Original Article

Birth Preparedness and Complication Readiness Among Pregnant Women Attending Antenatal Clinic in Benue State University Teaching Hospital, Makurdi

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Article History

Submitted: 24/05/2026; Accepted: 01/06/2026: Published: 17/06/2026

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ABSTRACT

Birth preparedness and complication readiness is a universal plan for decreasing maternal mortality. It is an intervention included by the World Health Organisation as an important component of the antenatal care package. It aims to prevent unfavorable pregnancy outcomes through timely access to skilled maternal and neonatal services. This study aimed to assess birth preparedness and complication readiness among pregnant women attending the antenatal clinic in Benue State University Teaching Hospital, Makurdi, Benue State. A descriptive cross-sectional study was conducted among 354 pregnant women who were systematically selected. They were given a structured, interviewer-administered questionnaire. Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 25 and was presented in tables. The majority of the participants were within the age group of 25-29 years. The participants had a good knowledge of 77.4%, with most of them moderately prepared (58.2%). The proportion of women who had primary, secondary, and tertiary levels of education with good knowledge was 0.8%, 18.5%, and 78.0%, respectively. Factors such as husband's involvement, level of education (mostly tertiary), and good knowledge of danger signs contributed to the good knowledge of BPCR. Most pregnant women made adequate preparations, anticipating a safe delivery.

Keywords: Antenatal Care, Birth Preparedness, Complication Readiness, Maternal Mortality, Pregnancy

INTRODUCTION

Maternal morbidity and mortality constitute a great public health burden.[1] According to the World Health Organization (WHO), nearly 830 women die from pregnancy or labor-related complications globally, and 99% of maternal mortality occurs in developing countries.[2] Sub-Saharan Africa alone accounts for about two-thirds (66.4%) of maternal deaths.[3] In Nigeria, the National Demographic and Health Survey (NDHS) estimated a maternal mortality ratio of over 512 maternal deaths per 100 000 live births in 2018.[4] Despite the high maternal mortality ratio, proven interventions that are known to prevent maternal deaths exist[5]. These interventions include birth preparedness and complication readiness as well as getting emergency obstetric care.[5]

Birth preparedness and complication readiness (BPCR) is a universal plan in decreasing maternal mortality,[6] which focuses on increasing awareness and producing a stronger demand for quality health care services.[7] It also involves preparing for birth and getting ready for any obstetric emergency.[8] The major aim is to prevent unfavorable pregnancy

Article Access

Website: www.wjmbs.site

10.5281/zenodo.20816976

How to cite this article

Ukpabi DE, Terwase BW, Musa DT, Adajime PT, Anzaa MM, Rimamnunra GN. Birth Preparedness and Complication Readiness Among Pregnant Women Attending Antenatal Clinic in Benue State University Teaching Hospital, Makurdi. West J Med & Biomed Sci. 2026;7(2):306-315. DOI:10.5281/zenodo.20816976

outcomes through the promotion of timely access to skilled maternal and neonatal services.[9] It is a strategy recommended by WHO safe motherhood intervention program, is accepted worldwide, and is designed to plan for birth and handle emergencies during pregnancy, labor and the postpartum period.[10] It helps pregnant women to identify complications, get to the health facility in time, and receive professional care in time by decreasing morbidities and mortalities due to complications because of 3-level delays.[10]

The three delays that influence the rendering and utilization of the maternal health care services to prevent maternal mortality include: deciding to seek care should a complication arise, reaching care, and getting care.[11] Birth Preparedness and Complication Readiness strategy prompts women, families, and communities to make plans like identifying available transport, saving to pay for service fees and transport, getting a blood donor in order to quicken decision making, and decrease delays in reaching care in the case of an emergency.[5] Low levels of Birth Preparedness and Complication Readiness is one of the factors contributing to the high maternal mortality rate in Nigeria.[6] The rationale for this study is to assess the level of birth preparedness and complication readiness in Benue State among pregnant women attending antenatal clinics in Benue State University Teaching Hospital.

