Birth Preparedness and Complication Readiness Among Pregnant Women Attending an Urban Health Centre in Surat, India

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ABSTRACT

Background: Birth preparedness is an important strategy to reduce MMR. It includes knowledge of key danger signs; identification of: birth place; birth attendant, fund, transport and compatible blood donor for emergency use beforehand. **Objective:** This study aims to explore birth preparedness in Surat and determine factors associated with it.

Methods: Study conducted facility based cross-sectional study among 310 antenatal women at Urban Health Training Centre attached to Government Medical College, Surat, Gujarat. Predesigned, semi-structured, pretested questionnaire was used for data collection after acquiring informed written consent.

Result: A total of 310 women participated in the study. Mean age of participants was 22.9 ± 3.6 years. Almost one-third (30.3%) of participants were illiterate. Almost six-tenth (61.9%) of participants were involved in unskilled or semi-skilled work and two-fifth (38.1%) of participants were homemakers. Majority of participants (96.7%) were registered in first trimester. Most known factor during pregnancy as danger sign was bleeding (81.9%). BPACR index was calculated as $\sum$Indicator/7 which was observed to be 62.3%. There was statistically significant association between awareness about health problems during pregnancy and type of family.

Conclusion: Raising awareness regarding components of BPACR among antenatal women will help to reduce morbidity and mortality in antenatal women and achieve sustainable development goal.

Keywords: Birth preparedness and complication readiness, Maternal Mortality Ratio, Antenatal women

INTRODUCTION

Pregnancy and motherhood are physiological phenomenon. However, approximately 830 women die from preventable causes related to pregnancy and childbirth every day.[1] Approximately 15% of pregnant women develop life-threatening complications which are unpredictable and may progress rapidly to fatal outcome.[2] Postpartum haemorrhage and pre-eclampsia/eclampsia contribute to 40% of all maternal deaths.[3]

Birth preparedness includes prior knowledge of key danger signs; identification of birth place, preferred birth attendant, nearest appropriate health facility, emergency expense related fund, transport and compatible blood donor for emergency use.[4] Birth preparedness and complication readiness elongates maternal and neonatal health continuum of care and thus comes up with one of the important tools for pregnant women to experience better pregnancy outcome and strengthen family and community health.[5]

Programmatic approach to improve the use and ef-

fectiveness of key maternal and new-born health services, which is based on the premise that preparing for birth and being ready for complications reduces maternal and neonatal deaths.[6]

Women who had history of obstetric problems during the previous pregnancy were found to be more knowledgeable on danger signs related to pregnancy compared to those without any complications during previous pregnancy. Women who were knowledgeable on danger signs were four times more likely to be knowledgeable on Birth Preparedness and Complication Readiness (BPACR) as compared to those who were not knowledgeable.[7]

Having Skilled Birth Attendant at every delivery has been found to markedly reduce maternal morbidity and mortality in countries such as Malaysia and Sri Lanka.[8] Birth Preparedness and Complication Readiness interventions can improve of preparations for birth and complications.[9]

Sustainable Development Goals (SDG) target 3.1 set by United Nations aims at reducing global maternal mortality ratio to less than 70 per 100,000 live births. Maternal Mortality Ratio of India has declined over the years to 103 in 2017-19 from 130 in 2014-2016 [10] and of Gujarat has declined over the years to 75 in 2016-18 from 91 in 2014-2016. [11] There is proof from different studies conducted in different parts of the world that enhancing BPACR improves preventive behaviour, knowledge about danger signs among mothers and leads to improvement in reducing delays in care seeking during obstetric emergency.

Literature review revealed minimal data reporting BPACR status of antenatal women in Gujarat. Therefore, this study was done to assess BPACR status among antenatal women and to study sociodemographic factors affecting BPACR among study participants.

MATERIALS AND METHODS

A facility based Cross-Sectional Study was conducted among antenatal women attendees from November 2020 to April 2021 at Urban Health Centre, Althan, Surat, India, which was chosen purposively. Due permission was obtained from health service provider (Surat Municipal Corporation), and Human Research Ethics Committee of Government Medical College, Surat. Antenatal women of more than twenty weeks of pregnancy who were availing services from UHC were included in the study. Participants who did not gave the consent were excluded. This UHC provides primary healthcare services like immunization, antenatal care, family planning, and treatment of minor ailments to the community.

