

Awareness, practice, and challenges of birth preparedness and complication readiness among pregnant women attending clinic at a Nigerian State Teaching Hospital: A cross-sectional study

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Abstract

Background: Birth preparedness and complication readiness (BPCR) is a key strategy for reducing maternal mortality in low-resource settings.

Objective: To assess awareness, practice, and challenges of BPCR among pregnant women attending antenatal clinic in Nigeria.

Methods: A descriptive cross-sectional study was conducted among 290 pregnant women using a validated questionnaire. Data were analyzed using descriptive statistics and Chi-square tests at $p \leq 0.05$.

Results: Awareness of BPCR was high (mean=3.20±0.96), and practice was also relatively high (mean=3.06±1.12). However, major challenges included high cost of attending ANC to learn more about BPCR (mean=4.41), long waiting time at clinic discourages mothers from attending antenatal to learn more about birth preparedness and complication readiness (mean=4.19), and poor communication. Significant associations were found between awareness and practice ($\chi^2=21.2$, $p < 0.05$) and between education and practice ($\chi^2=11.5$, $p < 0.05$).

Conclusion: Despite high awareness, systemic barriers hinder optimal BPCR practice. Strengthening healthcare systems and targeted education is essential.

Keywords: Birth preparedness; Complication readiness; Maternal health; Antenatal care

1. Introduction

Maternal mortality is a critical issue for pregnant women and a significant public health challenge in developing countries like Nigeria. Pregnancy refers to the state of a woman carrying an unborn child, spanning from fertilization to delivery (Enuku & Osarugwe, 2022). Every pregnant woman faces the risk of sudden and unpredictable complications that could result to injury or death of either the mother or child, and that is the reason for preparing for birth and its complications readiness (Enuku & Osarugwe, 2022). Worldwide, around 15% of pregnancies develop life-threatening complications during pregnancy, delivery, or postpartum period and the majority of maternal mortality occurs during labor and the postpartum period (WHO, 2017).

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The need for awareness and practice of birth preparedness and complication readiness is therefore an essential aspect of the life of every pregnant woman. Birth preparedness and complication readiness (BP/CR) is the process of planning for normal birth and anticipating the actions needed in care of an emergency (WHO, 2015). It's a safe motherhood initiative that and an essential part of antenatal care (Tony-Igwe, et al, 2024). It is putting in place recommended interventions that is require in case of abnormal situation associated with labour, this enhance preparation as well as its readiness towards any likely occurrence of obstructed labour, and involves collaborative efforts among the couple, family members and healthcare professionals to have a good outcome before, during and after child birth period and a critical strategy in maternal and newborn healthcare to ensure safe childbirth and reduce maternal and neonatal mortality.

Planning for a normal birth while being prepared for any complications that may arise remain the focus (Agba, 2022). It permits pregnant women and their families seek health care without delay in case of obstetric complications and delivery (Ijang, et al, 2019). The birth plan enables the pregnant woman and her family to identify place of delivery, arrange for transport to the health facility, save money for services, get a compatible blood donor, and have birth companion ready before birth (Nkwocha, et al, 2017).

Birth preparedness and complication readiness is a comprehensive strategy aimed at increasing the utilization of skilled birth attendants, which is essential for reducing maternal mortality (Subedi, 2019). In support of the above, Enuke and Osarugwe (2022) detailed that elements of BP/CR includes identifying place of delivery, saving money, preparing essential items for clean and safe delivery, identifying skilled provider, been aware of key danger signs and acting on immediately, designate decision maker, identifying source of support in case of emergency, arranging transport, blood donor, and emergency fund for pregnant women.

It encompasses several components: awareness of warning signs; planning where to deliver the baby; arranging for a birth attendant; organizing transportation; saving money; and identifying a potential blood donor for obstetric emergencies (Rabiu & Ladu, 2019). Birth preparedness plays a crucial role in safe motherhood initiatives, which are part of a global effort to decrease deaths and health issues among women, particularly in developing countries such as Nigeria.

It is specifically designed to lower maternal mortality rates within the broader framework of women's reproductive health services (Saidu, et al, 2019; Letose, et al, 2020; Anikwe, et al, 2020). Awareness of birth preparedness and complication readiness promote active preparation and decision making for delivery by pregnant women and their families. Awareness of birth preparedness and complication readiness is crucial in helping expectant parents prepare for labor, delivery, and postpartum needs, promoting safer childbirth and healthier outcomes for both mother and baby (Masudio, et al, 2019). Awareness of pregnant women on birth preparedness improves recognition of any problem in pregnancy and proper management (Osegi, et al, 2022).

