



Birth Preparedness and Complication Readiness among Women Availing Obstetric Services at a Rural Maternity Hospital in South Karnataka, India

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Abstract

Birth Preparedness and Complication Readiness (BP/CR) is a strategy to promote the timely use of skilled maternal and neonatal care, especially during childbirth, based on the theory that preparing for childbirth and being ready for complications reduces delays in obtaining this care and prevents many maternal and neonatal deaths. The objective of study is to assess birth preparedness and complication readiness (BP/CR) and its associated factors among women availing obstetric services at a rural maternity hospital in south Karnataka. A cross sectional study was carried out at a rural maternity hospital from Jan-Feb 2016. Convenience sampling was used to study 200 women attending the hospital for delivery. An interview schedule consisting of socio-demographic details and assessment of BP/CR (JHPIEGO tool for monitoring BP/CR (2004)) was used. Among the 200 women interviewed, 76% were aware of any one danger sign in women during pregnancy, 23.5% during labour, 23.5% after giving birth and 61% in a newborn. The proportion of woman who was aware of any three danger signs was found to be extremely low. All had, in advance arranged money for delivery, 34% had arranged for transport, 72% had identified the health facility for delivery and none had identified a blood donor. There was poor knowledge about key danger signs in women during pregnancy, labour, post partum and in the new born which would lead to first delay. Knowledge about BP/CR is insufficient especially in case of identifying transport and blood donor which may lead to second delay. BP/CR should be discussed repeatedly during antenatal visits.

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Birth preparedness, complication readiness, antenatal women, rural.

Introduction

Maternal mortality is the priority issue in health policy and research in developing countries due to high rates of maternal deaths. Globally an estimated 2,87,000 maternal deaths occurred in 2010 of which 19% (56,000) was recorded in India. Most of maternal deaths occur in the developing world. (Statistical Inst, Delhi, 2012). As per Office of Registrar General of India estimate in 2011-13, the Maternal Mortality Ratio (MMR) in India

was 167 per one lakh live births and in Karnataka was 133 per one lakh live births respectively. These figures are higher with respect to country's Millennium Development Goal to reduce MMR by 109 per one lakh live births by 2015 (MDG, 2015).

Thaddeus and Maine have documented "three delays" in seeking, reaching, and obtaining appropriate care as the crucial factors for maternal mortality, Thaddeus *et al.*, (1994). The Maternal and Neonatal Health (MNH)

Program of Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) developed the birth-preparedness and complication readiness matrix to address these three delays at various levels, including the pregnant woman, her family, her community, health providers, health facilities, and policy-makers during pregnancy, childbirth, and the postpartum period (JHPIEGO, 2001).

Birth Preparedness and Complication Readiness (BPCR) is the process of planning for normal birth and anticipating the actions needed in case of an emergency. It includes identifying a trained birth attendant for delivery, identifying a health facility for emergency, arranging for transport for delivery and/or obstetric emergency, and saving money for delivery and identification of compatible blood donors in case of emergency. Complication readiness raises awareness of danger signs among women, families, and the community, thereby improving problem recognition, reduces the delay in deciding to seek care and hastens reaching medical facilities (JHPIEGO, 2001).

This study aims to assess the birth preparedness and complication readiness (BP/CR) and its associated factors among women availing obstetric services at a rural maternity hospital in south Karnataka. The findings of this study will provide important information regarding prevalence, practice and determinants of BP/CR. This will help policy makers and public health specialists to design community based interventions which will encourage pregnant women and their families to be prepared for birth and its complications.

Materials and Methods

This was a cross sectional study done during the period of January-February 2016. Institutional Ethics approval was obtained for the study. The sample size calculated was 200 by using BPCR index (41%) from a similar study conducted in Delhi, Acharya *et al.*, (2015). 200 women attending a rural maternity at Ramanagara taluk in southern Karnataka for delivery were interviewed. A written informed consent was taken prior to interview. The interview schedule was divided into three sections: Section I -socio demographic detail of the subjects, Section II -obstetric details of the subjects, Section III-Knowledge of birth preparedness and its practices. The questionnaire was adapted from the 'Monitoring birth preparedness and complication readiness- tools and indicators for maternal and newborn health matrix' from

the Maternal and Neonatal Health (MNH) Program of the JHPIEGO (2004).

