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Knowledge of Birth Preparedness and Complication Readiness among Pregnant Women Attending Antenatal Clinic in Mgbundukwu Primary Health Center, Port Harcourt

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Abstract

Maternal mortality remains a significant public health challenge in Nigeria, largely due to delays in seeking, reaching, and receiving skilled obstetric care. Birth Preparedness and Complication Readiness (BP/CR) is a key strategy for reducing maternal morbidity and mortality through early planning and recognition of obstetric danger signs. This study assessed the knowledge of BP/CR among pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center in Port Harcourt, Rivers State, Nigeria. A descriptive cross-sectional design was adopted. A total of 120 questionnaires were administered using a structured self-administered instrument, of which 109 were correctly completed and analyzed, yielding a response rate of 90.8%. Data were analyzed using descriptive statistics with the aid of SPSS version 25. Findings revealed that the majority of respondents (70.6%) demonstrated good knowledge of BP/CR, while 29.4% had poor knowledge. Most respondents (86.4%) recognized that birth preparedness involves planning to deliver in a healthcare facility, and 81.7% acknowledged the importance of skilled birth attendants. However, only 50.4% identified regular antenatal registration and attendance as key components of BP/CR, and 53.2% recognized saving money for emergencies as essential. Although awareness of institutional delivery and skilled attendance was high, gaps remain in practical aspects of financial and logistical preparation. The study concludes that while knowledge of BP/CR among pregnant women in the study area is relatively high, comprehensive understanding of its critical components remains incomplete. Strengthened antenatal health education and community-based interventions are recommended to enhance preparedness and reduce maternal health risks.

How to Cite this Article

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1. Introduction

Maternal health remains a major global public health concern, particularly in low- and middle-income countries where preventable pregnancy-related complications continue to account for a significant proportion of deaths among women of reproductive age. Pregnancy and childbirth are natural physiological processes; however, they are often associated with unpredictable complications that may pose life-threatening risks to both the mother and the fetus. Birth Preparedness and Complication Readiness (BP/CR) is a strategic intervention designed to promote timely access to skilled maternal and neonatal healthcare services by encouraging pregnant women and their families to plan adequately for childbirth and anticipate potential emergencies (Azeze et al., 2018). This approach emphasizes proactive decision-making and logistical planning in order to reduce delays in seeking, reaching, and receiving appropriate care during obstetric emergencies.

Globally, cultural beliefs, poor awareness, financial limitations, and inadequate health system support often prevent families from preparing effectively for childbirth until the onset of labour. Consequently, pregnant women and their caregivers may fail to recognize danger signs associated with pregnancy complications, thereby delaying the decision to seek professional medical care (Ketema et al., 2020). Such delays may result in adverse maternal and neonatal outcomes, especially in emergency situations that require immediate medical intervention. BP/CR therefore serves as a critical component of safe motherhood programmes by enabling pregnant women to identify skilled birth attendants, arrange transportation, save funds for delivery, and select appropriate healthcare facilities prior to labour (Mgbekem et al., 2020; Sabita et al., 2018).

Maternal mortality has been largely attributed to what is commonly referred to as the "three delays" model, which includes delay in deciding to seek care, delay in reaching healthcare facilities, and delay in receiving adequate treatment upon arrival at the facility (Ihomba et al., 2020). These delays are influenced by several factors such as lack of knowledge about obstetric danger signs, financial constraints, distance to health facilities, poor road networks, shortage of skilled healthcare providers, and inadequate healthcare infrastructure. Failure to address these barriers often leads to complications such as postpartum

haemorrhage, hypertensive disorders, sepsis, obstructed labour, and unsafe abortion, which are among the leading causes of maternal deaths worldwide (Olaogun, 2017).