Practice of birth preparedness involves specific, proactive steps taken by expectant parents, often in consultation with healthcare providers, to ensure they are ready for labor, delivery, and postpartum needs. This approach increases the chances of a safe delivery by reducing delays, improving access to skilled care, and addressing potential complications early (Enuku & Osarugwe, 2022). The key components of birth preparedness awareness and complication readiness as detailed by Anikwe, et al, (2020), include: knowing the signs of complications, such as severe bleeding, high fever, or labor signs, enables quick action, improving outcomes; choosing a healthcare facility, identifying the route, and arranging transport reduce delays in reaching skilled care when needed; setting aside funds or accessing health insurance to cover costs associated with delivery and unexpected emergencies; preparing partners, family members, or support groups to assist during labor and the postpartum period improves the mother's emotional and physical well-being; and ensuring supplies like hygiene items, newborn clothing, and postpartum essentials are ready can make the experience smoother.

Raising awareness of these aspects empowers parents, particularly in communities with limited healthcare access, and supports proactive planning for a safe and positive birth experience. One important thing is to be aware of birth preparedness and another important variable is the practice of birth preparedness by pregnant women attending antenatal clinic. More than three-fourths of maternal deaths could be averted if all women had access to skilled care, which is considered the cornerstone and key intervention to minimize complications associated with pregnancy and childbirth (WHO, 2015). Unprepared family will likely encounter delay time in getting organized and reaching the appropriate referral facility leading to undesired outcome (Berhe, et al, 2018; Solnes, et al, 2017; Tura, et al, 2014). Some pregnant mothers may not aware of how to recognize the danger signs of complications (Mulugeta, et al, 2020).

Several factors such as maternal educational level, economic status of the family, attitude of the pregnant women, health professionals' ability to educate the pregnant mothers and others may play significant role in the awareness and practice of birth preparedness and complication readiness among pregnant women. A study conducted in Uganda showed that respondents had good knowledge of BP though this was higher among the educated respondents (Masudio, et al, 2019). A similar study in Cameroon revealed that awareness of BP was found to be low and also the practice of birth preparedness and complication readiness was unsatisfactory as despite receiving information from health workers (Ijang, et al, 2020). A study by Osegi, et al, (2022) revealed a statistical relationship between the level of awareness and practice of birth planned as calculated value of 23.4 is higher than the P-value of 5.99 at 0.05 level of significant at 2 degree of freedom. Enuke and Osarugwe, (2022) in their study noted that an overall good knowledge of birth preparedness and complication readiness with a poor level of practice of BPCR. They concluded that there was a significant association between birth preparedness and complication readiness and parity.

A study by Ijang, et al (2019) revealed that education and counselling on birth preparedness and complication readiness is not made available to the pregnant women resulting in poor knowledge. In essence, information about birth preparedness and Complication Readiness as well as the educational level of pregnant women have roles to play in both awareness and practice of PB/CR A study by Wondu, et al (2024), revealed that a birth preparedness and complication readiness practice was low among their study population but it was found among pregnant women with formal education, and birth preparedness and complication readiness were significantly associated with level of education the practice of preparedness and complication readiness.

The practice of birth preparedness and complication readiness sometimes happen with challenges such as the pregnant women's inability to understand the danger signs of pregnancy and child birth, past experiences during the previous deliveries, lack of support from their partners, limited access to antenatal care services, poor communication between the healthcare providers and the pregnant women, cultural beliefs where it is regarded as taboo for a woman to suffer from any kind of birth complication, and others (Pandey, et al, 2022).

The theory that guided this study Social learning theory and the health belief model by Rosenstock, Strecher, & Becker (1988) The model discusses individual's beliefs about preventing diseases, maintaining good health, and striving for well-being. Birth preparedness and complication readiness are means of maintaining well-being of the pregnant mothers and therefore aligning to this model.

Advising pregnant mothers on BPCR during antenatal care contact is vital to keep the course of the pregnancy safer and prepare the women to deliver at health facilities (Ejigu,et al,2018).

