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Original Research Article

A CROSS –SECTIONAL STUDY TO ASSESS THE KNOWLEDGE OF OBSTETRIC DANGER SIGNS AMONG PREGNANT FEMALES ATTENDING A TERTIARY CARE CENTRE IN RAIPUR, C.G

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ABSTRACT

Background: Central to reducing these mortalities is the timely recognition of obstetric danger signs which serve as critical precursors to life-threatening complications. Identifying and responding to obstetric danger signs is the first step in the "Three Delays" model, which often determines maternal survival. The objective of the study was to assess the knowledge of obstetric danger signs and their associated factors among pregnant females attending a tertiary care centre in Raipur, C.G.

Materials and Methods: It was hospital-based cross-sectional study conducted in the Antenatal Outpatient Department (OPD) of a tertiary care teaching hospital in Raipur, C.G over a period of 1 year .The study participants were the pregnant women in their second or third trimester attending the hospital for routine check-ups. The required sample size was 220. Data was collected using a structured, pre-tested questionnaire Knowledge was categorized into "Good" or "Poor". Data was analyzed using SPSS version 23.0. Descriptive statistics was used to describe knowledge, while Chi-square tests identify factors that significantly influence knowledge levels.

Results: Most of the study participants had knowledge about vaginal bleeding (83.2 %), absent or decreased Foetal Heart Rate (69.5%) and convulsions (75%) as danger signs. Lesser known symptoms were retained placenta (33.6%), foul smelling discharge (43.2%), blurred vision (34.5%), prolonged labour (39.1%). There was a statistically significant association between knowledge of pregnant women with age, counseling during ANC visit, history of any complications in past/present pregnancy.

Conclusion: The knowledge of the specific danger signs in pregnancy affect health seeking behavior of the pregnant females. Hence, it is important to give more focus on educating pregnant women about obstetric danger signs during their visits face to face as well as using audio-visual aids, which could go a long way in improving the maternal and fetal outcomes.

Keywords: Knowledge, Obstetric danger signs, Pregnancy.

INTRODUCTION

Maternal mortality is a global health challenge, with the vast majority of deaths occurring in low- and middle-income countries due to preventable complications. In India, maternal health remains a primary public health concern, with the Maternal Mortality Ratio (MMR) currently standing at 93 deaths per 100,000 live births.[1] While India has seen a steady decline in maternal deaths, regional disparities persist, particularly in states like Chhattisgarh, where high-risk pregnancies are complicated by unique socio-demographic and geographic challenges.[2,3] Central to reducing these mortalities is the timely recognition of obstetric danger signs which serve as critical precursors to life-

threatening complications. Identifying and responding to obstetric danger signs—clinical manifestations such as severe vaginal bleeding, convulsions, and high fever—is the first step in the "Three Delays" model, which often determines maternal survival. Current literature suggests that while awareness of high-profile symptoms like vaginal bleeding is relatively common, comprehensive knowledge of less overt signs, such as blurred vision or fetal inactivity, remains alarmingly low.[4,5] Consequently, understanding the current state of maternal knowledge is essential for developing targeted educational interventions that empower women to seek life-saving obstetric care.With this background, the objectives of the study was to assess the knowledge of obstetric danger signs and their associated factors among pregnant females attending a tertiary care centre in Raipur, C.G.

MATERIALS AND METHODS

It was hospital-based cross-sectional study conducted in the Antenatal Outpatient Department (OPD) of a tertiary care teaching hospital in Raipur, C.G. The study was conducted over a period of 1 year from April 2024 to March 2025. The study participants were the pregnant women in their second or third trimester attending the hospital for routine check-ups. The inclusion criteria was any pregnant women above 18 years in their second or third trimester and those willing to provide informed consent. Women with severe illness, cognitive or mental disabilities, or those in active labor who cannot comfortably complete an interview were excluded. The sampling method used was convenience sampling. All the pregnant females who fulfilled the inclusion criteria and who gave written informed consent were included in the study till the required sample size was reached. The sample size was calculated using the formula n = Z2pq/d2, where p was taken as 28%,[6] with a 5% acceptable margin of error and 90% confidence interval. The required sample size was 220. Data was collected using a structured, pre-tested questionnaire. It was developed from standardized WHO and UNICEF modules and translated into Hindi. Face to face interview was done to explore the knowledge regarding obstetric care. The questionnaire had 3 sections on socio-demographic profile, obstetric history and Knowledge of obstetric danger signs respectively. Knowledge was categorized into "Good" or "Poor". Poor Knowledge resulted from women who mention fewer than six obstetrical danger signs (two of the danger signs during each of the three periods (pregnancy, labor/childbirth, and postpartum). Good Knowledge on Obstetrical Danger Signs was obtained from women who mention six or more obstetrical danger signs which might be manifested during pregnancy or labor and delivery or postpartum period. Data was analyzed using SPSS version 23.0. Descriptive statistics was used to describe knowledge, while Chi-square tests identify factors that significantly influence knowledge levels.

