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Birth Preparedness And Complication Readiness (BPACR) among postpartum mothers in a rural medical college of Haryana

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ABSTRACT

Introduction

To make motherhood safe and joyful for the mother and baby, Birth preparedness and complication readiness (BPACR) is a globally accepted strategy. BPACR encourages pregnant women, their families, and communities to effectively plan for births and deal with emergencies, if they occur. BPACR improves preventive behaviours, improves knowledge of mothers about danger signs, and leads to improvement in care-seeking during obstetric emergencies.

Objectives

The study was undertaken to assess the status and determinants of BPACR among the women who had experienced motherhood recently.

Methodology

This cross-sectional study was carried out among recently delivered 141 postpartum mothers and admitted in our hospital during March 2023 to June 2023. A semi-structured interview schedule was used for data collection.

Results

Mean age of study participants were 25.64±3.85 years. BPACR index among 51.5% of study subjects ranged between 1-4 while for 48.9% of candidates it varied from 5-8. There was a significant association between educational status and occupation of study participants, education and occupation of spouse, socio-economic status of family, number of ANC visits, Td vaccination, IFA intake with BPACR status of study participants (p value <0.005).

Conclusion

It may be concluded that there is a need of creating awareness regarding birth preparedness and complication readiness. Improving the educational status of mothers and their spouses and ensuring adequate antenatal care visits will eventually help in ensuring fruitful pregnancy outcomes.

Key Words: : BPACR, complications, maternal mortality

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INTRODUCTION

For many women having a baby is the fulfilment of a lifelong dream and a woman typically falls in love with her baby from the time her pregnancy is confirmed. Not all women are fortunate enough to undergo a healthy pregnancy and delivery. World Health Organization (WHO) indicated that more than 800 women were dying each day from the preventable complications of pregnancy and childbirth, with the vast majority of these deaths (95%) occurring in low and lower middle-income countries in 2020. The Maternal Mortality Ratio (MMR) in low-income countries in 2020 was 430 per 100000 live births versus 12 per 100000 live births in high income countries. [1]In India, there are numerous myths and beliefs regarding childbirth. Even talking about or preparing for the new arrival is prohibited in some cultures. [2] Pregnant women face the risk of sudden, unpredictable complications like haemorrhage, injury or even death which cannot be totally predicted in advance. Hence, it is necessary to employ strategies to overcome such problems as they arise as timely management and treatment by skilled health professionals of a pregnant mother can make the difference between life and death for both the mother and the baby. To make motherhood safe and joyful for the mother and baby, Birth preparedness and complication readiness (BPACR) is a globally accepted strategy. BPACR encourages pregnant women, their families, and communities to effectively plan for births and deal with emergencies, if they occur. BPACR helps ensure women can reach professional care when labour begins and to reduce delays that occur when mothers in labour experience obstetric complications.

BPACR includes many elements like registration of pregnancy, knowledge of danger signs, plan for where to give birth, a skilled birth attendant, transportation, birth companion, saving money for expenses and identification of compatible blood donors in case of emergency. [3] There are evidences from previous literature that that promoting BPACR improves preventive behaviours, improves knowledge of mothers about danger- signs, and leads to improvement in care-seeking during obstetric emergencies. BPACR focuses not only on the pregnant women but the partner, family, community, and even the ground level health care workers. [4,5]Though it has been well established that all women need access to high quality care in pregnancy, and during and after childbirth but there are certain factors that prevent women from receiving or seeking health care during pregnancy and childbirth which are health system failures that translate to poor quality of care, insufficient numbers of and inadequately trained health workers, shortages of essential medical supplies. Social determinants, including income, access to education, race and ethnicity, harmful gender norms and/or inequalities that result in a low prioritization of the rights of women and girls and external factors contributing to instability and health system fragility, such as climate and humanitarian crises play a pivotal role in depriving women from achieving their right to high quality health services for herself and her baby. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at both health system and societal levels. BPACR is an efficient strategy to understand the barriers and facilitators for maternal and child health care.In light of the available evidence, our study aims to assess the status and determinants of BPACR among women who had experienced motherhood recently.