A predesigned, semi- structured, pilot testing was done for pretesting of questionnaire and it was used for data collection. Proper explanation of the study to the participants was done in a local language they can understand and informed consent form was signed.

Sample size: Desk review was done before conducting this study which revealed that around 5 ANC women were attending UHTC OPD per day. Assuming three interviews per day and 20 working days per month; in 6 months of study duration, approximately 300 to 350 ANC were feasible to study after considering a drop out of 15%. A total of 310 antenatal women who attended antenatal clinic of UHC were consecutively included in the study.

Study tool: The questionnaire was divided into four sections assessing "Socio demographic details", "Awareness about danger signs", "Birth preparedness" and "Knowledge about Janani Suraksha Yojana (JSY)". Majority of the questions were close ended with multiple response and few were close ended with binary response.

Sociodemographic details included age, religion, type of family, number of family members, family's monthly income, education of participant, education of husband, occupation of participant, occupation of husband and obstetric history.

For evaluation of awareness about danger signs during pregnancy and labour.

For birth preparedness, firstly awareness about the term birth preparedness was asked. After that the constituents of birth preparedness including identification of mode of transport, saving money, skilled provider and blood donor were enquired about.

Awareness about JSY was evaluated and its benefits were enquired.

BPACR index was calculated from the following indicators: [12]

- Percentage of the women who knew about > 8 danger signs of pregnancy.
- Percentage of the women who knew about financial assistance provided by government in Janani Suraksha Yojana (JSY).
- Percentage of the women who knew about transportation provided by government in JSY.
- Percentage of the women who availed Antenatal Care (ANC) in 1st trimester by skilled provider.
- Percentage of the women who identified skilled birth attendant for delivery.
- Percentage of the women who identified mode of transportation.
- Percentage of the women who saved money to pay for expenses.

BPACR index was calculated as $\sum$Indicator/7

Pre testing of the questionnaire was done prior to the study using a pilot test on 10 participants. Content and Face Validity was established by Expert Analysis and Discussions.

A Knowledge Score was given on the basis of parameters defining Birth Preparedness including

knowledge about prior Identification of Skilled Birth Attendant, Blood Donor, Transport and Financial Savings. Participants were also asked if Birth Complications can occur to mother or baby. Each of these responses were graded 1 for Yes and 0 for No. So, Knowledge Score total was 6.

Data collection and analysis: Study Participants were explained about the study in a language they could understand. Informed written consent was obtained from the participants and they were allowed to drop out of the interview anytime. Data collection was done by face-to-face interview using data collection tool. Average duration of interview was 10-15 minutes. Interview was conducted by principal investigator. Data entry was done in Microsoft excel and analysis was done in SPSS trial version 23. Univariate analysis was done including descriptive statistics of mean, standard deviation, frequency and percentage. Bivariate analysis was done by using chi square test between birth preparedness and sociodemographic factors, $p<0.05$ was taken as statistically significant. Birth preparedness has been measured by making preparedness scale using four items. Participants who scored more than fifty percent were counted as well prepared and who scored less than fifty percent were counted as less prepared. [1] Binomial Logistic Regression was applied for evaluation of predictors of Birth Preparedness.

RESULTS

A total of 310 women participated in the study. Mean age of participants was 22.9 ± years with nearly equal participants (28.1% and 19.0%) in 23-27 years and 28-32 years age group, respectively and 52.9% in 18-22 years. Almost one third (30.3%) participants were illiterate as compared to only (14.5%) of their husbands. Highest educational level for most of participants (38.4%) was higher secondary. Ninety-seven (31.3%) participants were graduates or professionals as compared to two-fifth (42.9%) of their husbands. Almost six-tenth (61.9%) participants were involved in unskilled or semiskilled work and two-fifth (38.1%) participants were homemakers. Similarly, Majority of spouse (64.8%) were employed and one hundred nine (35.2%) were unemployed. Around two-fifth (41.0%) participants stayed in joint family. Majority of the subjects (49.4%) were Hindus followed by (47.1%) Muslims and Christians (3.5%). More than half of the women were nulliparous (57.4%), 22.3% were para one, 13.8% were para two and 20 women (6.5%) were para three. Around one-third (35.5%) of participants belonged to upper middle class followed by 33.5% participants who belonged to middle class according to B G Prasad classification.