RESULTS

A total of 220 pregnant women participated in the present study. The majority of them were in the age group 18-35 years (75.9%) and belonged to the (75.5%). Large proportion of the study participants were educated up to secondary school and above (53.2%) and were housewives (67.7%). Most of the participants belonged to the class 3 (34.5%), followed by the class 4 (19.1%). Table 2 shows the distribution of study participants as per the obstetric history and ANC services utilization.

Table 1: Socio-demographic Profile of Participants (n = 220)

Variable	Category	Frequency	Percentage
Age	18-35	167	75.9
	>35	53	24.1
Education	Illiterate	9	4
	Primary	69	31.4
	Middle	25	11.4
	High & H.Sec	75	34.1
	Graduate & Above	42	19.1
Religion	Hindu	166	75.5
	Muslim	23	10.4
	Christian	31	14.1
Occupation	Homemaker	149	67.7
	Employed	71	32.3
SES (as per Modified B.G Prasad classification)	Class 1	35	15.9
	Class 2	29	13.2
	Class 3	76	34.5
	Class 4	42	19.1
	Class 5	38	17.3

Table 2: Obstetric History and ANC Utilization

Variable	Category	Frequency	Percentage
Gravidity	Primigravida (1st Pregnancy)	64	29.1
	Multigravida (2+ Pregnancies)	156	70.1

Number of ANC Visits	< 4 Visits	167	75.9
	≥ 4 Visits	53	24.1
History of Past Complications	Yes	74	33.6
	No	146	66.4
Site of Previous pregnancy	Government	127	57.7
	Private	93	42.3
	Home	00	00
Counselled during ANC check up	Yes	121	55
	No	99	45

Most of the study participants had knowledge about vaginal bleeding (83.2 %), absent or decreased Foetal Heart Rate (69.5%) and convulsions (75%) as danger signs. Lesser known symptoms were retained placenta (33.6%), foul smelling discharge (43.2%), blurred vision (34.5%), prolonged labour (39.1%). [Table 3]

From all of the 220 respondents, about 116 (52.7 %) pregnant women have had good knowledge on obstetrical danger signs who mentioned at least six obstetric danger signs, whereas 104 (47.3 %) respondents have had poor knowledge who mentioned less than six obstetric danger signs.

Table 3: Awareness of Specific Obstetric Danger Signs

Variable	Category	Frequency	Percentage
Danger Signs Identified			
During Pregnancy (Antepartum)	Severe Vaginal Bleeding	183	83.2
	Swelling of hands/face	105	47.7
	Blurred vision	76	34.5
	Severe headache	82	37.3
	Absent or decreased Foetal Heart Rate	153	69.5
During Labor (Peripartum)	Prolonged Labor (>12 hours)	86	39.1
	Convulsions/Fits	165	75
	Retained Placenta	74	33.6
After Delivery (Postpartum)	Excessive Bleeding (PPH)	103	46.8
	High Fever	127	57.7
	Foul smelling discharge	95	43.2

