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Birth Preparedness and Complication Readiness among Women of Child Bearing Age in Peri Urban Areas of Lahore

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ABSTRACT

Background: Globally, many initiatives have been taken to ensure safe motherhood. World Health Organization recommends birth preparedness and complication readiness (BPCR) as a strategy to improve maternal well-being. **Objective:** The study aimed to assess birth preparedness and complication readiness among women of child bearing age residing in peri-urban area. **Study Design:** Community based cross-sectional study. **Settings:** Three Peri-urban areas of Lahore Pakistan. **Duration:** June 2022 to October 2022. **Methods:** Data was collected by a validated questionnaire. Convenience sampling was used to include 391 women who delivered in last 12 months. BPCR was measured using items like identification of skilled birth attendant, decision regarding place of delivery, plan of transportation and saving money. Women who scored 3 or more were labeled "well prepared". Participants who mentioned two or more danger signs in pregnancy, delivery and post-partum, were labelled knowledgeable for each phase. Data was analyzed in SPSS version 23. Chi square test was applied. p value ≤ 0.05 was labelled as significant. **Results:** Mean age of respondents was 26.8 ±5.4 years. About 307(78.5%) were well prepared. BPCR was significantly associated with education level of spouse (p=0.03), no of ante natal visits (p=0.05), being informed about BPCR (p<0.001), place of delivery (p= 0.008), knowledge about danger sign in pregnancy (p=0.02) and knowledge about the danger signs in labor (p=0.04). **Conclusion:** Significant proportion of participants was well prepared. BPCR was significantly associated with spouse's education level, no of ante natal visits, information about BPCR, place of delivery and knowledge about danger sign.

Keywords: *Birth preparedness, Child bearing age, Complication readiness, Pregnancy, Women.*

INTRODUCTION

During pregnancy unexpected life-threatening complications may emerge in any phase, from conceiving the baby till the end of puerperium.[1]

Maternal mortality is a great tragedy and its toll is very high in low and middle-income countries like Pakistan. World Health Organization (WHO) approximated that 463 mortalities occurred due to pregnancy related causes per 100,000 live births in low-income countries, while in high income countries the ratio was only 11 per 100,000 live births.[2] In Pakistan, the ratio of maternal mortality per 100,000 live births is as high as 186.[3] According to an estimate, about 28% women have availed the antenatal care in Pakistan. Assistance of trained birth attendants was available for approximately 52 % births in our country.[4] Fortunately, some interventions have been designed to address this public health concern.[5]

Birth preparedness and complication readiness is an effective intervention which enable expecting mothers, to make plan for child births and to face complication which may arise unexpectedly.[6] BPCR includes decision about place of delivery, to avail services of a trained birth attendant, saving amount required for expenditures, making arrangement for transportation and timely recognition of danger signs.[7]

Across the globe, preparedness for birth and ability to effectively deal with emergency situations vary depending upon level of literacy and access to health services. Findings of a study carried out in Thailand reflected that 78.6% women were well prepared[1]. Another research conducted in India showed that level of preparedness was satisfactory in 58.5% pregnant females. About 94.5% had identified skilled birth attendant, however, majority was not aware about the danger signs.[8] A study conducted in Peshawar described that 72.4% respondent did not have information about BPCR. Planning for transport were done by 4.7%, funds were arranged by 22.4% and identification of birth attendant by 42.4%.[9]

According to recommendation of WHO 'antenatal care' (ANC) should be provided to every pregnant woman. BPCR is a key component of focused ANC.[10] Scaling up BPCR and provision of appropriate health care during pregnancy, labour and puerperium are pre requisites of improving maternal wellbeing.[10] Sustainable Development Goals (SDGs) is a road map to reduce morbidities and to save women's lives. Target 3.1 of SDG 3 calls for reduction of maternal mortality below 70 deaths per 100,000 live births across the globe, by 2030.[11] This goal can be achieved by promoting BPCR in every pregnancy.

After assessing BPCR, the findings of the research can be shared with policy makers, implementers, health personnels and the community. Very little work has been done to determine the status of preparedness for child birth and readiness to deal with complications in Pakistan. This research was conceptualized to fill the gap by assessing the current situation of BPCR among women of child bearing age residing in peri urban localities of Lahore.

METHODS

This community based cross-sectional study was conducted from June 2022 to October 2022 in three peri urban areas of Lahore Pakistan (Maraka, Sham ki Bhattian, Raiwind). All three selected areas have the coverage of lady health workers (LHW) programme.

Samling was done by convenience sampling technique. Cochran's sample size formula was used to calculate sample size.

