results:-

Response rate:-
All the 137 participants' who were present at the time of study responded (i.e., 100% response rate).

Table (1) shows that the minimum and maximum age of participants were 19 and 40 years old respectively, with the mean age of them was 29.5 ± 5.7 years. The Shapiro-Wilk statistic test shows that age values are not normally distributed ($p<0.001$). The age of most participants ranged from 25 to 35 years 79 (57.7%). Most of the participants were Saudi 112 (81.8%), and 127 (92.7%) were living in an urban area, while only 10 (7.3%) lived in rural areas. Most participants had either secondary or university/postgraduate levels of education 41 (29.9%) and 57 (41.6%), respectively. Most of them were housewives 126 (92%). About one-fifth of participants 31 (22.6%) had a family monthly income of less than 2000 SR, while 45 (32.8%) had 2000-5000 SR, 53 (38.7%) had >5000-10000 SR and only 8 (5.8%) of participants had a monthly income more than 10000 SR.

Table (2) shows that 33 (24.1%) of participants did not have previous pregnancies, 70 (51.1%) had 1-4 previous pregnancies while 34 (24.8%) had more than four previous pregnancies. About one-fourth of participants 35 (25.5%) did not have children, 83 (60.6%) had 1-4 children while 19 (13.9%) had more than four children. About three-fourths of participants 104 (75.9%) did not have any previous abortion, 32 (23.4%) had 1-4 previous abortions, while 1 (0.7%) had more than four previous abortions. About half of participants 70 (51.1%) gave birth in a Governmental/University Hospital, while 34 (24.8%) gave birth in a Private Hospital/Clinic. About one-fifth of participants 30 (21.9%) had previous pregnancy complications. About one-fourth of participants 35 (25.5%) were in interviewed during their first trimester, 48 (35%) during their second trimester, while 54 (39.4%) were during their last trimester. Almost half of participants 65 (47.4%) paid less than four visits to the ANC, while 72 (52.6%) paid four or more visits.

Table (3) shows that 76 (55.5%) of participants perceived obstetric danger signs, while 96 (70.1%) of them received health education on obstetric danger signs. Participants main sources of information about obstetric danger signs were the Internet 32 (23.4%), health sector 24 (17.5%) and their family, relatives, and friends 21 (15.3%). However, 41 (29.9%) of participants had no information on obstetric danger signs.

Table (4) show that the highest participants correct responses regarding obstetric danger signs were related to severe vaginal bleeding 128 (93.4%), decreased fetal movements 106 (77.4%) and convulsions 104 (75.9%). While the least were related to sudden increased fetal movements 25 (18.2%), rapid weight gain 43 (31.4%) and severe nausea and vomiting 48 (35%).

Figure (1) shows that 41 (30%) of participants had a poor knowledge <50% or (<9.2) as the mean score regarding obstetric danger signs. While 67 (49%) had a moderate knowledge 75-50%or (9.2 -13.4) as a mean score, and 29 (21%) had a good knowledge >75% or (>13.5) as a mean score, where the mean score was 10.2±4.4, rang (0-18).

Table (5) shows that participants knowledge grades regarding obstetric danger signs were associated significantly with their age (p=0.010). With the highest percentage of poor knowledge among age younger than 25 years participants 16 (55.2%) and highest percentage of good knowledge among age older than 35 years participants 7 (24.1%). Participants' knowledge grades regarding obstetric danger signs associated significantly with their educational status (p<0.001), with the highest percentage of poor knowledge among illiterate participants 11 (73.3%) and lowest percentage of University/Postgraduate educated participants 7 (12.3%). Participants good knowledge grades were significantly higher among employed than unemployed participants 6 (54.5%) and 23 (18.3%), respectively, (p=0.018). Participants good knowledge grades were significantly higher among participants with higher monthly income 3 (37.5%), (p<0.001). Participants' knowledge grades regarding obstetric danger signs did not associate significantly with their nationality and residence.