MATERIAL AND METHODS

The present study was undertaken by undergraduate medical students as a part of their teaching curriculum and focused on creating awareness, generating interest and promoting research among young medical professionals. The study was undertaken in a rural medical college located in an industrial district of the state which caters to migratory population and patients from neighbouring states as well. This hospital based cross-sectional study was conducted among recently delivered postpartum mothers who were admitted and delivered in our hospital. All adult (≥18 years) postpartum women who delivered between March to June 2023 were included while those who were seriously ill and not willing to participate in the study were excluded. A semi-structured interview schedule consisting of questions related to socio-demographic profile, details of present and past pregnancies and birth preparedness and complications readiness was used for data collection. Modified B.G. Prasad classification for the year 2023 was used to assess socio-economic status of study participants. [6]Minimum sample size was estimated using the prevalence of well-prepared women as 58.5%, relative error of 15% at level of significance of 95%, and using the formula $N=Z^2pq/L^2$ and came out to be

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122. [7] Finally a total of 141 eligible study subjects were included in the study. All recently delivered women (those women who had delivered one day prior to the day of data collection) admitted in the hospital were included in the study and recruited using consecutive sampling. The investigators visited the postpartum ward of the hospital, explained the purpose of the study and obtained written informed consent before data collection. If the selected postpartum women refused to participate in the study, then the next eligible participant was included. To ensure quality of data collection, the number of respondents that were interviewed per day was fixed to a maximum of ten participants.

BPACR index was calculated from the following indicators:

i. Women who knew about >8 danger signs of pregnancy.
ii. Women who knew about financial assistance provided by the government in Janani Suraksha Yojana (JSY).
iii. Women who knew about transportation provided by the government in Janani Shishu Suraksha Karyakram (JSSK).
iv. Women who availed ANC (Antenatal care) in the first trimester by a skilled provider.
v. Women who identified skilled birth attendants for delivery.
vi. Women who identified mode of transportation.
vii. Women who saved money to pay for expenses.

BPACR index was calculated as ΣIndicator/7. Mothers who fulfilled at least four BPACR practices were considered as "well prepared" and the rest were "less prepared."

Confidentiality of data was maintained. This study was approved by the Institutional Ethics Committee. Study subjects with lower BPACR index were counseled, explained the importance of birth preparedness and informed about various measures to prepare for upcoming complications if any.

Collected data was entered in the master chart in MS Excel 2010 and analysis was carried out using R software v4.3.2 as per the objectives of the study. Descriptive statistics (percentage, mean) was used to demonstrate demographic characteristics of respondents. Chi-square test was used to compare proportion difference between categorical variables.

RESULTS

Of the total 141 study subjects, mean age of study participants was 25.64±3.85 years with minimum and maximum ages being 20 years and 35 years respectively (Range- 15 years). Maximum number of participants belonged to the age group 20-25 years (55.3%) followed by 26-30 years (38.3%).

Table 1- BPACR status of study participants

S. No.	BPACR indicators	Frequency	Percentage
1	Knowledge of >8 danger signs	6	4.3
2	Knowledge about financial assistance through JSY	12	8.5
3	Knowledge of transportation provided by government through JSSK	24	17.0
4	ANC availed in first trimester from skilled provider	30	21.3
5	Identified skilled birth attendant for delivery	36	25.5
6	Identified mode of transport	18	12.8
7	Saved money for expenses	15	10.6
	Total	141	100.0

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Table 1 depicts that only 4.3% of study participants knew about more than eight danger signs while 25.5% had identified a skilled birth attendant for delivery. Average BPACR index was 4.36. It was observed that 51.1% of study subjects were well prepared (BPACR score of 5-7) while the rest were poorly prepared (BPACR score 1-4).

Table 2- Association of Socio-demographic profile of study participants and their BPACR preparedness level.