The data was entered in Microsoft Excel and analyzed using SPSS version 16. Measures of central tendency like mean and standard deviation were used to describe the socio-demographic variables. Test of association like chi-square test and Fischer's exact test were performed to look for association between various socio-demographic and obstetric factors, and BPCR.

Results and Discussion

The questionnaire was administered to 200 women attending the hospital for delivery and the response rate was 100%.

Of the 200 women interviewed, mean age was $22.74 + 2.607$ years. The youngest was 18 years and the oldest 31 years. Majority were home makers (96%) and most of them belong to either joint/extended/three generation family (80.5%). Majority of them were Hindu by religion (86%). The mean duration of schooling was $11.9 + 2.73$ years and the mean number of family members was found to be 5.3 ± 1.653 . The average per capita income was Rs 1896 +1893.9 (IQR: 1000-2249) and majority of them belong to lower socio economic status according Modified B G Prasad classification. 5.5% of them were married before 18 years of age. Mean age at marriage was 20.31 ± 1.95 years and (range=15-25 years). The mean gestational age of the study population was 39.05 ± 0.9 weeks. The average number of antenatal visits done was $12.1 + 1.88$. Most of the women were primigravida 133(66.5%). About 18(9%) of the study subjects had previous history of abortion and 5(2.5%) had reported previous deaths of the children.

About 24% of the respondents were not aware of any danger signs and 76% reported any one danger sign during pregnancy. 76.5% of them don't know any danger signs during labour and delivery and 23.5 % reported any one danger sign during labour and delivery. Majority of them (76.5%) don't know any danger signs in post-partum period and 23.5% knew any one danger signs in post-partum period. 39% of the respondent doesn't know any danger signs in new born child and 61% knew any one danger signs in a new born child. In advance, all the study subjects had arranged money for delivery, 34% had arranged for transport, 72% had identified the health facility for delivery and none had identified a blood donor. (See Table 3)

Women above the age group of 21 years had identified the mode of transport in advance as compared to younger women (<20 years) and which was statistically significant (See Table 4). Women receiving formal education more than 10 years had identified more, the place delivery and mode of transport as compared to other group (<10years) and it was not statistically significant. Also there was no statistically significant difference in the knowledge on danger signs either during pregnancy, labour, post partum period, in the new born and educational levels of respondent.

Women from upper class and upper middle class have better knowledge of danger signs in the new born and it was statistically significant. Also statistically significant difference was seen among the lower SES classes against the knowledge of danger signs in the women during pregnancy.

Multi gravid women had statistically significant better knowledge of danger signs during pregnancy as compared to primigravida women.

Information provided by the health care providers was found to be low. About 34.5% were informed of the danger signs during pregnancy, labour, post partum period and in the new born. Health care providers had informed in advance: to arrange transport at the time of

delivery (37.5%), to save money for the delivery (36%) and to identify the place of delivery (34.5%). None of them had advised to arrange a blood donor in advance. (Table 5).

In this study, of 200 antenatal woman 76% were aware of any one danger sign in women during pregnancy, 23.5% during labour, 23.5% after giving birth and 61% in a newborn. The proportion of woman who was aware of any three danger signs was found to be extremely low. The findings in this study was higher compared to the study results conducted by Acharya *et al.*, (2015), among the antenatal women in Delhi in 2012 as 27.8% were aware of any one danger sign during pregnancy, 6.7% during labour and 0.7% after giving birth,. Another study conducted among the antenatal women in 2nd /3rd trimester and recently delivered women in west Bengal in 2011 reported that, among the 117 antenatal women 14.5% were aware of any one danger sign in women during pregnancy, 17.1% during labour, 12.8% after giving birth and 29.1% in a newborn. And the awareness among the recently delivered women (<1 year) reported that 23.5% were aware of any one danger sign in women during pregnancy, 18.1% during labour, 8.8% after giving birth and 41.2% in a newborn, Mukhopadhyay *et al.*, (2015). A study done in Nigeria in 2004 among the antenatal women reported that 49.6% were aware of the danger signs during pregnancy, labour and after giving birth (Tobin *et al.*, 2014).

