Original Article

# Assessment of knowledge of obstetric danger signs and its associated factors among pregnant women attending antenatal clinic of rural health training centre of a medical college: A cross-sectional study from Rajasthan

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## Abstract

**Background and Objectives:** Women and newborns are most vulnerable during and immediately after childbirth. The majority of maternal and newborn deaths occurring in developing countries can be attributed to inabilities to access health services, illiteracy, social stigmas, and gender inequalities. Women should be made aware of the danger signs so that health care services can be assessed on time, thus reducing maternal mortality. The objectives of this study were to assess the knowledge about obstetric danger signs and to find out various factors associated with them among pregnant women attending antenatal care (ANC) clinic at the Rural Health Training Centre (RHTC) attached to a Medical College. **Methodology:** This cross-sectional study was conducted at the ANC clinic of the RHTC attached to a medical college of Rajasthan for a period of 4 months and included 353 pregnant women. A pre-designed and pre-tested schedule was used. Mean knowledge scores were computed and knowledge was classified into adequate and inadequate. Descriptive statistics were used and the Pearson Chi-square test was used as a test of significance, taking a *P* value of < 0.05 as statistically significant. **Results:** Educational status of pregnant women, antenatal check-up status and gravid status had significant associations with the knowledge of obstetric danger signs. **Conclusions:** About half of the respondents had adequate knowledge about the obstetrics danger signs. Therefore, there is a strong need of creating awareness in the community by improving access to health care.

**Keywords:** Antenatal clinic, danger signs, health services, knowledge, pregnant women

## Introduction

The World Health Organization (WHO) has defined maternal mortality as "death of women during pregnancy or within forty-two days of termination of pregnancy, irrespective of duration and site of pregnancy, from any cause related to or as a complication of pregnancy or its management, but is not attributed by accidental or incidental causes".[1] According to United Nations Children's Fund (UNICEF), women, and newborns are the most vulnerable during and immediately after childbirth. The estimated annual death of 2.8 million pregnant women and newborn, or one every eleven seconds, is mainly due to preventable causes.[2] The majority of mentioned deaths occur in developing countries, which can be attributed to inabilities to

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**Received:** 03-04-2022 **Revised:** 07-07-2022
**Accepted:** 11-07-2022 **Published:** 31-10-2022

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_774_22



**How to cite this article:** Kumar A, Raj D, Gupta A, Kumar A. Assessment of knowledge of obstetric danger signs and its associated factors among pregnant women attending antenatal clinic of rural health training centre of a medical college: A cross-sectional study from Rajasthan. J Family Med Prim Care 2022;11:6487-92.

access health services, illiteracy, ignorance, social stigmas, and gender inequalities.

Delays that cause most maternal mortalities, also called 3 D's, are a delay in the decision to seek care, delay in reaching the place of care, and delay in getting appropriate and sufficient care.[3] As per the WHO, the leading cause of maternal mortality is haemorrhage worldwide, followed by infection, pre-eclampsia, and eclampsia.[4]

Keeping the above statistics in mind, women should be made aware of danger signs and their relation to complications during pregnancy, labour, and the postpartum period, so that pregnant women and their families will seek health care services on time, and thus reducing maternal mortality.[5] The danger signs are not actual complications, but are a set of symptoms that can be easily identified by nonclinical personnel. In low-income countries, knowledge of obstetric danger signs and birth preparedness are the major strategies that can lead to increasing the utilization of skilled care during low-risk births and emergency obstetric care in complicated cases.[6,7] Maternal deaths can be reduced due to obstetric complications with the presence of skilled attendants at births and availability of emergency obstetric care[8-10] and this is dependent on a functional referral system from rural communities to health facilities.[11]

Knowledge of the danger signs will help a pregnant woman in taking appropriate action needed on time. However, there is paucity of published literature on the knowledge of obstetric danger signs and its influencing factors in the study area. Therefore, this study aims at filling the knowledge gaps.

The objectives of this study were to assess the knowledge about danger signs during pregnancy, labour, and postpartum period among pregnant women attending antenatal care (ANC) clinic at RHTC and to find out various factors associated with the knowledge of danger signs among study participants.

## Methodology

### Study design and setting

The present study utilized a descriptive cross-sectional study design. This study was undertaken at the antenatal clinic of Rural Health Training Centre (RHTC), Naila, attached to SMS Medical College, Jaipur from February to May 2021.

### Study population

It included all pregnant women in the third trimester of pregnancy, attending the ANC clinic.

### Inclusion criteria

- Pregnant women who consented to take part in the study
- Pregnant women residing in the area for the last 6 months before the commencement of this study.