Variables		Poorly Prepared N (%)	Well Prepared N (%)	Total N (%)	Statistics
Mother's Education	Graduate and above	15 (33.3)	30 (66.7)	45 (100)	$\chi2 - 36.624$, df- 5, p value <0.01
	High School	9 (37.5)	15 (62.5)	24 (100)	
	Illiterate	15 (100)	0 (0)	15(100)	
	Intermediate	6 (28.6)	15 (71.4)	21(100)	
	Middle	9 (60)	6 (40)	15 (100)	
	Primary	18 (85.7)	3 (14.3)	21(100)	
Father's Education	Graduate and above	9 (18.8)	39 (81.2)	48 (100)	$\chi2 - 34.13$, df- 5, p value <0.01
	High School	6 (50)	6 (50)	12 (100)	
	Illiterate	15 (83.3)	3 (16.7)	18 (100)	
	Intermediate	27 (64.3)	15 (35.7)	42 (100)	
	Middle	9 (75)	3 (25)	12 (100)	
	Primary	6 (66.7)	3 (33.3)	9 (100)	
Mother's Occupation	Homemaker	66 (53.7)	57 (46.3)	123 (100)	$\chi2 - 10.60$, df- 4, p value – 0.031
	Professional	0 (0)	3 (100)	3 (100)	
	Semi Professional	0 (0)	3 (100)	3 (100)	
	Semiskilled	0 (0)	3 (100)	3 (100)	
	unskilled	6 (66.7)	3 (33.3)	9 (100)	
Father's Occupation	Professional	0 (0)	9 (0)	9 (100)	$\chi2 - 33.765$, df- 5, p value <0.01
	Semi Professional	9 (42.9)	12 (57.1)	21 (100)	
	Semiskilled	0 (0)	9 (0)	9 (100)	
	Skilled	12 (66.7)	6 (33.3)	18 (100)	
	Unemployed	0 (0)	6 (0)	6 (100)	
	unskilled	51 (65.4)	27 (34.6)	78 (100)	
SES (modified B.G. Prasad scale for	Class I	0 (0)	12 (100)	12 (100)	$\chi2 - 18.157$, df- 4, p value- 0.001
	Class II	12 (57.1)	9 (42.9)	21 (100)	
	Class III	18 (42.9)	24 (57.1)	42	

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2022)				(100)	
	Class IV	27 (64.3)	15 (35.7)	42 (100)	
	Class V	15 (62.5)	9 (37.5)	24(100)	
Number of ANC visits	Less than 4	21 (77.8)	6 (22.2)	27 (100)	$\chi 2$ –9.537, df- 1, p value- 0.02
	4 or more	51 (44.7)	63 (55.3)	114 (100)	
Td vaccination in pregnancy	Yes	0 (0)	6 (100)	6 (100)	$\chi 2$ –6.539, df- 1, p value- 0.011
	No	72 (53.3)	63 (46.7)	135 (100)	
IFA intake during pregnancy	Yes	15 (71.4)	6 (28.5)	21 (100)	$\chi 2$ –4.095, df- 1, p value- 0.043
	No	57 (47.5)	63 (52.5)	120 (100)	
Total number of children	Up to two children	45 (45.5)	54 (54.5)	99 (100)	$\chi 2$ –4.185, df- 1, p value- 0.041
	More than two children	27 (64.3)	15 (35.7)	42 (100)	
Baby birth weight in present pregnancy	Less than 2500 grams	42 (70)	18 (30)	60 (100)	$\chi 2$ –14.987, df- 1, p value <0.001
	2500 grams or more	30 (37)	51 (63)	81 (100)	
Total		72 (51.1)	69 (42.9)	141 (100)	

We observed significant association between educational status and occupation of study participants, education and occupation of spouse, socio-economic status of family, number of ANC visits, Td vaccination, IFA intake and total number of children with BPACR status of study participants (p value <0.005) as depicted in Table-2. Study subjects who were well prepared tend to have a lesser proportion of low-birth-weight babies in comparison to those who were poorly prepared. However, caste/category of study participants, gender of previously borne children did not significantly affect BPACR status.