Despite global efforts aimed at improving maternal health outcomes, maternal mortality remains alarmingly high in developing countries. In 2015 alone, an estimated 303,000 maternal deaths were recorded globally, with approximately 99% of these deaths occurring in low-income countries (Azeze et al., 2018). Sub-Saharan Africa accounts for over two-thirds of global maternal deaths, with a lifetime risk of maternal mortality estimated at 1 in 36 compared to 1 in 4,900 in developed nations (Olaogun, 2017). Nigeria contributes significantly to this burden and ranks among the countries with the highest maternal mortality ratios globally. Reports indicate that Nigeria's maternal mortality ratio was approximately 814 deaths per 100,000 live births in 2015, with substantial regional disparities observed across different states (Sageer et al., 2019).

Furthermore, Nigerian women are estimated to have a maternal mortality risk nearly 500 times higher than their counterparts in developed countries (Olonade et al., 2019). Although some states, including Lagos, report slightly improved maternal health indices compared to the national average, maternal mortality rates remain unacceptably high (Hodin, 2017). These persistent challenges highlight the need for effective interventions such as BP/CR to improve maternal health outcomes by promoting timely access to skilled obstetric care.

The World Health Organization advocates for universal health coverage as part of the Sustainable Development Goals (SDGs), particularly Goal 3 which aims to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (Akinwaare & Oluwatosin, 2019). Achieving this target requires the implementation of comprehensive maternal health strategies that address both medical and socio-economic determinants of maternal health. BP/CR has been identified as a cost-effective and practical approach for mitigating the risks associated with pregnancy and childbirth by enhancing preparedness for obstetric emergencies at the individual, family, community, and healthcare system levels (Barhe et al., 2018; Kari & Angolkar, 2020).

In Nigeria, maternal morbidity and mortality are frequently linked to inadequate planning for childbirth and poor recognition of obstetric danger signs among pregnant women. These challenges underscore the importance of assessing the knowledge and practices of BP/CR among expectant mothers attending antenatal clinics. Therefore, this study aims to evaluate the knowledge of birth preparedness and complication readiness among pregnant women attending antenatal clinic at Mgbundukwu Primary Health Center in Port Harcourt, Rivers State, Nigeria.

2. Methodology

2.1 Study Design

This study adopted a descriptive cross-sectional research design to assess the knowledge and practice of Birth Preparedness and Complication Readiness (BP/CR) among pregnant women attending antenatal clinic services. The cross-sectional approach enabled the collection of data from respondents at a single point in time in order to evaluate their level of preparedness for childbirth and potential obstetric complications.

2.2 Study Area

The study was conducted at Mgbundukwu Model Primary Health Center located at No. 1 Okija Street, by Emenike Bus Stop in Port Harcourt, Rivers State, Nigeria. The health facility is licensed by the Federal Ministry of Health as a primary healthcare center and provides a wide range of medical services including antenatal care, immunization, family planning, obstetrics and gynecology services, and treatment of infectious diseases. The antenatal clinic operates from Monday to Saturday on a 24-hour basis, offering services such as booking, health education, clinical examination of pregnant women, laboratory investigations, and prescription of medications by qualified healthcare professionals including nurses, midwives, and medical doctors.

2.3 Target Population

The target population for this study comprised all pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center during the study period. The average monthly attendance of pregnant women at the antenatal clinic was estimated to be approximately 150.

2.4 Sample Size Determination

The sample size for this study was determined using the Taro Yamane formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Total population (150)

e = Margin of error (0.05)

$$n = \frac{150}{1 + 150(0.05)^2}$$

$$n = \frac{150}{1 + 150(0.0025)}$$

$$n = \frac{150}{1.375}$$

$$n \approx 109$$

To account for possible non-response or attrition, an additional 10% of the calculated sample size was added:
10% of 109 ≈ 11
Therefore, the final sample size for the study was:
109 + 11 = **120 respondents**

2.5 Sampling Technique
A non-probability sampling technique was employed for the selection of respondents. Pregnant women who attended the antenatal clinic during the study period and met the inclusion criteria were recruited consecutively until the required sample size was achieved.