### Exclusion criteria

- Pregnant women with severe hearing loss or low intelligence quotient (IQ)
- Serious illness/complications

### Sample size and sampling technique

Considering the level of knowledge to be 35.7%,[12] with an absolute error of 5% and a confidence level of 95%, the required minimum sample size was calculated to be 353 by using the appropriate formula. Consecutive sampling was applied to achieve the required sample size.

### Data collection

The necessary approval for the study was taken before the commencement of the study from the Institutional Ethical Committee.

After taking oral informed consent from the study participants and after explaining the nature of this study, each one of them was moved to a separate room at the out-patient department (OPD) one-by-one. They were interviewed with the pre-designed and pre-validated schedule,[13,14] which contained information on the socio-demographic profile of the respondents and their spouses like age, sex, education status, occupation, etc., and obstetric history. Information relating to knowledge of danger signs during the antenatal period, labour, and post-partum period was obtained, which had 12, 8, and 6 questions, respectively. The total knowledge scores were calculated by allotting one point to each correct response and no point to an incorrect response. The mean knowledge scores were computed (15.5, rounded off to 16) and participants who scored equal to the mean and above the mean score were categorized as having adequate knowledge, and those with less than the mean score were under the inadequate knowledge category.[15]

### Statistical analysis

Data were entered into Microsoft Excel spreadsheet and analysed using Epi Info (version 7.2). Descriptive statistics were used and the Pearson Chi-square test was used for bivariate analysis as a test of significance; taking *a P* value of $< 0.05$ as statistically significant.

## Results

### Socio-demographic and obstetrics characteristics of the women attending an ANC clinic

A total of 353 pregnant women had given consent and participated in the present study. The mean age of study participants was 24.1 years with a standard deviation of 2.9 years. The majority of them were <25 years (53.8%) and belonged to the joint family (84.7%). Large proportion of the respondents were educated up to secondary school and above (57.2%) and were housewives (76.2%). Most of the participants belonged to the upper-lower socio-economic class (34.6%), followed by the lower class (25.8%) [Table 1].

## Knowledge of danger signs during pregnancy, during labour, and postpartum period among pregnant women attending an ANC clinic

Table 2 shows that 81.9% of the study participants were aware of abdominal pain as one of the danger signs during pregnancy, followed by pallor (78.5%), severe fatigue (70.3%), vaginal bleeding (68.6%). Heavy vaginal bleeding (77.3%), vaginal tear (69.1%), followed by water break but labour not induced within 6 hours (62%), fever (51.3%), convulsion (49.6%), etc., were some of the danger signs identified by the respondents during labour, while heavy vaginal bleeding, painful urination (63.2%), persistent headache (57.8%), high fever (56.7%), etc., were some of the danger signs pointed out during the post-partum period.

## Factors associated with knowledge of danger signs of pregnancy, during labour and post-natal period

About 53% of pregnant women had adequate knowledge and 47% had inadequate knowledge of danger signs during pregnancy, childbirth, and the postpartum period. Educational status of pregnant women, antenatal check-up status, as well as gravid status, had significant associations with the knowledge of obstetric danger signs during pregnancy, during labour, and the post-natal period ($P < 0.05$). Age, type of family, socio-economic status, and education status of husbands did not have any association with obstetric danger signs in the present study [Table 3].

**Table 1: Socio-demographic and obstetrics characteristics of the women attending an ANC clinic (*n*=353)**

| Variables | Number (*n*=353) | Percentage |
|---|---|---|
| Age (years) | | |
| <25 | 190 | 53.8 |
| ≥25 | 163 | 46.2 |
| Type of family | | |
| Nuclear | 54 | 15.3 |
| Joint | 299 | 84.7 |
| Religion | | |
| Hindu | 344 | 97.5 |
| Muslim | 9 | 2.5 |
| Category | | |
| General | 122 | 34.6 |
| OBC | 79 | 22.4 |
| Others (SC and ST) | 152 | 43.1 |
| Education of the respondent | | |
| Illiterate | 63 | 17.8 |
| Primary school | 88 | 24.9 |
| Secondary school and above | 202 | 57.2 |
| Occupation of the respondent | | |
| Employed | 84 | 23.8 |
| Housewife | 269 | 76.2 |
| Education of the husband | | |
| Illiterate | 20 | 5.7 |
| Primary school | 50 | 14.2 |
| Secondary school and above | 283 | 80.2 |
| Occupation of the husband | | |
| Employed | 340 | 96.3 |
| Unemployed | 13 | 3.7 |
| Socio-economic status* | | |
| Upper class (I) | 20 | 5.7 |
| Upper middle class (II) | 47 | 13.3 |
| Lower middle class (III) | 73 | 20.7 |
| Upper lower class (IV) | 122 | 34.6 |
| Lower class (V) | 91 | 25.8 |
| Antenatal check-up | | |
| Less than four visits | 128 | 36.3 |
| More than or equal to four visits | 225 | 63.7 |
| Gravida | | |
| Primigravida | 148 | 41.9 |
| Multigravida | 205 | 58.1 |

*Modified B. G. Prasad Socio-economic Scale 2020 was used.