Table 4: Factors Associated with Knowledge Level

Variable	Category	Knowledge score		Chi-square statistics	P-value
		Good	Poor		
Age	**18 -35**	**76**	**91**	**14.49**	**0.0001**
	> 35	40	13		
Education	Literate	114	97	2.3	0.12
	Illiterate	2	7		
Parity	Primipara	33	31	0.049	0.82
	Multipara	83	73		
ANC Visit	< 4 visits	86	81	0.42	0.52
	>= 4 visits	30	23		
Counseling during ANC visit	Yes	79	42	17.02	0.00003
	No	37	62		
History of any complications in past/present pregnancy	Yes	51	23	11.72	0.0006
	No	65	81		
Site of delivery	Government	71	56	1.21	0.269
	Private	45	48		

Significant at p < 0.05

On assessing the factors associated with knowledge of obstetric danger signs, there was statistically significant association (p value <0.001) between knowledge level and maternal age. There was a statistically significant association between knowledge of pregnant women and counseling during ANC visit (p value <0.001), history of any complications in past/present pregnancy (p value <0.001). However, there was no association with other demographic and obstetric variables. [Table 4]

DISCUSSION

In the present study, 116 pregnant women (52.7%) had good knowledge of obstetric danger signs. This shows that nearly half of the antenatal women still had poor overall knowledge, even though they were

attending a tertiary care centre. This finding is important because maternal mortality remains a major public health issue in India and regional differences are seen in states like Chhattisgarh also.[1,2] A previous Raipur study also showed that knowledge of obstetric danger signs was incomplete among mothers in this region.[3] Recognition of obstetric danger signs is the first step for early care seeking and it directly affects delay in reaching proper obstetric care.[4,5]

Our finding was higher than the Nagpur tertiary care teaching hospital study, where 61% women knew about danger signs of pregnancy but only 7% had good awareness.[6] In Bilaspur, 25% women had good knowledge when knowledge of more than six danger signs was used as the cut-off.[7] A recent Telangana study from Hyderabad reported adequate knowledge in 64.84% of pregnant women.[8] In Northern Ethiopia, Woldeamanuel et al. reported that only 37.5% of pregnant women were knowledgeable about obstetric danger signs.[9] Another recent study from Hosanna Town, Southern Ethiopia reported good knowledge in 63.2% pregnant women.[10] These differences may be due to variation in study setting, literacy level, ANC contact, counselling method and definition used for good knowledge.

In our study, severe vaginal bleeding was the most commonly recognised danger sign (83.2%). Convulsions were also recognised by 75% of women and absent or decreased foetal heart rate by 69.5%. This pattern is similar to earlier Indian studies where bleeding was one of the better recognised danger signs.[3,6-8] In the Nagpur study also, bleeding was the most commonly known obstetric danger sign, reported by 50% of women.[6] In the Telangana study, severe abdominal pain and bleeding per vagina were the most commonly recognised signs.[8] In the Angolela Tera District study, vaginal bleeding was also the most frequently mentioned danger sign during pregnancy, childbirth and postpartum period.[9] This shows that obvious and dramatic danger signs are better remembered by pregnant women.

The poor recognition of some specific signs is more important than the overall score. In our study, less than half of women knew about retained placenta (33.6%), blurred vision (34.5%), severe headache (37.3%), prolonged labour (39.1%) and foul-smelling discharge (43.2%). Similar gaps were seen in the Nagpur study, where awareness was low for convulsions, retained placenta, labour lasting more than 12 hours and high fever.[6] The Telangana study also reported lower awareness for swelling of hands and face, foul-smelling discharge, severe headache and blurred vision.[8] In the Hosanna Town study, severe vaginal bleeding and blurred vision were better known, but knowledge of convulsions, high fever and water break without contractions was lower.[10] These findings show that women remember common or visible danger signs better. Less obvious symptoms still need repeated explanation.

Postpartum danger signs also need more attention. In the present study, knowledge of excessive postpartum bleeding was 46.8% and foul-smelling discharge was 43.2%. This is a concern because women and families may become less alert after delivery, especially if the baby appears well. Postpartum haemorrhage, puerperal sepsis and hypertensive complications can worsen quickly. The Raipur study also showed very low awareness of postpartum danger signs.[3] Hence counselling should cover danger signs during pregnancy, labour and postpartum period separately.

Maternal age showed significant association with knowledge level in the present study. Women above 35 years had better knowledge compared to younger women. This may be due to previous pregnancy experience, repeated contact with health services or exposure to complications in earlier pregnancy. The Hosanna Town study also reported that older respondents had significantly better knowledge than younger women.[10] However, age should not be seen as protection. Younger women and primigravida women may need more repeated and structured counselling because they have less personal experience of pregnancy complications.