2.6 Inclusion and Exclusion Criteria
Inclusion Criteria:

- Pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center during the study period.
- Pregnant women who consented to participate in the study.

Exclusion Criteria:

- Pregnant women who were critically ill at the time of data collection.
- Pregnant women with mental health conditions that could impair effective communication.

2.7 Instrument for Data Collection
Data were collected using a structured, self-administered questionnaire designed by the researcher based on relevant literature and the objectives of the study. The questionnaire consisted of sections that assessed respondents' socio-demographic characteristics as well as their knowledge and practices regarding birth preparedness and complication readiness.

2.8 Validity of the Instrument
The validity of the research instrument was established through expert review. The questionnaire was examined by a research supervisor and a clinical data analyst to ensure content and face validity. Their observations and recommendations were incorporated into the final version of the instrument.

2.9 Reliability of the Instrument
The reliability of the questionnaire was tested using the Cronbach Alpha (α) method to determine internal consistency. The reliability coefficient obtained was 0.68, indicating an acceptable level of reliability for the instrument as recommended in similar social science and health-related studies.

2.10 Method of Data Collection
A total of 120 questionnaires were administered to eligible respondents with the assistance of antenatal clinic midwives over a period of seven days. Respondents were provided with clear instructions on how to complete the questionnaire, and the researcher closely monitored the data collection process to ensure accuracy and completeness of responses.

2.11 Method of Data Analysis
Data collected from the respondents were coded and entered into the Statistical Package for Social Sciences (SPSS) version 25 for analysis. Descriptive statistics such as frequency distribution, percentages, mean, and standard deviation were used to summarize the data, while inferential statistical tools including Pearson correlation and linear regression analysis were employed to test relationships between variables.

2.12 Ethical Consideration
Ethical approval for the study was obtained from the management of Mgbundukwu Model Primary Health Center prior to data collection. Informed consent was obtained from all participants after providing them with detailed information regarding the purpose and procedures of the study. Participation was voluntary, and respondents were assured of confidentiality and anonymity. Data collected were used strictly for research purposes and stored securely to prevent unauthorized access. The study adhered strictly to ethical guidelines governing research involving human participants.

3. Results

3.1 Response Rate of Respondents

A total of 120 questionnaires were administered to pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center, Port Harcourt. Out of these, 109 questionnaires were correctly completed and returned, yielding a response rate of 90.8% (Table 1). This high response rate indicates a good level of participation among the respondents and provides a reliable basis for data analysis.

Table 1: The Response Rate of respondents

Questionnaire	F Frequency	Percentage (%)
Number Administered	120	100
Number Recieved	109	90.8

Source: field survey, 2024

3.2 Respondents' Socio-demographic Characteristics (Table 4.2a)

3.2.1 Age Distribution

The age distribution of the respondents revealed that the majority of the pregnant women were within the reproductive age group of 21–40 years (Table 2a). Specifically, 7.3% of the respondents were aged 21–25 years, 22.0% were between 26–30 years, 33.0% were aged 31–35 years, and 31.2% were aged 36–40 years. Only 5.5% of the respondents were between 15–20 years, while 0.9% were within the age range of 41–45 years.

3.2.2 Marital Status

With respect to marital status, the majority (89.0%) of the respondents were married, while 5.5% were single. Additionally, 1.8% of the respondents were divorced and 3.7% were widowed.

3.2.3 Years of Marriage

Findings on the duration of marriage indicated that 37.6% of respondents had been married for 0–5 years, 36.7% for 6–10 years, and 23.9% for 11–15 years. A small proportion of respondents (0.9%) reported being married for 16–20 years and above 21 years respectively.

3.2.4 Residential Location

The residential distribution showed that 74.3% of the respondents resided within Mgbundukwu community, while 25.7% lived in other parts of Port Harcourt metropolis.