Table.1 Number of key danger signs mentioned by antenatal women during pregnancy, labour and child birth, after child birth and in newborn.(n=200)

No. of danger signs	Key danger signs during pregnancy (%)	Key danger signs during labour (%)	Key danger signs after child birth (%)	Key danger signs in newborn (%)
Did not know any key danger sign	47(23.5)	153(76.5)	149(74.5)	74(37)
Any 1 danger sign	131(65.5)	41(20.5)	42(21)	88(44)
Any 2 danger sign	17(8.5)	5(2.5)	9(4.5)	32(16)
Any 3 danger sign	5(2.5)	1(0.5)	0(0)	6(3)

Table.2 Distribution of study population according to awareness of key danger signs in Pregnancy, Labour/Childbirth, Post partum and Newborn Period (n=200)

Awareness of key danger signs	Frequency n (%)
1. Key danger signs during pregnancy	
Severe vaginal bleeding	149 (74.5)
“Water break” without labour	19 (9.5)
Convulsions	6 (3)
Absence of foetal movements	4 (2)
Swollen hands or face	3 (1.3)
Blurred vision	3 (1.3)
Reduced foetal movements	3 (1.3)
2. Key danger signs during childbirth & labour	
Labour duration > 12 hours	26 (13)
Severe vaginal bleeding	19 (9.5)
Convulsions	9 (4.5)
Retained placenta	7 (3.5)
3. Key danger signs in women after child birth	
High fever	23 (13)
Vaginal bleeding	19 (9.5)
Foul smelling discharge	9 (4.5)
Pain/swelling in Breast	9 (4.5)
4. Key danger signs in newborn	
Fever/hypothermia	71 (35.5)
Yellowing of skin	42 (21)
convulsions	22 (11)
Fast breathing	19 (9.5)
Poor feeding	16 (8)

Table.3 Status of Birth Preparedness and Complication Readiness indicators among the Study Population (n=200)

Indicators	Frequency (%)
Identified place of delivery	144 (72)
Identified mode of transport	68 (34)
Saved money	200 (100)
Identified a blood donor	0 (0)

Table.4 Association of socio-demographic and obstetric factors with BP/CR

Variable	Category	Study subjects	At least one key danger sign of pregnancy	At least one key danger sign of labor	At least one key danger sign of postpartum	At least one key danger sign of newborn	Identified place of delivery	Identified mode of transport
Age group	18-20	42	28 (66.7)	10 (23.8)	12 (28.6)	25 (59.5)	30(71.4)	6(14.3) *
	21-25yrs	127	100(78.7)	30 (23.6)	32 (25.2)	79(62.2)	91 (71.7)	51 (40.2)
	> 25yrs	31	24(77.4)	7 (22.6)	3 (9.7)	18(58.1)	23(74.2)	11 (35.5)
Religion	Hindu	172	129(75)	39(22.7)	40(23.3)	103(59.9)	124(72.1)	61(35.5)
	Muslim	18	15(83.3)	6(33.3)	2(11.1))	12(66.7)	2(11.1)
	Christian	10	8(80)	2(20)	5(50)	11(61.1)	8(80)	5(50)
Education	0-5	9	9(100)	2(22.2)	2(22.2)	6(66.7)	5(55.6)	3(33.3)
	6-10	70	54(22.9)	19(27.1)	19(27.1)	45(64.3)	55(75.7)	29(41.4)
	>10	121	89(73.6)	26(21.5)	26(21.5)	71(58.7)	86(71.1)	71(58.7)
Occupation	Home makers	192	147(76.6)	46(24)	46(24)	118(74)	139(72.4)	62(32.3)
	others	8	5(62.5)	1(12.5)	1(12.5)	4(50)	5(62.5)	6(75)
Type of family	Nuclear	39	23(59) *	7(17.9)	9(23.1)	28(71.8)	25(64.1)	13(33.3)
	Three/extended /joint	161	129(80.1)	40(24.8)	38(23.6)	94(58.4)	119(73.9)	15(34.2)
Socio economic status (Modified BG Prasad)	Class I	2	1(50) *	1(50)	1(50)	2(100) *	1(50) *	0(0)
	Class II	11	4(36.4)	5(45.5)	3(27.3)	9(81.8)	8(72.7)	2(18.2)
	Class III	57	46(80.7)	13(22.8)	14(24.6)	42(73.7)	33(57.9)	25(43.9)
	Class IV	104	79(76)	21(20.2)	24(23.1)	54(51.9)	78(75)	32(30.8)
	Class V	26	22(84.6)	7(26.9)	5(19.2)	15(57.7)	24(92.3)	9(34.6)
Gravida status	Primi	133	99(74.4)	34(25.6)	31(23.3)	82(61.7)	95(71.4)	44(33.1)
	Multi	67	53(79.1)	13(19.4)	16(23.9)	40(59.7)	49(73.1)	24(35.8)
Abortion	Yes	18	12(66.7)	4(22.2)	1(5.6)	9(50)	14(77.8)	3(16.7)
	No	182	140(76.9)	43(23.6)	46(25.3)	113(62.1)	130(71.4)	65(35.7)

