

BIRTH PREPAREDNESS AND COMPLICATION READINESS AMONG
PREGNANT WOMEN IN SHAHEED BENAZIRABAD: A CROSS-SECTIONAL
STUDY

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Abstract

Background: Maternal mortality remains a critical public health issue in Pakistan, particularly in rural and semi-urban regions. Birth Preparedness and Complication Readiness (BPCR) is a key strategy promoted by the World Health Organization to eliminate critical delays in receiving skilled obstetric care.

Objective: To evaluate the knowledge and practices regarding BPCR, assess awareness of obstetric danger signs, and compare preparedness across public and private healthcare settings in District Shaheed Benazirabad, Sindh, Pakistan.

Methodology: A facility-based cross-sectional study was conducted among 133 pregnant

women in their third trimester attending antenatal care at MNCH Hospital (public) and private clinics in Shaheed Benazirabad. Data were collected using a structured, pre-tested questionnaire translated into Urdu and Sindhi. Statistical analysis was conducted using IBM SPSS version 21.0. Descriptive statistics and Pearson’s Chi-square (χ^2) tests

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were applied to assess associations between socio-demographic determinants and BPCR awareness, with statistical significance set at $p < 0.05$.

Results: Overall, 57.1% of participants demonstrated knowledge regarding BPCR. While 61.7% had identified a skilled birth attendant, critical emergency practices were low: only 32.3% had saved funds for emergencies, and 29.3% had identified a blood donor. Hospital bag preparation was reported by 69.9% of participants. Awareness of obstetric danger signs was present in 55.6% of women, with severe vaginal bleeding being the most recognized sign (63.2%). Maternal age ($\chi^2 = 12.329$, $p = 0.006$) and employment status ($\chi^2 = 6.964$, $p = 0.031$) showed statistically significant associations with BPCR knowledge, whereas parity, education, and facility type did not.

Conclusion: Although general awareness of BPCR is moderate, critical gaps persist in emergency financial planning, blood donor selection, and danger sign identification. Targeted antenatal education focusing on young and unemployed women is essential to improve maternal outcomes in the region.

Introduction

Pregnancy and childbirth complications represent major drivers of avoidable mortality and morbidity among women of reproductive age across low- and middle-income countries (LMICs). Global estimations indicate approximately 830 maternal deaths daily, with the vast majority occurring in resource-constrained environments. In Pakistan, the Maternal Mortality Ratio (MMR) remains elevated at 186 deaths per 100,000 live births, with rural rates exceeding urban figures by 26%. Provincial disparities are equally pronounced, with Sindh registering an MMR of 224 per 100,000 live births—far higher than national targets aligned with Sustainable Development Goal 3 (SDG-3) [1,2].

Preventable maternal deaths frequently stem from three critical delays: delays in deciding to seek care, delays in reaching a health facility, and delays in receiving adequate care upon arrival. The Birth Preparedness and Complication Readiness (BPCR) strategy, established by

the World Health Organization (WHO), directly addresses the first two delays by empowering women, families, and communities to plan for childbirth and unexpected emergencies during pregnancy. Key elements of BPCR include identifying a skilled birth attendant (SBA), choosing a target delivery facility, arranging emergency funds, securing emergency transportation, identifying a potential blood donor, and recognizing essential obstetric danger signs [1,3].

In Pakistan's patriarchal context, health decision-making is often governed by male family members or elder relatives, while maternal illiteracy, financial limitations, and inadequate antenatal counseling further hinder individual readiness [4]. In District Shaheed Benazirabad, Sindh, empirical research regarding BPCR knowledge and practical arrangements—including essential supplies preparation like hospital bags—remains limited. This study aimed to evaluate the status of BPCR, assess awareness of obstetric danger signs, evaluate hospital bag readiness, and examine socio-demographic determinants among pregnant women attending public and private facilities in Shaheed Benazirabad.

Methodology

Study Design and Setting

A facility-based cross-sectional study was conducted in District Shaheed Benazirabad (Nawabshah), Sindh, Pakistan. Data were collected over a period of three months across public and private maternal health centers, specifically the MNCH Hospital (public) and designated private obstetric clinics serving diverse urban and rural populations.