Objectives of the Study are to:

- Determine the level of awareness that constitutes birth preparedness and complication readiness among women attending antenatal clinic in the state Teaching Hospital.
- Assess the extent of practice of birth preparedness and complication readiness among women attending antenatal clinic in the state Teaching hospital
- Determined the challenges faced by the women attending antenatal clinic in the Teaching hospital in their practice of birth preparedness

1.1. Study Hypotheses

- **H₀₁:** There is no significant association between awareness and practice of BPCR among the women
- **H₀₂:** There is no significant association between educational level and BPCR practice among the women.

2. Materials and methods

2.1. Research Design

This study employed descriptive survey research design. Osegi, et al, (2022), used this design to determine the awareness, practice and factors influencing birth preparedness and complication readiness among women attending antenatal clinic at University of Calabar Teaching Hospital (UCTH), Calabar, Nigeria and was considered appropriate for the present study.

2.2. Setting for the Study

The study was conducted in a state teaching hospital, Teaching Hospital in Anambra State, Nigeria. The hospital is located at the capital city of the state, with diverse medical and nursing specialty areas such as Obstetrics and Gynaecology, Internal medicine, midwifery and others with each working to ensure the best of healthcare delivery to the clients. It acts as referral center for multiple private, mission and secondary health facilities in the state and as a catchment area for the neighbouring states to Anambra State, Nigeria.

2.3. Population for the Study

The population for this study comprised of all the women that attended antenatal clinic in State Teaching Hospital at the time of the study totaling 1049.

2.4. Sample Size

A sample of 290 pregnant women was drawn from the population using Taro Yahmen formula for sample estimation .

2.5. Sampling Technique

The study adopted a purposive/judgmental sampling technique due to the type of population so participants were selected based on the researchers' judgment about who will provide the most relevant information. Consideration was therefore given to women who have attended antenatal care for and at least two times.

2.6. Inclusion and exclusion criteria

Pregnant women who have been consistent with their antenatal care attendance and not close to term were included in the study while those who met the inclusion criteria but not willing to participate in the study were excluded from the study.

2.7. Instrument for Data Collection

The instrument for data collection was researchers-developed questionnaire titled "Awareness and Practice of Birth Preparedness and Complication Readiness among women Attending Antenatal Clinic Questionnaire (APBPCRMACQ)". This was developed through series of consultations and group discussion, validations and test of internal consistency before the version used for the study was accepted. Face, content, and construct validation were determined by two midwives, one gynaecologist and an expert in measurement and evaluation. A reliability coefficient of 0.766 was obtained after a pilot test with Guttman Split-Half Coefficient.

2.8. Ethical Considerations

The Health Research Ethics Committee of the hospital gave approval for the study with approval letter, COOUTH/HREC/ETH.C/VOL.1/FN;05/007 which enabled the researchers to proceed for data collection. Consent was obtained from each respondent before the administration of the instrument.

Confidentiality of the privileged information from the respondents was also maintained.

None of the items in the instrument contained questions that may lead to psychological harm. The tenet and the significance of the research as well as their right to withdraw at any time without consequences were explained to the participants.

2.9. Procedure for Data Collection

With the institutional approval, the researchers collected data for the study through one-on-one administration of the instrument. Data collection lasted twenty weeks and 290 copies of the questionnaire were administered with 100% return rate.

2.10. Method of Data Analysis

Data obtained from study were harmonized, put in array and captured in tables with frequencies and percentages. Analysis was done using descriptive and inferential statistics. Mean and standard deviation were applied for the descriptive statistics. The cut-off point for acceptance or agree was 2.50 and disagree was below 2.50. The inferential statistics for testing the hypotheses was Chi-square where the level of significance was set at P value =0.05. Conversely, where the P-value is less than the level of significance 0.05, it means that there was no significant association and the

hypothesis was not rejected. Statistical Package for Social Sciences (SPSS) version 26 IBM was the package used for the analysis.