Table 2a: Respondents' Socio-demographic Characteristics

Characteristics		Frequency	Percentage (%)
Age group	15-20 years	6	5.5
	21-25 years	8	7.3
	26-30 years	24	22.0
	31-35 years	36	33.0
	36-40 years	34	31.2
	41-45 years	1	0.9
	Total	**109**	**100**
Marital Status	Single	6	5.5
	Married	97	89.0
	Divorced	2	1.8
	Widowed	4	3.7
	Total	**109**	**100**
Years of marriage	0-5 years	41	37.6
	6-10 years	40	36.7
	11-15 years	26	23.9
	16-20 years	1	0.9
	21 + years	1	0.9
	Total	**109**	**100**
Residential location	**Rural**	81	25.7
	Urban	28	74.3
	Total	**109**	**100**

3.3 Socio-Demographic Characteristics of Respondents

Table 2b presents the distribution of respondents according to selected socio-demographic variables including tribe, occupation, educational level, and social status. The findings revealed that 42.2% of the respondents identified with the Yoruba

tribe while 33.9% of the respondents comprises of pregnant women from other tribes such as Ogoni, Etche, Kalabari and Andoni. In terms of occupation, 17.4% of the respondents were civil servants, while the majority (89.0%) were business women or traders. Additionally, 1.8% of the respondents were unemployed, and 3.7% were employed in private companies.

Analysis of respondents' educational level showed that 18.3% had no formal education, 24.8% had completed O'Level education, 19.3% possessed a Diploma certificate, 32.1% had attained B.Sc./HND qualifications, and 5.5% had postgraduate degrees. This indicates that more than half (56.9%) of the respondents had attained at least a Diploma-level education.

Furthermore, assessment of respondents' social status based on family income revealed that 31.2% belonged to the lower social class, 33.9% to the middle class, while only 34.9% were categorized under the upper social class.

Table 2b: Respondents' Socio-demographic Characteristics

Characteristics		Frequency	Percentage (%)
Tribe	Ikwerre	40	
	Yoruba	5	
	Igbo	15	13.8
	Hausa	11	10.1
	Others	37	33.9
	Total	**109**	**100**
Occupation	Civil servant	19	17.4
	Business woman	97	89.0
	Unemployed	2	1.8
	Private company Worker	4	3.7
	Total		
		109	**100**
	No formal education		
Educational level	O'Level	20	18.3
	Diploma	27	24.8
	B.Sc/HND	21	19.3
	Postgraduate degree	35	32.1
	Total	6	5.5
		109	**100**
	Lower class		
Social status	Middle class	34	31.2
	Upper class	37	33.9
	Total	38	34.9
		109	**100**

3.4 Obstetric Characteristics of Respondents

3.4.1 Number of Previous Pregnancies

Analysis of respondents' obstetric history showed that 23.9% of the respondents were experiencing pregnancy for the first time (Table 2c). Meanwhile, 20.2% had one previous pregnancy, 20.2% had two previous pregnancies, 18.3% had three previous pregnancies, 11.9% had four previous pregnancies, and 5.5% had five or more previous pregnancies.

3.4.2 Number of Living Children

Findings revealed that 25.7% of respondents had no living children, 21.1% had one child, 23.9% had two children, 18.3% had three children, while 11.0% reported having four or more children.

3.4.3 Trimester of Current Pregnancy

With regard to gestational age, 13.8% of the respondents were in their first trimester, 31.2% were in their second trimester, and the majority (53.2%) were in their third trimester. Only 1.8% of the respondents reported being pregnant for more than nine months.