## Discussion

The present study was a descriptive, cross-sectional, facility-based study conducted among pregnant females. The study aimed to find out the knowledge of obstetric danger signs along with the factors associated with them.

A total of 353 pregnant women had participated in this study. The majority of them belonged to the <25 years age group (53.8%). The majority of them were having education of secondary school and above (57.2%) and most of them were housewives (76.2%). A study conducted by Haleema *et al.*[16] found that 87.6% of the study subjects were aged <30 years. Around seventy-four percent of the participants were educated up to grade 10, followed by beyond 10 (25.3%), and most of them were housewives (91.8%). Bhumi *et al.*[12] found that the majority belonged to the age group of 30 years and above (41.2%). The majority of them completed their education up to intermediate (43.4%) and worked as semiskilled workers (43.4%), followed by housewives (30%). Our study showed that 63.7% of the participants were having ≥4 ANC visits and the majority of them (58%) were multigravida. These findings were consistent with the findings of Nithya *et al.*[17] As medical services in the study area are served by a community health centre as well as a RHTC attached to a tertiary care medical college and hospital, It is not difficult for them to get an ANC visit as soon as pregnancy is confirmed. The young age of marriage in the study area leads to early first pregnancy and then subsequent pregnancies.

The present study depicted that majority of the respondents stated abdominal pain as a danger sign during pregnancy (81.9%), while heavy vaginal bleeding as danger signs during labour (77.3%) and post-partum (74.5%). It can be attributed to the educational status of pregnant women as well as their husbands and the mentioned signs are too prominent to be missed. This was very much comparable to the findings of Kumar *et al.*,[18] who found abdominal pain (85.9%) as a major danger sign during pregnancy, heavy bleeding (83.3%) during labour and heavy bleeding (64.8%) during post-partum as major danger signs. In a study done by Wassihun *et al.*[19] vaginal bleeding remained the most common danger sign during pregnancy, childbirth, and the postpartum period.

**Table 2: Knowledge of danger signs during pregnancy, during labour, and postpartum period among pregnant women attending an ANC clinic***

| Name of danger signs | Numbers | Frequency |
|---|---|---|
| Danger signs during pregnancy | | |
| Abdominal pain | 289 | 81.9 |
| Severe fatigue | 248 | 70.3 |
| Vaginal bleeding | 242 | 68.6 |
| Fever | 214 | 60.6 |
| Difficulty in breathing | 202 | 57.2 |
| Persistent headache | 198 | 56.1 |
| Blurring of vision | 175 | 49.6 |
| Swelling/edema of hand/face/feet | 238 | 67.4 |
| Foul-smelling vaginal discharge | 204 | 57.8 |
| Unconsciousness | 171 | 48.4 |
| Convulsion | 178 | 50.4 |
| Pallor | 277 | 78.5 |
| Danger signs during labour | | |
| Heavy vaginal bleeding | 273 | 77.3 |
| Vaginal tear | 244 | 69.1 |
| Water break but labour not induced within 6 h | 219 | 62.0 |
| Green/brown vaginal discharge | 148 | 41.9 |
| Retained placenta for >1 h | 166 | 47.0 |
| Prolonged labour (>12 h) | 172 | 48.7 |
| Fever | 181 | 51.3 |
| Convulsion | 175 | 49.6 |
| Danger signs during post-partum | | |
| Heavy vaginal bleeding | 263 | 74.5 |
| Painful urination | 223 | 63.2 |
| High fever | 200 | 56.7 |
| Hot, swollen, painful breast | 190 | 53.8 |
| Foul-smelling vaginal discharge | 182 | 51.6 |
| Persistent headache | 204 | 57.8 |

*Multiple responses

In the present study, 53% of pregnant women had adequate knowledge of danger signs and 47% had inadequate knowledge, which was quite comparable with the findings of Negese *et al.*[20] Several other studies had shown to vary the proportion of women having good knowledge about danger signs between 32% and 66%.[19,21-23] This difference in the knowledge of danger signs could be attributed to variation in terms of socio-demographic and geographical characteristics, health services coverage, and difference in the sampling technique.