BPACR index was found to be 62.3% and association between type of family and awareness about severity of health problems during pregnancy was statistically significant (p<0.01).

Table 2 shows the awareness of study subjects regarding various aspects of antenatal care. Majority of participants (96.7%) were registered in first trimester. Around seven tenth (68.4%) participants taken at least four ANC visits.

Table 3 shows association between sociodemographic factors and Birth Preparedness, chi square test was applied between birth preparedness and various sociodemographic factors. It revealed that there was a statistically significant association between occupation of spouse and birth preparedness. Otherwise, Education of women, Education of spouse, Occupation of women, Parity and knowledge score had no significant relation with birth preparedness level.

Table 1: Awareness of antenatal women regarding various danger signs during pregnancy and labour

Awareness	Participants(%)
Awareness of danger signs during pregnancy	
Knowledge about financial assistance and transport provided in JSY	196 (63.2)
Bleeding	254 (81.9)
Severe headache	81 (26.1)
Blurred vision	33 (10.6)
Convulsion	22 (7.1)
High fever	66 (21.3)
Loss of consciousness	24 (7.7)
Difficulty in breathing	30 (9.7)
Severe weakness	115 (37.1)
Severe abdominal pain	119 (38.4)
Accelerated/reduced fetal movement	84 (27.1)
Water breaks without labor	103 (33.2)
Don't know	6 (1.94)
Awareness of danger signs during labour	
Severe bleeding	275 (88.7)
Severe headache	60 (19.4)
Convulsion	37 (11.9)
High fever	21 (6.8)
Loss of consciousness	164 (52.9)
Labor lasting >12 hours	121 (39)
Delayed placental delivery	82 (26.5)
Don't know	2 (0.64)

Almost all (98.06%) participants knew at least one key danger sign of pregnancy. Majority of the participants (99.35%) know at least one key danger sign of labour.

Table 2 Status of birth preparedness among antenatal women (310)

Variable	Women (%)
ANC Registration and care in first trimester	300 (96.7)
At least 4 or more ANC visits done	212 (68.4)
Identified skilled birth attendant for delivery	271 (87.4)
Identified mode of transportation	238 (76.8)
Saved money to pay for expenses	215 (69.4)
Identification of blood donor for obstetric emergency	32 (10.3)

Table 3: Association between sociodemographic factors andbirth preparedness (n=310)

Socio demographic factors	Birth preparedness		Chi square value	p-Value	aOR (CI)
	Less prepared	Well prepared			
Age (Years)					
18-22	88	76	3.79	0.15	1
23-27	42	45			1.163 (0.678-1.996)
28-32	23	36			1.690 (1.100-3.170)
Type of family					
Nuclear family	34	44	3.23	0.19	1
Joint family	60	67			0.838 (0.468-1.498)
Three generation family	59	46			0.627 (0.341-1.152)
Education of women					
Illiterate	44	50	0.43	0.80	1
Class 12 or below	59	60			0.886 (0.486-1.612)
Higher than class 12	50	47			0.810 (0.412-1.593)
Education of spouse					
Illiterate	20	25	0.51	0.77	1
Class 12 or below	66	66			0.842 (0.414-1.711)
Higher than class 12	67	66			0.765 (0.376-1.557)
Occupation of women					
Housewife	56	62	0.27	0.60	1
Job	97	95			0.903 (0.560-1.456)
Occupation of spouse					
Unemployed	62	47	3.81	0.05	1
Employed	91	110			1.549 (1.012-2.509)
Parity					
Nulliparous	88	90	0.001	0.97	1
Primi and multipara	65	67			1.164 (0.679-1.996)
Knowledge score					
0-3	89	81	1.35	0.24	1
4-6	64	76			0.737 (0.462-1.175)

Participants belonging to age group of 28-32 years and Occupation of Spouse were the independent predictor for well birth preparedness in this study.

DISCUSSION

Birth preparedness component motivates people to identify skilled provider beforehand, to save money for any complication if arise in emergency, to prepare for transport and to identify compatible blood donor. This study was conducted among 310 antenatal women to understand awareness about complications and extent of birth preparedness.