In a study carried out in Cross River, it was concluded that maternal health literacy should be carried out by health-care providers to improve the knowledge of birth preparedness and complication readiness.[11] This study aims to assess birth preparedness and complication readiness among pregnant women attending the antenatal clinic in Benue State University Teaching Hospital, Makurdi.

MATERIALS AND METHODS

Study Design

A cross-sectional descriptive study design was used for this study.

Study Population

The study population for this research was pregnant women attending the antenatal clinic of Benue State University Teaching Hospital. All pregnant women attending the antenatal clinic in Benue State University Teaching Hospital were included in the study, while those who were severely ill, in labour, mentally ill and/or physically incapable of being interviewed were excluded from the study.

Sample Size Determination

The minimum sample size was determined using the Cochran's Sample Size Formula ($n=z^2pd/d^2$)[12]

Where: n=minimum sample size

Z=standard normal deviation at 95% confidence interval, which corresponds to 1.96

p=estimated prevalence from a previous study =0.706[13]

q=complementary probability=(1-p) =1-0.706=0.294

d=degree of precision =0.05

$n= (1.96)^2 x\ 0.706x0.294/0.05^2$

=3.8416 x 0.706 x 0.294/0.0025

=0.7973778624/0.0025

=318.95

Assuming a non-response rate (nf) of 10%. The minimum sample size will be adjusted using the formula nf=n/1-f

Where nf=Adjusted Sample size with assumption of 10% non-response rate

n=minimum sample size

f=Assumed non-response rate =10-0.1

nf=318.95/1-0.1

=318.95/0.9

=354.4 ≅ 354

Sampling Technique

A systematic sampling technique was used in this study; the sampling interval was calculated by dividing the sample size by the average antenatal clinic attendance in a month. There are 4 antenatal clinic days in a week. The average number of attendees per day is 20. The total number of attendees in a week= total number of attendees per day (20) × 4 clinic days in a week =80.

Total number of attendees in a month =Total number in a week (80) × 4 weeks =320. The duration for data

collection was 3 months so the total population expected was 960 women.

Sampling interval =Total Population/sample size = $960 \div 354 = 2.711 \approx 3$

The sampling interval was 3.

The first respondent was chosen using simple random sampling via balloting: where pieces of paper bearing assigned numbers of each respondents in a container, folded, and then mixed thoroughly before a number is picked with the eyes closed. After which, the selection of subsequent responders was at the predetermined interval of 1. This continued until the sample size was achieved.

Study Instrument

A structured interviewer-administered questionnaire was used. The questionnaire items were adapted from previous studies.[14,15,16] The information obtained includes sociodemographic characteristics, and knowledge and practice of BPCR.

Data Collection

Data collection was carried out at the antenatal clinic while awaiting consultation. The study was carried out July and October 2024, a total duration of 4 months. Appropriate informed consent was taken from respondents and the nurse in charge.

Data Analysis

Data was entered using Google Forms and checked for appropriateness and accuracy. It was analyzed using the IBM Statistical Product and Service Solution (SPSS) version 25. For this study, a scoring system of 10 was used for the knowledge of danger signs during pregnancy, labour, and puerperium, which was categorized into good (score of 8-10), fair (score of 5-7), poor (score of <5). A scoring system for practice of BPCR of 6 was used, which will be categorized into well prepared (score of 5-6), moderately prepared (score of 3-4), less prepared (score of <4).

Ethical Consideration

Ethical clearance was sought and obtained from the Research Ethical Committee of the College of Health Science, Benue State University, Makurdi. The nature, purpose, and process of the study were explained to the respondents, after which informed verbal consent was obtained from those willing to participate.