The present study showed that the educational status of pregnant women, antenatal check-up status, as well as gravid status, had significant associations with the knowledge of obstetric danger signs of pregnancy, during labour, and post-natal period ($P < 0.05$). This was in line with the findings of a study done by Abdi.[24] Similar findings were noted by Wassihun *et al.*,[19] Regasa *et al.*,[21] and Liben *et al.*[25] Educated women were more likely to have a better understanding of the information they receive through various media. This might lead to greater access to information regarding health care services. Frequent visit to the ANC clinic would result in more chances of interacting with the health care providers, creating greater awareness of the danger signs among pregnant women. These findings were in contrast with the findings of Mwilike *et al.*,[26] where education, ANC visit, and gravidity had no significant association with the knowledge about the danger signs.

Age, type of family, socio-economic status of the respondent, and education status of husbands did not have any association with obstetric danger signs in our study. Kumar *et al.*[18] also reported that the age of the women and husband's education status did not have any significant association with the knowledge of danger signs, whereas, in contrast to the above finding, the socio-economic status of the mother was associated with the knowledge.

## Strength of this study

The main strength of this study is that only third-trimester pregnant women were included in the study, thus the number of visits were accurately determined, shedding light on the regularity of ANC visits. Study participants, being close to birth, got many benefits from this study as they were sensitized after data collection. The danger signs were documented without being prompted by the interviewer. Interviewer and social desirability bias are less likely as the issue of child-related events is more sensitive, and local language interpreters had been employed who themselves were the paramedical staff.

## Limitation of this study

Our study had certain limitations. Being cross-sectional in nature, the causality of the relationship cannot be established between knowledge of danger signs and various factors. As the symptoms were self-reported, our study was also prone to recall bias.

# Conclusion

About 53% of pregnant women had adequate knowledge of danger signs during pregnancy, childbirth, and the postpartum period. Educational status of pregnant women, antenatal check-up status, as well as gravid status had significant associations with the knowledge of obstetric danger signs of pregnancy, during labour and post-natal period. Age, type of family, their socio-economic status and education status of husbands did not have any association with an obstetric danger sign in the present study.

# Recommendation

Pregnancy-related complications are among the major health problems that women face in developing countries, especially in rural areas. Educating all pregnant women and their caregivers about obstetric danger signs through sensitization campaigns, information, education and communication (IEC), Behaviour change communication (BCC), and designing appropriate strategies for the same, should be carried out both in hospitals and at the community level, regardless of socio-economic

**Table 3: Factors associated with knowledge of danger signs of pregnancy, during labour and post-natal period among study participants (*n*=353)**

| Variables | Knowledge | | $\chi^2$ statistic (Df) | *P* |
|---|---|---|---|---|
| | Adequate | Inadequate | | |
| Age (years) | | | | |
| <25 | 95 (50.0) | 95 (50.0) | 1.46 (1) | 0.227 |
| >25 | 92 (56.4) | 71 (43.6) | | |
| Family type | | | | |
| Nuclear | 27 (50.0) | 27 (50.0) | 0.23 (1) | 0.634 |
| Joint | 160 (53.5) | 139 (46.5) | | |
| Educational status of pregnant women | | | | |
| Illiterate | 10 (16.7) | 50 (83.3) | 73.0 (2) | 0.000 |
| Up to primary school | 50 (40.3) | 74 (59.7) | | |
| Secondary and above | 127 (75.1) | 42 (24.9) | | |
| Educational status of husband | | | | |
| Illiterate | 12 (60.0) | 8 (40.0) | 0.70 (2) | 0.704 |
| Up to primary school | 28 (56.0) | 22 (44.0) | | |
| Secondary and above | 147 (51.9) | 136 (48.1) | | |
| Socio-economic status* | | | | |
| Upper class | 13 (65.0) | 7 (35.0) | 5.7 (2) | 0.056 |
| middle class | 72 (60.0) | 48 (40.0) | | |
| Lower class | 102 (47.9) | 111 (52.1) | | |
| Antenatal check-up | | | | |
| Less than four visits | 2 (1.6) | 126 (98.4) | 213.1 (1) | 0.000 |
| More than equal to four visits | 185 (82.2) | 40 (17.8) | | |
| Gravida | | | | |
| Primigravida | 58 (39.2) | 90 (60.8) | 19.4 (1) | 0.000 |
| Multigravida | 129 (62.9) | 76 (37.1) | | |

*For analysis purposes upper and upper-middle classes have been grouped to make the "upper" category and lower-middle and upper-lower into the "middle" category.

status of beneficiaries**.** This would help them identify danger signs and seek medical care at the earliest. Health care workers working at RHTC need to be more vigilant in imparting the same.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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