Study Population and Eligibility

The study population comprised pregnant women in their third trimester (> 28 weeks gestation) aged 18–40 years residing in District Shaheed Benazirabad who provided voluntary written informed consent. Women not residing in the district, those unwilling to participate, or those unable to complete the interview due to acute medical emergencies were excluded.

Sample Size and Sampling Procedure

The sample size of 133 participants was calculated using the standard epidemiological formula for finite populations:

$$n = \frac{N \cdot p(1 - p) \cdot Z^2}{d^2(N - 1) + p(1 - p) \cdot Z^2}$$

Assuming an outcome proportion $p = 28\% + 5\%$, a confidence level of 80%, and a margin of error $d = 5\%$, the required sample size yielded $n = 133$. Participants were selected using simple random sampling from outpatient antenatal registers.

Data Collection Instrument

A structured questionnaire adapted from validated international and local BPCR measurement tools was utilized. The instrument was translated into Urdu and Sindhi, back-translated for fidelity, and pre-tested on a pilot sample to ensure clarity and cultural appropriateness. The tool gathered data across five key domains: socio-demographic background, BPCR core practices, awareness of obstetric danger signs, essential contents of the hospital bag, and healthcare utilization.

Statistical Analysis

Data were entered and analyzed using IBM SPSS Statistics version 21.0. Categorical parameters were summarized as frequencies and percentages. Crosstabs and Pearson's Chi-square (χ^2) tests were performed to evaluate associations between socio-demographic variables and BPCR knowledge or danger sign awareness. Statistical significance was defined as $p < 0.05$.

Ethical Considerations

Ethical clearance was granted by the Institutional Review Board (IRB) of the Health Services Academy, Islamabad. Informed written consent was obtained from each respondent prior to

administration of the questionnaire. Participant confidentiality and privacy were strictly preserved throughout.

Results

Socio-Demographic Profile

A total of 133 pregnant women participated in the study. The majority were aged 25–34 years ($n = 63$, 47.4%), followed by 18–24 years ($n = 53$, 39.8%). Housewives accounted for 63.9% ($n = 85$) of respondents. Regarding education, 36.1% ($n = 48$) had no formal schooling, 53.4% ($n = 71$) completed primary education, and 10.5% ($n = 14$) attained secondary education. Primigravida women comprised 29.3% ($n = 39$) of the sample.

BPCR Knowledge and Practices

Overall, 57.1% ($n = 76$) of respondents possessed knowledge of BPCR, while 42.9% ($n = 57$) lacked sufficient understanding. **Table 1** summarizes the execution of specific BPCR components. While 61.7% ($n = 82$) identified an SBA and 49.6% ($n = 66$) selected a target delivery facility, essential financial and logistical preparations were low: only 32.3% ($n = 43$) saved emergency funds, and 29.3% ($n = 39$) identified a potential blood donor.

Table 1: Birth Preparedness Practices Among Pregnant Women ($n = 133$)

BPCR Practice / Indicator	Category	Frequency (n)	Percentage (%)
Chosen a Skilled Birth Attendant (SBA)	Yes	82	61.7
	No	51	38.3
Identified Health Facility for Delivery	Yes	66	49.6
	No	67	50.4
Arranged Emergency Transportation	Yes	54	40.6
	No	79	59.4
Saved Money for Emergency Expenses	Yes	4	32.3
	No	90	67.7
Arranged a Compatible Blood Donor	Yes	39	29.3

	No	94	70.7
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Determinants of BPCR Knowledge

Bivariate analysis (Table 2) showed that maternal age had a statistically significant association with BPCR knowledge ($\chi^2 = 12.329$, $p = 0.006$), with women aged 25–34 years exhibiting the highest proportion of adequate knowledge (68.3%). Employment status was also significantly associated with knowledge ($\chi^2 = 6.964$, $p = 0.031$), with employed women demonstrating higher awareness than unemployed women. Monthly income showed a marginal association ($\chi^2 = 6.765$, $p = 0.080$). Parity ($\chi^2 = 0.345$, $p = 0.951$), clinic setting ($\chi^2 = 0.203$, $p = 0.652$), and educational level ($\chi^2 = 1.679$, $p = 0.432$) showed no statistically significant differences.