RESULTS

Table 1 showed that the majority of respondents were 25-29 years old (n=176, 49.7%), with the fewest in the 15-19 years age range (n=8, 2.3%), and were Christians (n=330, 93.9%). More than half (n=185; 52.3%) were in the second trimester of pregnancy, while more than one-third (n=133; 37.5%) were multiparous. Table 2 outlines the knowledge of birth preparedness and complication readiness, with close to nine in ten women (n=307;86.7%) being aware of BPCR. Eighty-three percent (294) of the respondents explicitly agreed with the idea of making plans for crises and births. Hospitals accounted for 59.9% (212) of the participants' primary information sources, while about 310 (87.6%) of respondents acknowledged the significance of selecting a standard facility for emergency response and delivery. Three hundred and twenty-seven women (92.4%) had saved for the birth, and 285 women (80.5%) had considered arranging for a blood donor. The majority of respondents (n=274;77.4%) scored at least 8, indicating a good level of knowledge. In Table 3, 251 women (70.9%) stated that their husbands have accompanied them for antenatal visits, while just above half (n=180; 50.8%) have made plans for a blood donor. The distribution of BPCR scores shows that 206 (58.2%) respondents were moderately prepared and 38 women (10.7%) were well prepared. In Table 4, most respondents aged 25-29 years had good knowledge (n=117; 46.1%), while 198 (78.0 %) of the respondents with a tertiary level of education had good knowledge though there was no significant association of sociodemographic variables with birth preparedness.

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency N=354	Percentage (%)
Age(years)		
15 - 19	8	2.3
20 - 24	104	29.4
25 - 29	176	49.7
30 - 34	50	14.1
≥35	16	4.5
Religion		
Christianity	330	93.2
Islam	21	5.9
Others	3	0.9
Occupation		
Student	14	4.0
Farmer	15	4.2
Teacher	31	8.8
Housewife	49	13.8
Civil Servant	109	30.8
Businesswoman/Trader	136	38.4
Level of education		
Primary	3	0.8
Secondary	65	18.4
Tertiary	275	77.7
None	11	3.1
Husband's level of education		
Secondary	49	13.8
Tertiary	273	77.1
None	32	9.0
Monthly Family Income		
10,000 - <50,000	67	18.9
50,000 - 100,000	83	23.4
>100,000	204	57.6
Ethnicity		
Tiv	175	49.4
Idoma	95	26.8
Igede	26	7.3
Others	58	16.4
Marital status		
Cohabiting	3	0.8
Single	57	16.1
Married	294	83.1
Current Gestational Age		
First Trimester	92	26.0
Second Trimester	185	52.3
Third Trimester	77	21. 7
Number of Children		
0	134	37.9
1	87	24.6
2	89	25.1
3	22	6.2
4	19	5.4
6	3	0.8

Table 2: Knowledge of birth preparedness and complication readiness

Variables	Frequency N=354	Percentage (%)
Have You Heard of Birth Preparedness and Complication Readiness?		
Yes	307	86.7
No	47	13.3
Source of Information (multiple responses allowed)		
Television	6	1.7
Newspaper	6	1.7
Internet	46	13.0
Friends	55	15.5
Hospital	212	59.9
NA	47	8.2
What Is Birth Preparedness and Complication Readiness?		
Planning for an emergency	14	4.0
Planning for childbirth	46	13.0
Making plans for childbirth and preparing for emergencies during pregnancy, labor, and delivery	294	83.0
Awareness of Choosing a Standard Facility for the Delivery and Management of Emergencies		
No	44	12.4
Yes	310	87.6
Is Saving for Delivery Part of Childbirth Preparation and Readiness for Emergency?		
No	27	7.6
Yes	327	92.4
Is Arranging for a Blood Donor Part of Planning for Childbirth and Complications?		
No	69	19.5
Yes	285	80.5
Do You Know Any Danger Signs During Pregnancy?		
No	42	11.9
Yes	312	88.1
Danger Signs During Pregnancy (If Yes)		
Abdominal pain	22	6.2
Convulsion	20	5.6
Vaginal discharge	40	11.3
Increased or decreased fetal movement	89	25.1
Vaginal bleeding	141	39.8
NA	42	11.9
Do You Know Any Danger Signs During Labor?		
No	57	16.1
Yes	297	83.9
Danger Signs During Labor (multiple responses allowed)		
Vaginal bleeding	45	12.7
Labor greater than 12 hours	51	14.4
Placenta not delivered 30 minutes after the delivery of the baby	188	53.1
NA	57	19.8%
Do You Know Any Danger Signs After Delivery?		
No	87	24.6
Yes	267	75.4
Danger Signs After Delivery (If Yes)		
Swollen face	15	4.2
Abdominal swelling	21	5.9
Convulsions	30	8.5
Swollen hands and feet	32	9.0
Vaginal bleeding	64	18.1
High-grade fever	105	29.7
NA	87	24.6
Knowledge score of the respondents		
Poor (Score of <5)	34	9.6
Fair (Score of 5 -7)	66	18.6
Good (Score of 8 -10)	254	71.8