In this study, BPACR index came out to be 62.3%. BPACR index of our study was lower than that observed by Sharma et al. [13] (66.9%) on the contrary it was higher than that observed by Patil et al. [14] (55.83%), Gupta et al. [15] (46.2%), Acharya et al. [12] (41%) and Mukhopadhyay et al. [16] (34.5%). This study was conducted in a health care setup with antenatal women more than 20 weeks included in this study. Participants have undergone regular checkups and counselling which might have increased their knowledge. Our study reported that majority of women (41.0%) belong to joint family followed by three generation family (33.9%) and nuclear family (25.2%). Similar results were met with the study of Acharya A et al, in Delhi, India revealed that more than half (56.6%) the subjects stayed in joint families, whereas 43.4% belonged to nuclear families showing similarity in Study settings. [12]

In this study, the proportion of women aware of at least one key danger sign each of pregnancy, labor and postpartum were 98.06%, 99.35% and 93.87% respectively. However, the study by Mutiso et al. found that 67% of the respondents knew at least one danger sign in pregnancy while only 6.9% knew of three or more danger signs. [2] In our study, the commonest danger sign known to the participants was bleeding which was similar with study conducted by Chidebe et al. among pregnant women in secondary health facility, Nigeria. [17] Our study shows that 21.3% of the participants were aware about high grade fever while only 5.7% participants were aware about the same in study by Smeele et al. [18] Different symptoms and complications are prevalent across different parts of the world and higher prevalent symptoms become common knowledge among the people living there. This creates a scope of different findings in different studies.

In this study, 238 (76.8%) participants had identified transport, which is higher than study of Smeele et al. (21.7%), [18] Hailu et al. (7.7%) [19] and Gebre et al. (18.1%). [20] In this study, 215 (69.4%) participants had saved money which is lower than study of Smeele P et al. (87.4%) [18] but higher than Gebre et al. (54.1%). [20] In our study, 271 (87.4%) participants had identified skilled provider which is higher than study by Hailu et al. (20.5%) [19] and Gebre et al. (10.7%). [20] This study found that only 32 (10.3%) participants had identified blood donor which is comparable with Hcii O et al.'s study (15%) [21] but

higher than Geber et al. (3%). [20] All four Birth preparedness constituents are equally important and help in risk reduction of a wide range of complications. Hence emphasis should be given to all these rather than according to convenience of preparation.

In this study, type of family was not significantly associated with birth preparedness level. However, type of family is significantly associated with birth preparedness in study by Teekhasaenee T et al. [22] In study conducted at Delhi, parity, younger age, education, joint family system, and husband's education and occupation were associated with having a birth plan [12] similarly, husband's occupation significantly associated with birth preparedness in our study. On the contrary, age, type of family, education, occupation, husband's education, parity and knowledge score were not significantly associated with birth preparedness in our study. Woman's education and her spouse's education were strong predictors of BPACR in the study done in rural Uganda [23] and a study done in Kenya [2] which is contrary to our study. Population characteristics, difference in study tool and study setting might be factors for varied results across different studies across the globe.

Participants belonging to age group of 28-32 years and Occupation of Spouse were the independent predictor for birth preparedness in this study which is similar with the study done by Ananche et al. age 18–19 years (AOR = 0.18; 95% CI (0.04,0.94)).[24] and Akshaya et al. age >26 years (adj OR = 2.97; 95%CI: 1.15-7.7).[3] In Developing Countries, knowledge related to pregnancy and preparedness is passed on across generations or gained through experience. This might be a major reason for higher age group having better birth preparedness in this study and studies with similar study settings. Support from spouse and his ability to help in preparedness would also be a major factor for a smooth pregnancy experience.

CONCLUSION

This is a cross sectional study among 310 antenatal women. This study shows BPACR index was 62.3%. Higher Age group and Employed Status of Spouse were found to be significant predictors of Well Birth Preparedness. However, the four major constituents are not given equal significance with factors like Identification of blood donor lagging behind.

RECOMMENDATION

ANC women should be empowered by meaningful counselling for birth preparedness and complications readiness. A well planned and well-designed IEC should be created among community.

LIMITATION

This was a cross sectional study which will not reveal temporality. This study results cannot be generalised as Urban health centre was selected purposively.

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