Table 2: Socio-Demographic Determinants and Knowledge of BPCR (n = 133)

Socio-Demographic Variable	Total (N)	BPCP Knowledge: Yes (n)	BPCP Knowledge: No (n)	χ^2 (df)	p-value
Age Group (Years)					
<18	4	0	4	12.329 (3)	0.006*
18-24	53	29	24		
25-34	63	43	20		
35-40	13	4	9		
				0.345 (3)	0.951
Number of Pregnancies (Parity)					
1	39	23	16		
2-3	62	36	26		
4-5	25	13	12		
> 6	7	4	3		
				6.765 (3)	0.080
Monthly Income (PKR)					

<10,000	20	10	10		
10,000-20,000	56	37	19		
21,000-40,000	4	20	25		
41,000-50,000	12	9	3		
				0.203 (1)	0.652
Clinic Type					
Public (MNCH)	67	37	30		
Private Clinics	66	39	27		
				1.679 (2)	0.432
Educational Level					
Non Formal Education	48	25	23		
Primary Education	71	41	30		
Secondary Education	14	10	4	6.964 (2)	0.031*
Employment Status					
Unemployed	22	18	4		
Housewife	8	43	42		
Employed	26	15	11		

Statistically significant at $p < 0.05$.

Awareness of Obstetric Danger Signs

Over half of the participants ($n = 74$, 55.6%) recognized key obstetric danger signs during pregnancy. Severe vaginal bleeding was the most widely identified warning sign (63.2%), followed by severe abdominal pain (59.1%) and difficulty breathing (48.9%). Conversely, severe headache (35.3%) and high fever (36.8%) were least recognized (**Table 3**).

Table 3: Respondent Awareness of Specific Obstetric Danger Signs (n = 133)

Obstetric Danger Sign	Frequency (n)	Percentage (%)
Severe Vaginal Bleeding	84	63.2
Severe Abdominal Pain	69	59.1
Difficulty Breathing	65	48.9
Blurred Vision	59	44.4
Convulsions / Fits	53	39.8
High Fever	49	36.8
Severe Headache	47	35.3

Determinants of Danger Sign Awareness

Cross-tabulation showed no statistically significant links between danger sign awareness and age ($\chi^2 = 2.113$, $p = 0.549$), parity ($\chi^2 = 3.003$, $p = 0.391$), income ($\chi^2 = 0.602$, $p = 0.896$), education ($\chi^2 = 0.035$, $p = 0.983$), or employment status ($\chi^2 = 2.623$, $p = 0.269$). However, attendance at private clinics showed a trend toward greater danger sign awareness compared to public facility attendees (63.6% vs. 47.8%; $\chi^2 = 3.395$, $p = 0.065$).

Table 4: Bivariate Analysis of Socio-Demographic Determinants and Knowledge of Danger Signs (n = 133)

Socio-Demographic Variable	Total (N)	Danger Sign Awareness: Yes (n)	Danger Sign Awareness: No (n)	χ^2 (df)	p-value
Age Group (Years)					
<18	4	3	1	2.113 (3)	0.549
18-24	53	27	26		
25-34	63	38	25		
35-40	13	6	7		
				3.003 (3)	0.391

Number of Pregnancies					
1	39	18	21		
2-3	62	37	25		
4-5	25	16	9		
> 6	7	3	4		
				0.602 (3)	0.896
Monthly Income (PKR)					
<10,000	20	11	9		
10,000-20,000	56	30	26		
21,000-40,000	45	27	18		
41,000-50,000	12	6	6		
				3.395 (1)	0.983
Clinic Type					
Public (MNCH)	67	32	35		
Private Clinics	66	42	24		
				0.035 (2)	0.983
Educational Level					
Non Formal Education	48	27	21		
Primary Education	71	39	32		
Secondary Education	14	8	6		
				2.623	0.269
Employment Status					
Unemployed	22	9	13		
Housewife	85	51	34		
Employed	26	14	12		

Hospital Bag Preparation

A total of 93 women (69.9%) reported preparing a hospital bag prior to delivery. The inclusion rates for specific items are detailed in Table 5. Baby clothes (69.2%) and mother’s clothes (67.7%) were the most common items, while sanitary pads (35.3%), emergency funds/cards (35.3%), and baby wipes (37.6%) were least frequently packed.