Table 3: Practice of birth preparedness and complication readiness

Variable	Frequency N=354	Percentage (%)
Antenatal Visits		
1-3	163	46.1
4-8	158	44.6
≥9	33	9.3
Husband Reminds of Antenatal Appointments		
No	100	28.3
Yes	254	71.8
Husband Accompanied to Antenatal Clinic		
No	103	29.1
Yes	251	70.9
Know Expected Date of Delivery		
No	49	13.9
Yes	305	86.1
Identified a Place for Delivery		
No	63	17.8
Yes	291	82.2
Saved Money Towards Delivery		
No	91	25.7
Yes	263	74.3
Necessary Delivery Items Purchased		
No	172	48.6
Yes	182	51.4
Arrangements for Transportation Made		
No	154	43.5
Yes	200	56.5
Plans for a Blood Donor		
Yes	174	49.2
No	180	50.8
Got a Birth Companion		
No	137	35.9
Yes	227	64.1
Husband Stayed with You During Labor (Previous Deliveries) (N=220)		
No	105	42.7
Yes	115	52.3
Husband Helps with Chores During Pregnancy		
No	81	22.9
Yes	273	77.1
Noticed Any Danger Signs During This Pregnancy		
No	334	94.4
Yes	30	4.6
If Yes, Which Danger Signs Were Noticed		
Abdominal pain	9	2.5
Vaginal bleeding	7	2.0
High-grade fever	4	1.1
None	334	94.4
Decided a Decision Maker in Time of Need		
No	77	21.8
Yes	277	78.2
Birth preparedness and complication readiness score (BPCR).		
Less prepared (score of <3).	110	31.1
Moderately prepared (score of 3-4)	206	58.2
Well prepared (score of 5 6)	38	10.7

Table 4: Association of sociodemographic factors with knowledge of BPCR.

Variables	Good knowledge N (%)	Poor knowledge N (%)	Total N (%)	X^2	p-Value
Age					
15-19	6 (2.4)	2 (2.0)	8 (2.3)	5.673	0.225
20-24	78 (30.7)	26 (26.0)	104(29.4)		
25-29	117 (46.1)	59 (59.0)	176(49.7)		
30-34	41 (16.1)	9 (9.0)	50 (14.1)		
≥35	12 (4.7)	4 (4.0)	16 (4.5)		
Level of Education					
Primary	2 (0.8)	1 (1.0)	3 (0.9)	0.889*	0.937
Secondary	47 (18.5)	18 (18.0)	65 (18.4)		
Tertiary	198 (78.0)	77 (77.0)	275(77.7)		
None	7 (2.8)	4 (4.0)	11 (3.0)		
Occupation					
Student	9 (3.5)	5 (5.0)	14 (3.9)	0.753	0.980
Farmer	11 (4.3)	4 (4.0%)	15 (4.2)		
Teacher	21 (8.3)	10 (10.0)	31 (8.7)		
Housewife	35 (13.8)	14 (14.0)	49 (13.9)		
Civil Servant	79 (31.1)	30 (30.0)	109(30.9)		
Businesswoman/Trader	99 (39.0)	37 (37.0)	136(38.4)		
Monthly Family Income					
10,000-<50,000	43 (16.9)	24 (24.0)	67 (18.9)	5.666	0.059
50,000-100,000	157 (61.8)	48 (48.0)	205(57.9)		
>100,000	54 (21.3)	28(28.0)	82 (23.2)		
Ethnicity					
Tiv	130 (51.2)	45 (45.0)	175(49.4)	2.780	0.427
Idoma	67 (26.4)	28 (28.0)	95 (26.9)		
Igede	20 (7.9)	6 (6.0)	26 (7.3)		
Others	37 (14.6)	21 (21.0)	58 (16.4)		
Marital Status					
Cohabiting	2 (0.8)	1 (1.0%)	3 (0.9)	0.494*	0.597
Single	38 (15.0)	19 (19.0%)	57 (16.1)		
Married	215 (84.6)	79 (79.0%)	294 (83.0)		
***Fisher's Exact test**					