Table 2c: Obstetric Characteristics of Respondents

Characteristics		Frequency	percentage
Number of previous pregnancy	none	26	23.9
	one	22	20.2
	two	22	20.2
	Three	20	18.3
	Four	13	11.9
	Five +	16	5.5
	TOTAL	**109**	**100**
Number of children alive	none	28	25.7
	one	23	21.1
	Two	26	23.9
	three	20	18.3
	Four+	12	11.0
	Total	**109**	**100**
Trimester of current pregnancy	1-3 months	15	13.8
	4-6 months	34	31.2
	7-9 months	58	53.2
	More than 9 months	2	1.8
	Total	**109**	**100**

3.5 Knowledge of Birth Preparedness and Complication Readiness among Pregnant Women

Assessment of respondents' knowledge on BP/CR (Table 3) indicated that 86.4% of the pregnant women agreed that birth preparedness involves making necessary plans to deliver in a healthcare facility where pregnancy and delivery-related emergencies can be prevented or managed. Half of the respondents (50.4%) recognized that birth preparedness includes registering for antenatal care in a healthcare facility with skilled birth attendants and keeping antenatal clinic appointments.

Furthermore, 72.4% of respondents acknowledged that proximity and accessibility of the place of delivery to their residence is an essential component of birth preparedness. A large proportion (80.8%) correctly identified midwives, nurses, and medical doctors as skilled birth attendants, while 81.7% affirmed that delivering their babies with the assistance of skilled birth attendants is an important aspect of BP/CR.

In addition, 53.2% of respondents reported that saving money for emergencies during childbirth is an important component of birth preparedness and complication readiness.

Overall, 70.6% of the respondents demonstrated good knowledge of BP/CR, whereas 29.4% showed poor knowledge of birth preparedness and complication readiness (Table 4).

Table 3: Respondents' Knowledge on Birth Preparedness and Complication Readiness.

S/N	Knowledge Statements	Agree F (%)	Disagree F (%)	Total
1	Birth preparedness involves making necessary plans to deliver in a healthcare facility where emergencies during pregnancy and delivery can be prevented and/or treated	94 (86.4)	15 (13.6)	109
2	Birth preparedness involves registering for antenatal care in a healthcare facility with skilled birth attendants and keeping antenatal clinic appointments	55 (50.4)	54 (49.6)	109
3	Birth preparedness includes ensuring proximity and accessibility of the place of delivery to residence	79 (72.4)	30 (27.6)	109
4	Midwives, nurses and medical doctors are examples of skilled birth attendants	88 (80.8)	21 (19.2)	109
5	Delivering a baby using skilled birth attendants is an important part of birth preparedness	89 (81.7)	20 (18.3)	109
6	Saving money in case of emergency during childbirth is a component of birth preparedness and complication readiness	58 (53.2)	51 (46.8)	109

Table 4: Overall Knowledge Level of Respondents on BP/CR

Knowledge Level	Frequency	Percentage (%)
Good Knowledge	77	70.6
Poor Knowledge	32	29.4
Total	109	100

4. Discussion of Findings

This study assessed the knowledge of Birth Preparedness and Complication Readiness (BP/CR) among pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center in Port Harcourt, Rivers State, Nigeria. The findings of this study revealed important insights into the level of awareness, preparedness, and socio-demographic factors influencing BP/CR among expectant mothers within the study area.

The socio-demographic characteristics of respondents indicated that the majority of the pregnant women were within the active reproductive age group of 21–40 years. This finding is consistent with previous studies which reported that women within this age range are more likely to access antenatal care services due to increased awareness of pregnancy-related complications and the importance of skilled maternal healthcare services (Azeze et al., 2018; Ketema et al., 2020). The predominance of married women (89.0%) observed in this study may positively influence maternal health-seeking behavior, as marital support has been associated with improved utilization of antenatal and skilled delivery services in several maternal health studies conducted in Sub-Saharan Africa.

In terms of educational attainment, more than half of the respondents (56.9%) possessed at least a Diploma qualification. Education plays a crucial role in improving women's understanding of obstetric danger signs and enhancing their decision-making ability regarding childbirth planning and emergency preparedness. This finding supports earlier reports that maternal education significantly influences knowledge and utilization of BP/CR interventions (Berhe et al., 2018). Educated women are more likely to recognize complications early, make informed decisions, and seek timely medical care during obstetric emergencies.