Table (6) shows that participants knowledge grades regarding obstetric danger signs associated significantly with their number of previous pregnancies (p<0.001), with highest percentage 12 (35.3%) of good knowledge among those with a higher number of previous pregnancies. Participants knowledge grades regarding obstetric danger signs associated significantly with their number of children (p=0.004), with highest percentage 5 (26.3%) of good knowledge among those with a higher number of children. Participants knowledge grades regarding obstetric danger signs associated significantly with their place of delivery, with highest percentage 10 (29.4%) of good knowledge among those who delivered in a Private Hospital or Clinic (p=0.007). Participants knowledge grades regarding obstetric danger signs associated significantly with their previous pregnancy complications (p=0.013). Also participants knowledge grades regarding obstetric danger signs associated significantly with their gestational age (p=0.001), with highest percentage 13 (37.1%) of good knowledge among those who were in their first trimester with their number of visits to the ANC.

Table (7) shows that participants knowledge grades associated significantly with their perception about obstetric danger signs (p<0.001), with higher good knowledge grade among those with perception about obstetric danger signs. Participants' knowledge grades associated significantly with receiving health education about obstetric danger signs (p<0.001), with higher good knowledge grade among those who received health education. Participants' knowledge grades associated significantly with their main source of information about obstetric danger signs (p<0.001), with highest good knowledge grade among those who obtained their information from the books and journals 5 (38.5%), internet 11 (34.4%) and education sector 1 (33.3%).

Discussion:-

Knowledge of obstetric danger signs is an essential step for an appropriate and timely referral.(18) Delay in seeking care is one of the key factors leading to maternal mortality, which associated with lack of obstetric danger signs knowledge.(19)

Therefore, sufficient knowledge of obstetric danger signs is fundamental to mothers for proper exploitation of maternal and newborn care services.(24) On the other hand, poor knowledge of danger signs delays cares to seek and ultimately greater risk of death. Raising awareness for pregnant women to know these obstetric danger signs would improve early detection of problems and reduces the delay of seeking obstetric care.(25)

The present study aimed to evaluate knowledge of 137 pregnant women about obstetric danger signs and the factors associated with insufficient knowledge among them.

Results of this study showed that about one-third of pregnant women attending the ANC in Al-Nawariah PHCC had a poor knowledge regarding obstetric danger signs, while about half of them had a moderate knowledge and only (21%) had a good knowledge.

The low levels of pregnant women's knowledge regarding obstetric danger signs have been reported by several studies, which are lower than Rashad and Essa study in Egypt, reported that only (26.0%) of pregnant women had good knowledge (>70%) about the obstetric danger signs.(14) The study of Hailu et al., in Tsegedia District, Ethiopia, reported that only (30.9%) of women could state at least two danger signs of pregnancy.(15) Nurgi et al., in Debre Birhan City, Ethiopia, reported that only (31.8%) of mothers had good knowledge about obstetric danger signs during pregnancy.(8) Bogale et al., in Goba District, Ethiopia, reported that only (31.9%) of women in the childbearing age knew at least three key danger signs during pregnancy.(18) Bililign et al., in Raya Kobo District, Ethiopia, reported that (46.7%) of women in the childbearing age knew at least three key danger signs during pregnancy. (19) Moreover, the study of Kabakyenga et al., in Uganda, reported that (51.8%) of women knew at least one key danger signs during pregnancy.(10)

While it is higher than a study of Maseresha et al., in Somali region, Ethiopia, reported that (15.5%) of pregnant women knew at least two key danger signs during pregnancy.(16) The study of Katkuri et al. in Hyderabad, India, reported that only (10%) of pregnant women had good knowledge obstetric danger signs.(26) Pembe et al., in rural Tanzania, found that the percentages of women who knew at least three obstetric danger signs related to pregnancy were (6.9%). (27) Moreover, the study of Otaiby et al., in Riyadh, reported that less than (1%) of the pregnant women scored (>70%) good Antenatal knowledge.(12)

This result showed that the low levels of pregnant women's knowledge regarding obstetric danger signs are a common problem and have been reported by several studies.