*p value<0.05 (statistically significant)

Table.5 Information provided from health care providers (n=200)

Information regarding	Frequency (%)
Danger signs during pregnancy, labour, post partum period and in newborn	69 (34.5%)
Identification of the place of delivery in advance.	69 (34.5%)
Informing arrangement of transport in advance.	75 (37.5%)
Educating to save money for the delivery in advance	72 (36%)
Arrangement of the blood donor in advance.	0 (0%)

Home makers were more aware of the key danger signs than working class women. This could be probably due to the ASHA/ANMs had better opportunity to educate the home makers as compared to working class women. Women belonging to the three generation/extended/joint family were more aware of key danger signs during pregnancy as compared to those staying in nuclear family and the difference found to be statistically significant. Women of high socio economic status were more aware of the key danger signs in the new born and it was statistically significant. Women belonging to the low socio economic status were more aware of key danger signs during pregnancy which was statistically significant.

A study done by Acharya *et al.*, (2015), showed that parity, younger age, education, joint family system, and husband's education and occupation were associated with having high BP/CR. Woman's education and her spouse's education up to middle school and above were strong predictors of BPACR.

In the present study, all had in advance arranged money for delivery, 34% had arranged for transport, 72% had identified the health facility for delivery and none had identified a blood donor. A study done by Acharya *et al.*, (2015) among the antenatal women reported that 81.1% had identified skilled provider for delivery, 48.9% had saved money and 44.1% had arranged transport in advance. A study done by Tobin *et al.*, (2014) in Nigeria reported that 87.4% had identified the place of delivery in advance and 11.3% had saved money.

In this study women above the age group of 21 years had identified the mode of transport in advance as compared to younger women (<20 years) and which was statistically significant. Most of the study subjects belonged to the age group of 21-25 years out of which

40.2% had identified the mode of transport in advance. Women with higher educational status (<10 years) had identified mode of transport in advance than lower educational status women though the difference was not statistically significant. Lower socio-economic status women had identified the place of delivery more compared to higher socio economic status women and the difference was statistically significant.

None of the women interviewed had identified the blood donor and all of them had saved money for the delivery in advance. A study done by Acharya *et al.*, (2015) reported that education of women and their husbands, occupation of husband and type of family were statistically significantly associated with the women who had made arrangements for transport before delivery.

In conclusion, there was poor knowledge about key danger signs in women during pregnancy, labour, post partum and in the new born which would lead to first delay. Socio demographic factors like age, type of family and socio economic status found to be significantly associated with BP/CR. Knowledge about BP/CR is insufficient especially in case of identifying transport, saving the money for delivery and blood donor which may lead to second delay. And information provided by the health care providers was found to be low. Thus knowledge regarding BP/CR needs to be imparted to all pregnant mothers from first antenatal visit and should be reinforced subsequently at each ante natal visits or the during the home visits done by the health care providers.

Recommendations

Information regarding BPCR should be advocated to pregnant women during routine antenatal visits as well as from village level workers like ASHA and Anganwadi worker during their home visits. Health education

sessions to be conducted among the antenatal women in the community including the women of reproductive age group regarding BPCR and its components. Training programmes to be held for the health personnel working specifically at the grass root level like ASHA, Anganwadi worker about the components of BPCR and advised them to reinforce the components of BP/CR to pregnant women at each visits made by them.

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