3. Results

Table 1 Socio-demographic Characteristics of the Respondents (n = 290)

S/N	Variable	Category	Frequency (n)	Percentage(%)
1	Age	<20 years	78	26.9
		21–30 years	96	33.1
		≥31 years	116	40.0
2	Religion	Christianity	219	75.5
		Islam	32	11.0
		Traditional	39	13.5
3	Highest level of education	Primary	88	30.2
		Secondary	97	33.4
		Tertiary	105	36.2
4	Occupation	Employed	105	36.2
		Self-employed	95	32.8
		Homemaker	90	31.0
5	Marital status	Married	105	36.2
		Single	60	20.7
		Divorced	85	29.3
		Widowed	40	13.8

Table 2 Awareness of Birth Preparedness and Complication Readiness

S/N	Item	Mean	SD	Interpretation
1	Birth preparedness is a set of strategies to prepare for child birth.	3.05	0.93	Agreed
2	Complication readiness is the preparedness of patients and families as well as health care providers to recognize, respond and manage potential complication that may arise during child birth	3.48	0.97	Agreed
3	Saving money for delivery expenses is part of birth preparedness	3.15	1.01	Agreed
4	Identifying a skilled birth attendant	3.21	1.01	Agreed
5	Identifying a delivery facility	3.28	0.95	Agreed
6	Arranging transportation to the facility	3.45	1.01	Agreed
7	Planning for a birth companion (someone to escort to the delivery facility).	3.36	0.94	Agreed
8	Items for delivery such as clothes, baby supplies should be ready from the 7th month	2.88	0.99	Agreed
9	Knowing the danger signs of pregnancy	3.06	0.88	Agreed
10	Identifying compatible blood donors in case of emergency	3.08	0.93	Agreed
	Grand Mean	3.20	0.96	Agreed

Table 3 Practice of Birth Preparedness and Complication Readiness

S/N	Item	Mean	SD	Interpretation
1	Booking within the first 12 weeks of pregnancy.	2.81	1.04	Agreed
2	Taking two doses of injection tetanus-diphtheria (TD)	2.97	0.96	Agreed
3	Taking iron, folic acid and calcium supplementation during pregnancy	3.09	0.96	Agreed
4	Checking Hb%, blood group, cross matching, Thyroid-stimulating hormone (TSH) and thalassemia during pregnancy	2.14	0.98	Disagreed
5	Checking of blood pressure regularly	2.95	0.95	Agreed
6	Examining urine for presence of protein (albumin) and glucose during pregnancy	2.82	0.87	Agreed
7	Identifying a conducive place for delivery	3.00	0.98	Agreed
8	Arranging for skilled health provider for safe delivery	3.11	0.97	Agreed
9	Arrangement of transport in case of emergency need	3.15	0.96	Agreed
10	Saving money for labour or any emergency delivery like CS	3.14	0.93	Agreed
11	Plan for someone as escort to the facility	3.22	1.62	Agreed
12	Plan for blood donor if the need arises.	2.97	1.58	Agreed
13	Identifying well facilitated referral hospital for mothers in case of any eventuality.	3.82	1.39	Agreed
14	Identifying well facilitated referral hospital for new born case of any eventuality.	3.67	1.49	Agreed
	Grand Mean	3.06	1.12	Agreed

Table 4 Challenges faced by the mothers in their practice of birth preparedness and complication readiness

S/N	Item	Mean	SD	Interpretation
1	Lack of health education on birth preparedness and complication readiness negatively affects it's practice	3.77	1.37	Agree
2	Lack of finance makes the practice of birth preparedness difficult.	3.71	1.37	Agree
3	Distance of Antenatal clinics from pregnant mothers' homes	3.74	1.37	Agree
4	High cost of antenatal services deter mothers from attending ANC to learn more about BP/CR	4.41	1.02	Agree
5	Poor quality of care in the health facility	4.08	1.25	Agree
6	Length of waiting time at the ANC discourages mothers from attending antenatal to learn more about birth preparedness and complication readiness	4.19	1.19	Agree
7	Limited healthcare staff available at the clinic to provide one-on-one discussion on the subject matter to the mothers	3.49	1.39	Agree
8	Limited educational programmes about the importance birth preparedness and complication readiness	3.49	1.34	Agree
9	No reminders from antenatal care staff through, SMS or phone calls as done in some countries	3.72	1.32	Agree

10	Lack of access to antenatal information in my preferred language or format is not helpful	4.17	1.16	Agree
11	Lack of involvement family members such as husband or parents in antenatal education sessions	4.19	1.16	Agree
12	Poor communication ability by some healthcare staff	3.88	1.28	Agree
	Grand Mean	3.90	1.27	Agreed

Table 5 Association Between Awareness and Practice of BPCR

S/N	Awareness Level	High	Moderate	Low	Total
1	High	86	61	39	186
2	Low	51	34	19	104
	Total	137	95	58	290