DISCUSSION

BPACR is a key component of globally accepted safe motherhood programs which helps to provide professional delivery care in the intranatal period and to reduce delays in case of obstetric complications. Our study assessed the average BPACR index to be 4.36. Approximately half of study subjects (51.1%) were well prepared while the remaining was poorly prepared. Studies conducted by Saaka et al (2021) in Ghana and Hallu et al (2011) in Ethiopia reported the percentage of well-prepared women as 14.7% and 17% respectively [8,2]. This difference may be attributed to variations among the number of steps taken for the calculation of preparedness level. Our study included seven components for assessment of BPACR status while those of Saaka et al and Hallu et al considered ten and four basic steps for BPACR assessment. Also, the role of geographical and cultural variations could not be undermined.It was disappointing to note that none of the women knew about eight danger signs of pregnancy among the studies done by Deshmukh et al (2019, Chattisgarh) and Sau et al (2021, West Bengal) [9,10]. Our study reported a slightly better proportion of 4.3% which is still an unsatisfactory figure with regards to birth preparedness in the light of the grave importance of identification of danger signs to avert future complications. Study participants in the present study had poor knowledge about benefits of JSY and JSSK (8.5%, 17%) while these numbers were found to be better among the studies reported by Deshmukh et al (12.7%) and Sau et al (88% and 88.5%). [9,10] A probable reason for these findings could be less advocacy, communication and social mobilisation

(ACSM) activities towards the promotion of JSY and JSSK in the field area. Another possible explanation for this variation may be that a lower percentage of women (21.3%) in our study had availed antenatal visits in the first trimester of pregnancy while this response was comparatively better among other studies. It is an undeniable fact that among many communities in our country it is still not preferred to discuss pregnancy especially during the early weeks to ward off evil eye towards the mother and her unborn baby. In many societies in the world, cultural beliefs, and lack of awareness inhibit preparation in advance for delivery and expected baby. It may also act as contributing factors towards the lower percentage of study participants identifying skilled birth attendants (25.5%), mode of transportation (12.8%) and saving money for pregnancy and delivery expenses (10.6%). Deshmukh et al found a similar proportion of study participants identifying a mode of transportation (13.63%) and saving money for expenses (10%).[10] However, among studies done by Florence et al and Saaka et al it was observed that 55% and 32.7% of respondents had savings for delivery related expenses.[8,11] It was encouraging to note that 70% of study subjects had identified a birth facility.[11]Our study observed that women with higher educational status were well prepared for delivery in comparison to those who were less educated/ illiterate and this association was statistically significant. Similarly, those women having a well-educated spouse tend to be well prepared in contrast to those having a lesser educated spouse. Acharya et al (2015) in their study from Delhi observed that as the educational status of study subjects and their spouses increased, the proportion of preparedness level also increased and this association was highly significant (p value<0.001). [12] Hallu et al also found that literate mothers were well prepared (62.5%) as opposed to illiterate mothers.[2] It was observed that more of study participants belonging to higher SES were more prepared as opposed to their lower SES counterparts. Vishwanathan et al (2020) in their study from Maharashtra observed that participants belonging to Upper and Middle SES were better prepared (good and moderate BPACR) in contrast to participants from Lower SES (p value <0.01).[13] This finding was further reinforced by the study conducted by Sharma et al. [7]It was seen that study subjects availing four or more ANC visits were better prepared for delivery and upcoming complications, if any. Pregnant women getting good antenatal care tend to have healthier babies and this association was statistically proved in our study because we found that participants with a baby birth weight of 2500 grams or more were well prepared in terms of BPACR. Hallu et al noted that females attending ANC during current pregnancy were well prepared (57.9%) as contrasted to those who did not (42.1%).[2] Further having lesser number of children will culminate into more attention and availability of resources for antenatal care, delivery preparation and higher BPACR scores. The present study found that women who had up to two children were better prepared as compared to those having more than two children.The present study will help to understand the level of preparedness for childbirth and any upcoming complications. It will further provide an insight into barriers and facilitators of birth preparedness and provide concrete evidence in policy making. As a consequence of being a hospital-based study, it fails to understand the perspective of people in their real living environment i.e. in the community. Exploring the opinion of spouses (husband's role in birth planning) will eventually enrich future studies in this domain.