In the current study (52.6%) reported more than four ANC visits, this results is higher than what found in study of Bililign et al., in Raya Kobo District, Ethiopia, (42.2%) of women had more than four ANC visits.(19)

It is higher than the study of Ateeq et al., in Riyadh, reported that (41.1%) of women had at least five ANC visits(11) and Rashad and Essa, in Egypt, reported that (20.1%) of pregnant women had more than four ANC visits.(14) While it is lower than the study of Kabakyenga et al., in Uganda, reported that (67.6%) of women had equal or more than four ANC visits.(10)

This difference could be due to the variety of socio-economic factors and geographic areas. On the other hand, this low result (21%) and suboptimal levels of knowledge regarding obstetric danger signs. That has been detected in the present study even that (52.4%) reported more than four ANC visits could be explained by the inadequate exposure to health education at the PHCC which has been received only by (70.1%) of pregnant women.

Essential health education to pregnant women through ANC is very important as an effective tool to decrease maternal and perinatal morbidity and mortality. Therefore, every consultation at health care facility should be used optimally so that the pregnant women get the maximum benefits from the health care providers. Knowledge related to "obstetric danger signs" must be repeated at every visit.(28) The key point to reduce the maternal mortality is improving antenatal care to identify high-risk pregnancies.(29) Moreover, the comprehensive counseling and transfer so much information in an efficient way during ANC are very important. (30)

Therefore, primary health care providers should be advised to focusing more on providing health education on obstetric danger signs to all pregnant women during their ANC visits.

The highest participants correct responses regarding obstetric danger signs were related to severe vaginal bleeding (93.4%), decreased fetal movements (77.4%) and convulsions (75.9%). While the least identified obstetric danger signs were sudden increased fetal movements (18.2%), rapid weight gain (31.4%) and severe nausea and vomiting (35%). The reason for this result may be due to that pregnant woman in our country become happy if there was

increased fetal movement and more healthy embryo if there was more weight gain of mother and with increase nausea or vomiting.

The majority of participants (93.4%) reported severe vaginal bleeding as main obstetric danger signs during pregnancy. This result is higher than the study of Bililign et al., in Raya Kobo District, Ethiopia, found that vaginal bleeding was the most frequently identified obstetric danger sign during pregnancy (83.5%).(19)

The study of Bogale et al., in Goba District, Ethiopia, found that severe vaginal bleeding was the most frequently identified obstetric danger sign during pregnancy (71.3%). On the other hand, convulsions (10.1%) and blurred vision (13.8%) were the least identified obstetric danger signs.(18)

Nurgi et al., in Debre Birhan City, Ethiopia, found that severe vaginal bleeding (61.1%) was the most frequently identified obstetric danger sign during pregnancy.(8)

Kabakyenga et al., in Uganda, found that severe vaginal bleeding (49.2%) was the most frequently identified obstetric danger sign during pregnancy, while the least identified obstetric danger signs were blurred vision (1.6%).(10)

Hailu et al., in Tsegedia District, Ethiopia, found that severe vaginal bleeding (49.1%) was the most frequently identified obstetric danger sign during pregnancy, while the least identified obstetric danger signs were blurred vision (5.4%).(15)

Maseresha et al., in Somali region, Ethiopia, severe vaginal bleeding (25%) was the most frequently identified obstetric danger sign during pregnancy, while the convulsions (3%) was the least identified obstetric danger signs.(16)

This differences in the percentage could be due to several factors such as socio-economic factors, sample size, and studies nature.

Findings of the present study showed that participants' knowledge grades regarding obstetric danger signs were significantly better among older age, higher educated, employees and those with higher monthly income. Moreover, participants' knowledge grades regarding obstetric danger signs were better among those with a higher number of previous pregnancies, higher number of children, those who delivered in a private hospital or clinic, those with previous pregnancy complications. Those who did their antenatal care visits during their first trimester, and those who received health education about obstetric danger signs.