$n = Z^2 pq / e^2$

Where: n was the sample size, Z = 1.96 and (p)(q) represented the estimate of variance and e was the acceptable margin of error. Keeping confidence level at 95% and margin of error at 5%, sample size of 384 was calculated. However, 391 respondents were interviewed and included in data analysis.

Women aged 18-49 years, residing in peri urban areas (Maraka, Sham ki Bhattian and Raiwind) and who delivered during past 12 months preceding the study were included. The women suffering from severe mental or physical illness or not willing to participate were excluded. Approval was granted by IRB of Akhtar Saeed Medical and Dental College Lahore (IRB Ref no: M-22/84/-CM). Data regarding birth preparedness and complication readiness was collected using a standardized pre-designed questionnaire by JHPIEGO (affiliate of Johns Hopkins University).[12] The questionnaire consisted of four sections. Sociodemographic profile, obstetric data, BPCR level and awareness of obstetric danger signs were recorded in section 1, 2, 3 and 4 respectively.

Level of BPCR was calculated on the basis of following four steps taken by respondent: a) identification of a skilled birth attendant, b) identification of place of delivery, c) identification of a means of transport to reach health facility, d) saving money for hospital expenditures/ delivery related items. Women answering 'yes' to at least three of these four questions were labeled 'well prepared'. Remaining women were labeled 'less prepared'. Women mentioning of at least two danger signs in each period (pregnancy, childbirth or postnatal) without prompting were considered knowledgeable about danger signals for each category.

Calculation of frequency and proportions was done for categorical variables. Mean and standard deviation were calculated for continuous variable. SPSS version 23 was used for data entry and analysis. Chi square test has been applied to find the association between the variables. p value ≤ 0.05 was considered as significant.

RESULTS

Mean age of participants was 26.8 ±5.4 years. Among total, 342 (87.5%) were house wives. Only 86(22 %) have health insurance coverage, mainly be Sehat Insaaf card while 305(78%) did not have health insurance. Television was the most accessible mass media as reported by 330(84.4%) study participants. Majority of the respondents, 207(52.9%) stated that husband was the decision maker for health service seeking. Mother-in-law was the decision maker for 51(13%) and other relatives were decision makers for 22(5.6%) women, while 111(28.4%) had the autonomy for decision making regarding health care seeking. Details are shown in table 1.

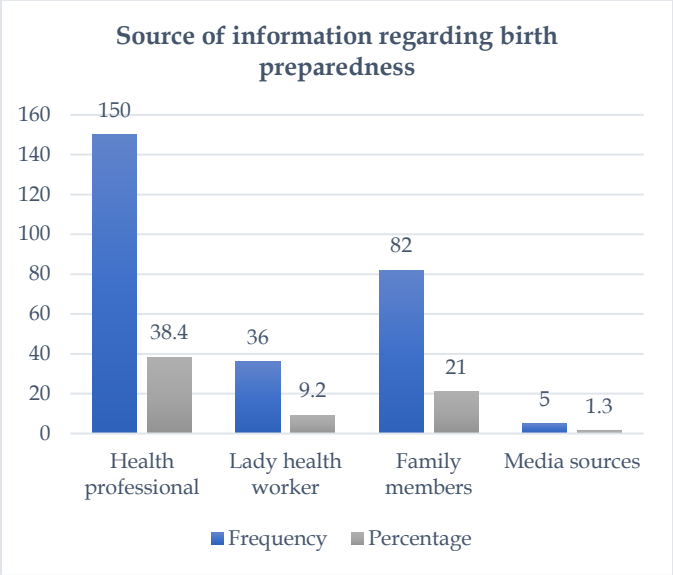
The obstetric characteristics showed that 84(21.5%) were primigravida, 250(64%) had their first ante natal checkup before 12 weeks of pregnancy. About 372(95%) attended antenatal checkup and among those 205(52.4%) women attended the recommended four visits.

Out of 391 respondents, about 273(70%) have heard the term of birth preparedness while 118(30%) have never heard this term. In majority cases (150, 38.4%) source of information was health professional (Figure 1).

Table 1: Socio demographic characteristics of participants

Socio demographic variables	Frequency	Percentage
Participant's age		
≤ 25 years	160	40.9
26-35 years	203	51.9
More than 35 years	28	7.1
Educational level		
Illiterate	121	30.9
Primary	85	21.7
Secondary/Higher secondary	127	32.5
Graduate or above	58	14.8
Occupation of participant		
House wife	342	87.5
Public sector employee	18	4.6
Private sector employee	10	2.6
Other	21	5.4
Education of husband		
Illiterate	102	26.1
Primary	71	18.2
Secondary/Higher secondary	155	39.6
Graduate or above	63	16.1
Monthly family income in Pak rupees		
Less than 10000	19	4.9
10000 -500000	348	89
> 50000 - 100000	19	4.9
>100000	5	1.3
Distance between residence and nearby health facility		
Less than one hour	195	49.9
1-2 hours	182	46.5
More than 2 hours	14	3.6
No of pregnancies		
1	84	21.5
2 or 3	188	48.1
4 or above	119	30.4

Figure 1: Sources of information



Among total 391 women, 369(94.3%) had identified place of delivery, 311(79.5%) identified skilled birth attendants, 278(71%) saved money and 290 (74.1%) identified a mode of transportation. A significant proportion of respondents, 307(78.5%) were well prepared while 84(21.5%) participants were less prepared.