$\chi^2 = 21.2$, $df = 2$, $p < 0.05$ (Significant)

Table 6 Association Between Education and BPCR Practice

SN	Practice Level	Primary	Secondary	Tertiary	Total
1	High	50	51	80	181
2	Low	50	35	24	109
	Total	100	86	104	290

$\chi^2 = 11.5$, $df = 2$, $p < 0.05$ (Significant)

4. Discussion

This study showed that the pregnant women attending antenatal clinic in the state tertiary hospital demonstrated a high level of awareness of BPCR which aligns with previous studies conducted in Nigeria and other low and middle-income countries (Ohenhen et al., 2023). Recent studies have similarly reported improved awareness levels, likely due to strengthened antenatal education and maternal health campaigns (Ayalew et al., 2020; Berhe et al., 2022). This suggests that antenatal education programs may be effective in disseminating information and improving birth preparedness practices among pregnant women (Akinwaare & Oluwatosin, 2023; Tunkara-Bah et al., 2021); World Health Organization [WHO], 2022).

Despite high awareness, the translation into practice remains sub-optimal in some areas (Ohenhen et al., 2023). Recent evidence confirms this persistent knowledge–practice gap in many low-resource settings (Tessema et al., 2021; Berhe et al., 2022). This gap highlights the complexity of behavioral change, where knowledge alone is insufficient without supportive socio-economic and healthcare structures (Tessema et al., 2021).

The significant association between educational level and BPCR practice underscores the role of education in improving maternal health outcomes (Alemayehu et al., 2021). Contemporary studies further reinforce that maternal education significantly predicts skilled birth attendance and preparedness behaviors (Bobo et al., 2020). Educated women are more likely to understand health information, recognize danger signs, and utilize healthcare services effectively (Bobo et al., 2020).

The study also identified systemic barriers such as high healthcare costs, long waiting times, and poor provider-client communication. These findings are consistent with existing literature, indicating that health system challenges remain a major impediment to effective BPCR implementation (Okonofua et al., 2018; WHO, 2015). More recent reports highlight persistent inequities in access, financial constraints, and quality-of-care issues across sub-Saharan Africa (WHO, 2023; United Nations Population Fund [UNFPA], 2021).

Importantly, the lack of family involvement reflects sociocultural dynamics that may limit women's autonomy in decision-making. Recent studies emphasize the critical role of male partner involvement and family support in improving maternal health service utilization (Yargawa & Leonardi-Bee, 2020; Tokhi et al., 2022). Addressing these barriers requires a multi-level approach involving healthcare system strengthening, community engagement, and policy interventions (WHO, 2022).

5. Conclusion

This study demonstrates that while awareness and reported practice of birth preparedness and complication readiness are relatively high, significant systemic and socio-economic barriers limit optimal implementation. Bridging the gap between knowledge and practice requires a multifaceted approach that includes strengthening antenatal education, improving healthcare service delivery, and addressing financial and sociocultural constraints. Enhancing these areas is essential for improving maternal and neonatal health outcomes in Nigeria.

Recommendations

- Based on the findings of the study, the following recommendations were made; Antenatal health education on Birth Preparedness and Complication Readiness (BPCR) should be intensified.
- Nurses and midwives should use clear, practical examples and visual aids to help women understand the importance of BPCR and how to take action. Government and NGOs should support low-income families through subsidies, free delivery kits, or transportation vouchers to ease the financial burden of birth preparedness.
- Community health workers should be empowered to follow up with pregnant women in their homes, reinforcing BPCR messages and assisting with preparation steps where necessary.
- The Ministry of Health should integrate BPCR indicators into national maternal health monitoring tools to ensure consistent implementation across all healthcare levels.

Compliance with ethical standards

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Statement of ethical approval

Ethical approval was obtained from the Hospital Health Research and Ethics Committee with approval number: COOUTH/HREC/ETH.C/VOL.1/FN;05/007.

Statement of informed consent

Informed consent was obtained from all participants before data collection. The researchers explained the objectives, benefits of the study to the participants. Confidentiality and anonymity were maintained, and participants were informed that participation was entirely voluntary and that they could withdraw at any time without penalty.

Author Contributions

All authors contributed to the conception, design, data collection, analysis, and manuscript preparation.

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