According to educational level, occupation and monthly income, this could be due to the facts that educational and employed women have more chances to receive information and share experience with others, then take the decision by visiting ANC earlier than others.

Regarding age factor, previous pregnancies, place of delivery and previous pregnancy complications. This result could be because women who have several experiences and were pregnant before are more aware than who did not experience that, and indicate the need for giving more attention to younger women with first pregnancy during counseling and health education, where they do not have any experience. Also delivering in hospital provide high health services quality and more able to deal with complications.

The study of Bogale et al., in Goba District, Ethiopia found that better-educated mothers were more likely to know obstetric danger signs than those who cannot read and write. Moreover, employed mothers were more likely to know obstetric danger signs than housewife mothers.(18)

Rashad and Essa, in Egypt, reported that pregnant women's knowledge grades regarding obstetric danger signs were significantly better among younger women, those with higher educational levels and employed women. Moreover, better knowledge grades were significantly higher among those with higher parity, those who gave birth at a private clinic and who perform their ANC visits.(14)

Al-Ateeq et al., in Riyadh explained the association between mothers' higher educational level and their knowledge about obstetric danger signs by that educated mothers usually pay more ANC visits during their pregnancy, and attended the first visit earlier compared with less educated mothers.(11)

Rashad and Essa in Egypt explained why working women have better knowledge about obstetric danger signs by that occupation seems to influence the level of women awareness about signs of obstetric complications and that working women have better opportunity to share experiences with others than housewives.(14)

Based on the current study participants who had a perception about obstetric danger signs (31.6%) and received health education (28.1%) had a better level of knowledge than who did not have a perception or didn't receive health education. This result could be because women who had more ANC visits and receive educational health 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 main source of information about obstetric danger signs, with highest good knowledge grade among those who obtained their information from the books and journals (38.5%), internet (34.4%) and the education sector (33.3%).

Al-Ateeq et al., in Riyadh, reported that the source of information for (66%) of women was their family members or friends, while (53.7%) reported that it was through health care providers during ANC visits. They explained this finding by that, in the Saudi culture, most women feeling are more comfortable to discuss their personal matters with their friends or relatives.(11)

These findings indicate the importance of receiving the correct education messages from their proper sources.

Limitations of the study:-

Time constraints, the researcher finished the data collection within one month only and this study was conducted at only one PHCC at Makkah Al-Mukaramah.

Conclusions:-

Based on the findings of the researcher study, the following can be concluded:

- About one-third of pregnant women have poor knowledge regarding obstetric danger signs, while about one-fifth of them had good knowledge.
- About one-third of pregnant women do not have information on obstetric danger signs, while the main sources for those who have information are the Internet and the health sector.
- The best correctly identified obstetric danger signs among pregnant women were severe vaginal bleeding, decreased fetal movements and convulsions, while the least correctly identified obstetric danger signs were sudden increased fetal movements, rapid weight gain and severe nausea and vomiting.
- Not all pregnant women attending PHCC received health education on obstetric danger signs.
- Pregnant women with poor knowledge about obstetric danger signs were those younger than 25 years, illiterate, unemployed, low monthly income, less number of previous pregnancies or children, who delivered in a governmental hospital, and those who did not receive health education about obstetric danger signs.

Recommendations:-

Based on the findings of the researcher study, the following can be recommended:

- Primary health care providers are requested to provide the necessary health education on obstetric danger signs for all pregnant women through ANC and must be repeated at every visit.
- Health education messages to pregnant women on obstetric danger signs should cover the main points of knowledge gap, especially sudden increased fetal movements, rapid weight gain and severe nausea and vomiting.
- Health education messages on obstetric danger signs to pregnant women should be enforced for those who are young, illiterate, unemployed, low monthly income, with no or very few previous pregnancies.
- The administrators in MOH should try to organize and conduct health education programs on obstetric danger signs in simple and familiar language among community through mass media to raise public awareness and knowledge regarding obstetric danger signs.
- Encourage the pregnant women to talk about obstetric danger signs with their doctors.