Out of 391, 208 (53.2%) had knowledge about two or more danger signs during pregnancy. While 201(51.4%) and 207 (52.9%) knew about two or more danger signs during labour and post-natal period. Severe vaginal bleeding was most frequently reported danger sign during pregnancy 243(62.1%), during labour 266(68%) and in post-natal period 176 (45%).

Significant association was found between BPCR and education level of spouse, number of ante natal visits (p=0.05), being informed about BPCR, chosen place of delivery, knowledge about danger sign in pregnancy and knowledge about the danger signs in labor.

Table 2: Bivariate analysis

Variables		Less prepared n (%)	Well prepared n (%)	Total n (100%)	p value
Participant's age	≤ 25 years	34 (21.3)	126 (78.7)	160(100%)	0.86
	26-35 years	45 (22.2)	158 (77.8)	203(100%)	
	More than 35 years	5 (17.8)	23 (82.1)	28(100%)	
Educational level of participant	Illiterate	26(21.5)	95(78.5)	121(100%)	0.68
	Primary	22(25.9)	63(74.1)	85(100%)	
	Secondary/ higher secondary	24(18.9)	103(81.1)	127(100%)	
	Graduate or above	12(20.7)	46(79.3)	58(100%)	
Educational level of husband	Illiterate	289 (27.5)	74(72.5)	102(100%)	**0.03***
	Primary	16(22.5)	55(77.7)	71(100%)	
	Secondary/ higher secondary	22(14.2)	133(85.8)	155(100%)	
	Graduate or above	18(28.6)	45(71.4)	63(100%)	
Monthly family income	Less than 25000/-	36 (22.8)	122 (77.2)	158(100%)	0.49
	25000 – 50000	41 (19.6)	168 (80.4)	209(100%)	
	More than 50000/-	7 (29.2)	17(70.8)	24(100%)	

No of pregnancies	1 2 or 3 4 or above	20(23.8) 41(21.8) 23(19.3)	64(76.2) 147(78.2) 96(80.7)	84(100%) 188(100%) 119(100%)	0.74
Decision maker in family	Self Husband Mother-in-law Others	27(24.3) 47(22.7) 9(17.6) 1(4.5)	84(75.7) 160(77.3) 42(82.3) 21(95.5)	111(100%) 207(100%) 51(100%) 22(100%)	0.18
Distance between residence and health facility	< 1 hour 1-2 hour >2 hour	48(24.6) 33(18.1) 3(21.4)	147(75.4) 149(81.9) 11(78.6)	195(100%) 182(100%) 14(100%)	0.31
Received information regarding birth preparedness	Did not receive information Received information	42(35.6) 42(15.4)	76(64.4) 231(84.6)	118(100%) 273(100%)	**<0.001***
No of ante natal visits	No visit 1 2-3 4	7 (36.8) 11 (20) 31 (27.6) 35 (17)	12 (63.1) 44 (80) 81 (72.3) 170 (82.9)	19(100%) 55(100%) 112(100%) 205(100%)	**0.05***
Chosen place of delivery	Government health facility Private sector health facility Home	45 (17.2) 30 (28.6) 9 (37.5)	217 (82.8) 75 (71.4) 15 (62.5)	262(100%) 105(100%) 24(100%)	**0.008***
Knowledge about the danger signs in pregnancy	Yes No	35(16.8) 49(26.8)	173(83.2) 134(73.2)	208(100%) 183(100%)	**0.02***
Knowledge about the danger signs in labor	Yes No	35(17.4) 49(25.8)	166(82.6) 141(74.2)	201(100%) 190(100%)	**0.04***
Knowledge about the danger signs in post-natal	Yes No	40(19.3) 44(23.9)	167(80.3) 140(76.1)	207(100%) 184(100%)	0.27

**Statistically significant*

DISCUSSION

BPCR is an approach which reduces delays in getting appropriate health care and ensures better outcome of pregnancy.