CONCLUSION AND RECOMMENDATIONS

It can be concluded that around half of the participants in the study were not adequately prepared for delivery and potential emergencies. It is important to create awareness about birth preparedness and complication readiness. Improving the educational status of mothers and their partners, as well as ensuring sufficient antenatal care and visits, will ultimately lead to better pregnancy outcomes. Spousal and family support will be critical for birth preparedness. Health staff engagement at the community level will increase the likelihood of safer outcomes for mothers and children.

REFERENCES

1. World Health Organization. Maternal Mortality. Geneva: World Health Organization; [Internet] 2023 Feb. [Cited 2024 Jan 11]. Available from- *www.who.int/news-room/fact-sheets/detail/maternal-mortality*
2. Hallu M, Gebremariam A, Alemseged F, Deribe K. Birth Preparedness and Complication Readiness among Pregnant Women in Southern Ethiopia. PLoS ONE. 2011 Jun; 6(6):1-7. e21432. doi: 10.1371/journal.pone.0021432
3. Maternal and Neonatal Health Programme. Monitoring birth preparedness and complication readiness. Tools and indicators for maternal and newborn health. Baltimore: JHPIEGO; [Internet] 2004. [Cited 2024 Jan 11]. Available from: http://www.jhpiego.org/files/ BPACRtoolkit.pdf
4. Moran AC, Sangli G, Dineed R, Rawlins B, Yameogo M, Baya B. Birthpreparedness for maternal health: findings from Koupela district, Burkina Faso. J Health Pop Nutr. 2006; 24: 489–97.
5. McPherson RA, Khadka N, Moore JM, Sharma M. Are birth preparedness programmes effective? Results from a field trial in Siraha district, Nepal. J Health Popul Nutr. 2006; 24: 479–88.
6. Pentapati SSK, Debnath DJ. Updated BG Prasad's classification for the year 2023. J Family Med Prim Care. 2023; 12(1): 189–190.
7. Sharma N, Kumar N, Singh S, Malik JS, Jangra A. Status and determinants of birth preparedness and complication readiness in a rural block of Haryana. J Family Med Prim Care 2019; 8:482-6.
8. Saaka M, Alhassan L. Prevalence and predictors of birth preparedness and complication readiness in the Kassena-Nankana district of Ghana: an analytical cross-sectional study. BMJ Open. 2021;11: e042906. doi:10.1136/ bmjopen-2020-042906
9. Deshmukh N, Borkar A, Rathore M. Int J Community Med Public Health. 2019 Apr;6(4):1634-1638.
10. Sau B, Ghosh S, Samanta A. Assessment of Birth Preparedness and Complication Readiness among Postnatal Mothers in Tertiary Care Hospital, West Bengal. J Clin Diagn Res. 2021 Apr; 15(4): QC21-QC26.
11. Florence M, Atuhaire C, Claude NN, Shirinde J, Cumber SN. Knowledge and practice of birth preparedness and complication readiness among pregnant women attending antenatal clinic in Openzinzi Hciii, Adjumani District, Uganda. Pan Afr Med J. 2019; 34:46. doi:10.11604/pamj.2019.34.46.1686.
12. Acharya AS, Kaur R, Prasuna JG, Rasheed N. Making Pregnancy Safer-Birth Preparedness and Complication Readiness Study Among Antenatal Women Attendees of a Primary Health Center, Delhi. Indian J Community Med 2015; 40:127-34.
13. Viswanathan VT, Patil SS, Joshi RN, Durgawale PM. Study to assess birth preparedness and complication readiness to promote safe motherhood among women from a rural area of Western Maharashtra. Indian J Community Med 2020; 45:511-5.