- Further nation-wide studies on assessment of pregnant women's knowledge regarding obstetric danger signs need to be conducted in larger sample size and regions other than Makkah Al-Mukarramah, to identify the level and distribution of different knowledge grades as well as the areas and topics of knowledge deficits.

Table (1):-Socio-demographic characteristics of participants'

Characteristics	No. = ***137***	%
Age groups		
• <25 years	29	21.2
• 25-35 years	79	57.7
• > 35 years	29	21.2
Mean±SD. Range	29.5 ± 5.7 19 - 40	
Nationality		
• Saudi	112	81.8
• Non-Saudi	25	18.2
Residence		
• Urban	127	92.7
• Rural	10	7.3
Educational status		
• Illiterate	15	10.9
• Read & write/Primary	9	6.6
• Intermediate	15	10.9
• Secondary	41	29.9
• University/Postgraduate	57	41.6
Employment status		
• Unemployed (housewife)	126	92.0
• Employed	11	8.0
Family monthly income		
• <2000 SR	31	22.6
• 2000-5000 SR	45	32.8
• >5000-10000 SR	53	38.7
• >10000 SR	8	5.8

Data presented as numbers and percentages

Table (2):-Characteristics of participants' previous and current pregnancy

Characteristics	No.	%
Number of previous pregnancies		
• 0	33	24.1
• 1-4	70	51.1
• > 4	34	24.8
Number of children		
• 0	35	25.5
• 1-4	83	60.6
• > 4	19	13.9
Number of previous abortions		
• 0	104	75.9
• 1-4	32	23.4
• > 4	1	0.7
Place of last delivery		
• Never gave birth	33	24.1
• Governmental/University Hospital	70	51.1
• Private Hospital/Clinic	34	24.8

Previous pregnancy complications		
• Never gave birth	33	24.1
• Yes	30	21.9
• No	74	54
Gestational age		
• First trimester	35	25.5
• Second trimester	48	35.0
• Third trimester	54	39.4
Number of Antenatal Clinic visits		
• Less than 4	65	47.4
• 4 or more	72	52.6

Data presented as numbers and percentages

Table (3):-Having information about obstetric danger signs

Variables	No.	%
Perception about obstetric danger signs		
• Yes	76	55.5
• No	61	44.5
Receiving health education about obstetric danger signs		
• Yes	96	70.1
• No	41	29.9
Main sources of information		
• Health sector	24	17.5
• Educational sector	3	2.2
• Family, relatives and friends	21	15.3
• Books, Journals and Magazines	13	9.5
• Television and Radio	3	2.2
• Internet	32	23.4
• No information	41	29.9

Data presented as numbers and percentages

Table (4):-Participants' correct responses regarding knowledge statements about obstetric danger signs

Obstetric danger signs	No.	%
Foul smelling vaginal discharge***(No)***	75	54.7
Drops of vaginal bleeding***(yes)***	99	72.3
Severe vaginal bleeding***(yes)***	128	93.4
Severe nausea and vomiting***(yes)***	48	35.0
Sudden weight loss***(yes)***	68	49.6
Rapid weight gain***(yes)***	43	31.4
A severe headache***(yes)***	64	46.7
Blurring of vision***(yes)***	73	53.3
Edema of face, hand and feet***(yes)***	71	51.8
Dizziness with palpitation***(yes)***	63	46.0
Loss of consciousness***(yes)***	97	70.8
Convulsions***(yes)***	104	75.9
High fever***(yes)***	69	50.4
Dyspnea interfere with normal activity***(yes)***	65	47.4
Acute abdominal pain***(yes)***	95	69.3
Sudden increase in fetal movements***(yes)***	25	18.2
Continuous decrease fetal movements***(yes)***	106	77.4
Amniotic fluid leakage without labor***(yes)***	94	68.6

Data presented as numbers and percentages

Table (5):-Participants' knowledge grades according to their socio-demographic characteristics