The obstetric characteristics of respondents revealed that a considerable proportion of the women had experienced previous pregnancies and had at least one living child. Previous pregnancy experience may enhance knowledge of potential complications and improve preparedness for childbirth. Women who have experienced childbirth in the past are more likely to understand the importance of antenatal care attendance, financial preparation, and identification of skilled birth attendants prior to delivery (Kari & Angolkar, 2020).

Findings from this study showed that 70.6% of respondents demonstrated good knowledge of BP/CR. This relatively high level of knowledge may be attributed to the regular health education sessions provided during antenatal clinic visits at the primary health center. Similar studies conducted in other parts of Nigeria and developing countries have also reported moderate to high levels of awareness of BP/CR among pregnant women attending antenatal clinics (Anikwe et al., 2020). However, despite the relatively good knowledge recorded in this study, certain gaps were identified in specific components of BP/CR.

For instance, while the majority of respondents (86.4%) acknowledged that birth preparedness involves planning to deliver in a healthcare facility where emergencies can be managed, only 50.4% recognized that registering for antenatal care and keeping clinic appointments is a key component of BP/CR. This suggests a disparity between general awareness of facility-based delivery and understanding of the preparatory steps required to ensure safe childbirth. Similar findings have been reported in previous studies where pregnant women demonstrated awareness of institutional delivery but lacked comprehensive knowledge of antenatal preparedness measures (Limenih et al., 2019; Ihomba et al., 2020).

Furthermore, although 81.7% of respondents agreed that delivery with the assistance of skilled birth attendants is essential, only 53.2% reported saving money for childbirth-related emergencies. Financial preparedness is a critical component of BP/CR, as inability to afford healthcare services may contribute to delays in seeking or receiving care during obstetric complications. This finding aligns with previous reports indicating that financial constraints remain a major barrier to effective birth preparedness in low-resource settings (Olaogun, 2017).

The findings of this study therefore highlight the need for intensified health education programmes aimed at improving pregnant women's understanding of the practical aspects of BP/CR beyond facility-based delivery. Improving awareness on financial planning, emergency transportation arrangements, and early antenatal registration may significantly reduce delays in accessing skilled maternal healthcare services and ultimately contribute to the reduction of maternal morbidity and mortality. Overall, while the level of knowledge of BP/CR among pregnant women attending antenatal clinic at Mgbundukwu Primary Health Center was found to be relatively high, the translation of this knowledge into effective practice remains suboptimal. This underscores the importance of strengthening antenatal health education interventions and community-based maternal health promotion programmes to enhance birth preparedness and complication readiness among pregnant women in the study area.

5. Conclusion

This study assessed the knowledge of Birth Preparedness and Complication Readiness among pregnant women attending antenatal clinic at Mgbundukwu Model Primary Health Center in Port Harcourt. The findings indicate that a majority of respondents possess good general knowledge of BP/CR, particularly regarding facility-based delivery and the importance of skilled birth attendants.

However, notable gaps exist in specific preparatory components such as early antenatal registration, financial planning for emergencies, and comprehensive logistical readiness. These deficiencies may contribute to delays in accessing skilled care during obstetric emergencies, thereby increasing the risk of adverse maternal and neonatal outcomes.

Although antenatal clinic attendance appears to contribute positively to awareness levels, enhanced and structured health education focusing on practical preparedness strategies is necessary. Policymakers and healthcare providers should prioritize strengthening maternal health education programmes, promoting financial and transport planning for delivery, and reinforcing community-based awareness initiatives.

Improving the depth of knowledge and translating awareness into practical action will contribute significantly to reducing maternal morbidity and mortality in the study area and support national efforts toward achieving Sustainable Development Goal 3 targets on maternal health.

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