Findings of this research showed that 78.5% participants were well prepared. This finding is consistent with research conducted in Karnataka, India which found that 79.3% participants were well-prepared for child birth.[10] Another community-based study of Ethiopia found appropriate practices of BPCR in 73.5% women.[13] However, some community and facility-based studies, had reported much lower BPCR levels. Only 11.4% Kenyan women and 7.6% Tanzanian women were well prepared.[14] Appropriate level of BPCR was found in 34.1% urban and 30.4% rural respondents of Bangladesh.[15] About 21.2% women of interior Sindh Pakistan showed satisfactory level of birth preparedness.[16] The higher proportion of good BPCR in current study may be attributed to its peri urban setting and better awareness through effective LHW programme.

The current study showed that 69.8% received information about required preparedness for child birth and association between the two variables was statistically significant. It is in accordance with the study done in Afar Ethiopia that showed 72% participants had information about birth preparedness.[17]

Prior decision about place of delivery and a well-trained attendant are essential elements of BPCR. A high proportion of participants (94.3%) reported that, they have decided about place of delivery. About 79.5% respondents identified skilled health personnel for conduction of delivery, 74.1% have arrangements for transport and 71% saved some amount for obstetric emergency. According to another study conducted at Nigeria, majority of women have identified place of child birth (94.4%), selected a skilled birth attendant (83.5%), made transport arrangement (89.3%), were saving money for delivery (92.4%) and for possible caesarean section (78.8%).[18] Findings of study conducted in West Bengal, India indicated that 78.1% women identified place of delivery, 81.9% women identified a health care provider having required skills for conduction of delivery, 61% arranged transport and 35.7% participants saved amount for expenses.[19]

WHO recommends at least 4 antenatal visits. Antenatal visits provide opportunities to counsel expecting mother on birth preparedness and complication readiness. In current study, higher level of BPCR was observed among those participants who attended the recommended 4 ante natal visits. In another study conducted in Egypt, the odds of BPCR were 3.2 times greater among females who received four or more ANC visits compared to those with less than four visits.[20]

Level of BPCR was high among those respondents who got education up to secondary/high secondary level

followed by those who have graduate or post graduate qualification. However, association between educational level of participant and BPCR was not significant. Sharma N *et al*. stated in their research that education status of subject was significantly associated with birth preparedness.[8] The observed difference may be attributed to different study settings.

Support from spouse and his ability to help in preparedness would also be an important factor for a smooth pregnancy. In this study, BPCR was high among those husbands who got secondary or high secondary level educational qualification and this association was statistically significant. Another study conducted at Nepal described that husbands who have formal education show more involvement in birth preparedness.[21]

Findings of this study revealed that there was no difference in level of BPCR in relation to parity. Another study conducted at Nigeria concluded that women who had two or more children were well prepared as compared to those having lesser parity.[22]

Those participants who received information about BPCR from any source were well-prepared for child birth. Rodrigo CH. *et al*. also mentioned in their research that respondents who were counseled, had higher odds of birth preparedness.[23]

The danger signs occurring in any phase of pregnancy signify an underlying problem that could adversely affect the health of pregnant woman and of her baby. Findings of this study reflect that 53.2% had knowledge about two or more danger signs during pregnancy while 51.4% and 52.9% knew about two or more than two danger signs during labour and post-natal period. According to a study done by GA Azeze *et al*., 49.3% women were able to mention at least two obstetric danger signals in every phase.[6] In this study severe vaginal bleeding was the most commonly reported danger sign in pregnancy, labour and post-natal period. Another facility-based study conducted in Ethiopia yielded the similar results. The most common identifiable obstetric warning sign in pregnancy, labor, and puerperium was vaginal bleeding by 78.9%, 29.9% and 39.7% respondents.[24]

Knowledge about danger signs is the key element which influence timely access to care. Significant difference regarding BPCR was observed among those participants who had knowledge and those who did not have knowledge about these red flags. Similar findings were described in a study conducted in Bangladesh showing higher odds ratio of "well prepared" among women with "good knowledge" during pregnancy and in delivery.[25]

CONCLUSION

Level of BPCR was satisfactory among majority of women of child bearing age residing in peri urban area. Statistically significant association was noted between BPCR and spouse's education level, having information about BPCR, number of ante natal visits, place of delivery, knowledge about danger signals during pregnancy and in labour. The most frequently stated warning sign was severe vaginal bleeding.

LIMITATIONS

Being a cross-sectional study, it can't establish causal association. Due to self-reported responses, there are chances of information bias.

SUGGESTIONS / RECOMMENDATIONS

Government must launch the awareness campaigns for health education of females of reproductive age related to birth preparedness and complication readiness. Early antenatal booking should be encouraged and adequate time should be spent to educate pregnant women on the danger signs of pregnancy and the concept of BPCR. All efforts should be put for empowerment of women.

CONFLICT OF INTEREST / DISCLOSURE

None.

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