	Poor		Moderate		Good			P
Characteristics	N.= **41**	%	N.=**67**	%	N.= **29**	%	χ^2	Value
Age groups								
• <25 years	16	55.2	8	27.6	5	17.2		
• 25-35 years	16	20.3	46	58.2	17	21.5		
• >35 years	9	31.0	13	44.8	7	24.1	13.19	*0.010**
Nationality								
• Saudi	29	25.9	59	52.7	24	21.4		
• Non-Saudi	12	48.0	8	32.0	5	20.0	5.144	0.076
Residence								
• Urban	38	29.9	62	48.8	27	21.3		
• Rural	3	30.0	5	50.0	2	20.0	0.010	0.995
Educational status								
• Illiterate	11	73.3	1	6.7	3	20.0		
• Read & write/ Primary	6	66.7	3	33.3	0	0.0		
• Intermediate	5	33.3	7	46.7	3	20.0		
• Secondary	12	29.3	18	43.9	11	26.8		
• University/ Postgraduate	7	12.3	38	66.7	12	21.1	31.86	*<0.001**
Employment status								
• Unemployed	39	31.0	64	50.8	23	18.3		
• Employed	2	18.2	3	27.3	6	54.5	7.990	*0.018**
Monthly income (SR)								
• <2000	20	64.5	6	19.4	5	16.1		
• 2000-5000	11	24.4	28	62.2	6	13.3		
• >5000-10000	8	15.1	30	56.6	15	28.3		
• >10000	2	25.0	3	37.5	3	37.5	28.79	*<0.001**

Data presented as numbers and percentages.
The total number of participants *was equal* 137.
Comparisons ware made using Chi-square test.
**Statistically significance at the <0.05 level.*

Table (6):-Participants' knowledge grades according to their previous and current pregnancy characteristics

	Poor		Moderate		Good		χ^2	P
Characteristics	N.= **41**	%	N.=**67**	%	N.= **29**	%		value
Number of previous pregnancies								
• 0	18	54.5	10	30.3	5	15.2		
• 1-4	12	17.1	46	65.7	12	17.1		
• > 4	11	32.4	11	32.4	12	35.3	23.16	*<0.001**
Number of children								
• 0	19	54.3	10	28.6	6	17.1		
• 1-4	16	19.3	49	59.0	18	21.7		
• > 4	6	31.6	8	42.1	5	26.3	15.50	*0.004**
Number of previous abortions								
• 0	33	31.7	50	48.1	21	20.2		
• 1-4	8	25.0	17	53.1	7	21.9		
• > 4	0	0.0	0	0.0	1	100.0	4.28	0.369

Place of last delivery								
• Never gave birth	18	54.5	10	30.3	5	15.2		
• Governmental/ University Hospital	15	21.4	41	58.6	14	20.0		
• Private Hospital/ Clinic	8	23.5	16	47.1	10	29.4	14.23	*0.007**
Previous pregnancy complications								
• Never gave birth	18	54.5	10	30.3	5	15.2		
• Yes	6	20.0	17	56.7	7	23.3		
• No	17	23.0	40	54.1	17	23.0	12.72	*0.013**
Gestational age								
• First trimester	14	40.0	8	22.9	13	37.1		
• Second trimester	10	20.8	33	68.8	5	10.4		
• Third trimester	17	31.5	26	48.1	11	20.4	18.14	*0.001**
No. of ANC visits								
• Less than 4	25	38.5	26	40.0	14	21.5		
• 4 or more	16	22.2	41	56.9	15	20.8	5.02	0.081

Data presented as numbers and percentages.
The total number of participants *was equal* 137.
Comparisons ware made using Chi-square test.
** Statistically significance at the <0.05 level.*

Table (7):-Participants' knowledge grades according to their awareness regarding obstetric danger signs