Table 5: Frequency of Essential Items Included in Delivery Hospital Bags (*n* = 133)

Item Categorization	Frequency (n)	Percentage (%)
Baby Clothes	92	69.2
Mother’s Clothes	90	67.7
Personal Identification & Medical Records	64	48.1
Toiletries (Soap, Toothbrush, etc.)	60	45.1
Snacks and Drinks	60	45.1
Mobile Phone and Charger	60	45.1
Baby Diapers	56	42.1
Sanitary Pads	47	35.3
Emergency Money or ATM Card	47	35.3

Discussion

This study offers valuable insights into Birth Preparedness and Complication Readiness (BPCR) among pregnant women in District Shaheed Benazirabad. The observed BPCR knowledge level of 57.1% is higher than figures reported in earlier studies from Thatta (21.2%) and Wah Cantt (34.1%), yet it highlights continuous knowledge gaps among childbearing women in secondary districts of Sindh [4,5].

A notable finding is the significant association between maternal age and BPCR knowledge (*p* = 0.006). Women aged 25–34 years demonstrated higher awareness than younger cohorts (< 18 years). This aligns with regional evidence suggesting that younger, primigravida mothers often lack exposure to reproductive health messaging and need targeted antenatal education. Furthermore, employment status significantly influenced preparedness (*p* = 0.031),

where employed women demonstrated greater knowledge. Financial autonomy and workplace exposure likely improve access to information and health choices [6].

Contrary to expectations, parity and maternal educational attainment were not significantly associated with BPCR knowledge ($p > 0.05$). Experience from previous pregnancies did not automatically translate into improved preparedness. This observation underscores that routine multiparity does not substitute for structured counseling during antenatal care visits. Similarly, formal literacy alone does not ensure health literacy regarding obstetric emergencies unless accompanied by targeted health education [7,8].

Regarding practical preparedness, severe deficiencies were noted in emergency logistics. Less than one-third of participants had saved funds for emergency medical expenses (32.3%) or identified a potential blood donor (29.3%). In Pakistani socio-cultural settings, financial allocation and blood donation often require male family approval. Addressing these barriers requires involving husbands and elder family members in maternal health counseling sessions. While 69.9% of women reported preparing a hospital bag, critical medical items like sanitary pads and personal medical records were omitted by many participants. Similarly, awareness of warning signs like severe headache (35.3%) and convulsions (39.8%) was low compared to vaginal bleeding (63.2%). These findings highlight the need for comprehensive antenatal education covering non-hemorrhagic danger signs like pre-eclampsia and eclampsia [9].

Comparing facility types, private clinic attendees showed slightly higher hospital bag readiness (77.3% vs. 62.7%) and danger sign awareness (63.6% vs. 47.8%) than public clinic attendees, though these differences were not statistically significant. This trend suggests that private facilities may attract patients of higher socio-economic status or offer more individualized counseling, emphasizing the need to standardize public sector antenatal education [10].

Conclusion

This study reveals moderate overall awareness regarding Birth Preparedness and Complication Readiness among pregnant women in District Shaheed Benazirabad, alongside critical gaps in emergency financial planning, blood donor identification, and recognition of non-hemorrhagic danger signs. Younger and unemployed women face the highest risk of inadequate preparation. Enhancing maternal health education across both public and private sectors is essential to address these disparities and improve maternal and neonatal outcomes in Sindh.

Recommendations

1. **Institutionalize Standardized BPCR Counseling:** Antenatal care units in both public (MNCH) and private sectors should implement standardized BPCR checklists covering danger sign recognition, emergency funds, blood donor selection, and hospital bag contents.
2. **Target High-Risk Demographics:** Special counseling sessions should focus on young, primigravida, and unemployed women to bridge knowledge gaps.
3. **Incorporate Family-Inclusive Counseling:** Educational efforts should involve husbands and family decision-makers to facilitate emergency decision-making, financial planning, and blood donor identification.
4. **Strengthen Community Outreach:** Local health workers (LHWs) and community health networks should lead localized campaigns using vernacular materials to raise awareness of obstetric danger signs.
5. **Establish Public-Private Referral Pipelines:** Collaborative frameworks between private clinics and public tertiary hospitals are recommended to ensure prompt emergency obstetric care.

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