Counselling during ANC visit was strongly associated with good knowledge in our study. This is one of the most useful findings for practice. Women who received counselling had better knowledge than those who did not receive counselling. The Angolela Tera District study also showed that receiving maternal health education was independently associated with better knowledge.[9] This supports that ANC visit should not remain only a routine clinical check-up. It should be used as an opportunity for simple, repeated and patient-specific health education.

History of complications in past or present pregnancy was also significantly associated with good knowledge. Women who have faced complications may receive more information during referral, hospitalisation or follow-up. They may also perceive pregnancy risk more seriously. In the Angolela Tera District study, two or more pregnancies were associated with better knowledge.[9] In the Hosanna Town study, number of live births was also an independent factor associated with good knowledge.[10] However, women without previous complications may underestimate risk. Therefore, counselling should be universal and not limited only to women already labelled as high risk.

Education was not significantly associated with knowledge in the present study. This differs from some earlier studies. In Bilaspur, literacy was significantly associated with better knowledge.[7] In the Angolela Tera District study, formal education was an independent predictor of knowledge.[9] In the Hosanna Town study also, primary, secondary and tertiary education were associated with better knowledge compared to no formal education.[10] This difference may be due to the small number of illiterate women in our study and because knowledge

depends not only on education but also on the quality of counselling received.

Parity, number of ANC visits and site of previous delivery were not significantly associated with knowledge in the present study. This suggests that contact with health services alone may not be enough. The content and quality of counselling matters more. Some women may attend ANC but may not receive clear explanation of danger signs. Some may receive information but may not remember it. Hence, simple repetition, pictorial charts, audio-visual material and involvement of husband or family member can improve recall and action.

Recent studies also support these findings. A Rajasthan study reported that about half of pregnant women had adequate knowledge of obstetric danger signs.[11] A systematic review from developing countries reported low to medium awareness in most studies and found that education, previous pregnancy experience, ANC visits and health facility delivery were common determinants of awareness.[12] A mixed-methods study from rural Gujarat showed better recognition of bleeding, leakage of fluid and swelling, while knowledge was lower for headache, visual disturbance, prolonged labour and retained placenta.[13] Similar pattern was also seen in a Thai community hospital study, where overall knowledge was fair but varied across individual danger signs.[14] More recent studies from Ethiopia, Zambia and Saudi Arabia also show that previous obstetric experience, counselling and previous information exposure improve knowledge of obstetric danger signs.[15-17] These findings support the need to treat every ANC contact as a health education opportunity. The message should be short and repeated. It should include danger signs during pregnancy, labour and after delivery. Women should also be told when to report immediately and where to report.

The findings have direct programmatic implication. Every ANC visit should include a short danger sign checklist. The checklist should be explained in local language. Family members should also be included because care-seeking decisions are often taken by family in many Indian settings. Such low-cost counselling can reduce the first delay in the Three Delays model and may help in improving maternal and fetal outcomes.

This study has some limitations. It was a hospital-based cross-sectional study from a single tertiary care centre, so findings may not represent pregnant women who do not attend formal ANC services. Convenience sampling may introduce selection bias. Knowledge was assessed by interview, so recall bias and socially desirable responses may be present. The study shows association only and cannot prove causality. Despite these limitations, the study identifies important gaps in knowledge of specific obstetric danger signs and supports strengthening of ANC-based counselling.

CONCLUSION

Majority of the study participants, (52.70%), had good knowledge of danger signs in pregnancy. When knowledge of specific obstetric danger signs were determined, many participants had poor knowledge of the individual danger signs. Less than half of the study participants had knowledge about important danger signs like retained placenta (33.6%), foul smelling discharge (43.2%), blurred vision (34.5%), prolonged labour (39.1%). This poor knowledge of the specific danger signs in pregnancy may lead to a delay in seeking health care. Hence, it is important to give more focus on educating pregnant women about obstetric danger signs verbally as well as using audio-visual aids, which could go a long way in improving the maternal and fetal outcomes.

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