	Poor		Moderate		Good			P
Characteristics	N.= **41**	%	N.= **67**	%	N.= **29**	%	χ^2	Value
Perception about obstetric danger signs								
• Yes	8	10.5	44	57.9	24	31.6		
• No	33	54.1	23	37.7	5	8.2	33.03	*<0.001**
Receiving health education								
• Yes	12	12.5	57	59.4	27	28.1		
• No	29	70.7	10	24.4	2	4.9	47.08	*<0.001**
Main sources of information								
• Health sector	2	8.3	15	62.5	7	29.2		
• Education sector	1	33.3	1	33.3	1	33.3		
• Family& friends	7	33.3	11	52.4	3	14.3		
• Books& journals	0	0.0	8	61.5	5	38.5		
• Television& Radio	0	0.0	3	100.0	0	0.0		
• Internet	2	6.3	19	59.4	11	34.4		
• No information	29	70.7	10	24.4	2	4.9	57.97	*<0.001**

Data presented as numbers and percentages.
The total number of participants' *was equal* 137.
Comparisons ware made using Chi-square test.
** Statistically significance at the <0.05 level.*

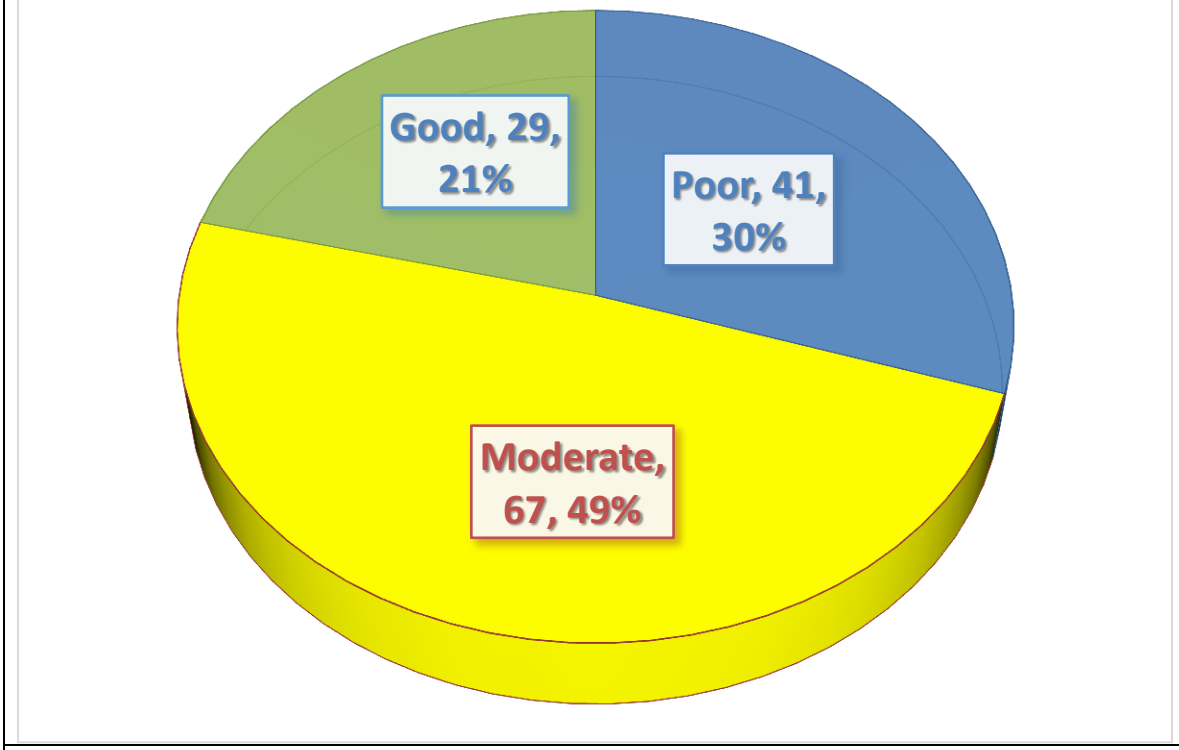

Figure (1): Participants' knowledge grades about obstetric danger signs

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