DISCUSSION

This study revealed that the majority of the respondents had a good knowledge of birth preparedness and complication readiness. This is similar to other studies in Kano State, Sokoto State, and Ekiti States, but contrasts with a study conducted in Plateau State, where the knowledge was just over half of the respondents.[17,18] This may be due to the high level of education among the respondents. This high proportion of knowledge will promote the timely use of maternal and neonatal care during childbirth, thereby reducing the delay in obtaining care.

The practice of BPCR, however, was lower when compared to the knowledge, as just 10% were well prepared. This result is lower when compared to studies done in Thailand (78.6%)[19], Ethiopia (76.4%)[20], and Ogun State (76.8%) in South Western Nigeria.[21] The high proportion of BPCR seen in these studies may be due to the availability of better health care services, better preparation for a blood donor, and better preparation for transportation. Nevertheless, this study showed a higher level of BPCR when compared to the work done in Edo State.[13] This could be attributed to the fact that the participants in Edo State believed they would have their babies without complications, therefore, did not see the need to practice BPCR. The level of birth preparedness observed in this study will ensure uneventful labour and delivery, improve maternal and neonatal outcomes following delivery, and improve the health indices in Benue State.

Though none of the sociodemographic factors influenced BPCR, age is a cardinal variable in reproductive health since being women at extremes of ages are predisposed to health complications when compared to those within the prime reproductive age bracket. Most of the respondents in this study aged 25-29 years had good knowledge of BPCR compared to the other age groups. Similarly, a study done in Sokoto State revealed that most of the respondents fell within the age range of 25-29 years

(38.8%).[18] A similar result is seen in a study done in Lagos state.[13] Women aged 25–29 years in this study exhibit better knowledge of birth preparedness because they have greater maternal experience, higher healthcare utilization, improved educational status, and increased autonomy in health-related decision-making compared with younger women.

In this study, it was found that the level of education was directly proportional to knowledge of BPCR. Education generally improves the knowledge and health-seeking behaviour of individuals.[22] This direct relationship was also seen in household incomes, as seen in an Indian study.[23] The knowledge of danger signs in this study revealed that three quarters of the respondents knew of at least one danger sign in pregnancy, labour and puerperium. This is in variance with other studies done in Ebonyi ,[6] Sokoto ,[18] and Lagos states, all in Nigeria[24] and India.[25] The differences in knowledge of danger signs during pregnancy, labour and puerperium seen between this study and Thatta district, Singh, could be attributed to comparatively low levels of education among the respondents in Thatta district, Singh. Poor knowledge of danger signs would increase the maternal and neonatal mortality rate as the pregnant mother will be ignorant of warning signs during pregnancy, labour and puerperium.

The male involvement in this study is as high as seen in studies conducted in Ogun State, Nigeria, and South Gondar Region, Ethiopia, which is positive, as men's role in decision-making regarding birth and delivery, especially in Africa, is crucial.[16,26] Furthermore, male involvement is a prioritized intervention for achieving the Sustainable Development Goals of reducing the maternal mortality risk ratio.[26] With male involvement in BPCR, maternal deaths can be decreased by preventing delays through well-planned birth and complication readiness, which in turn enhances the practice of BPCR.

CONCLUSION

The high knowledge of birth preparedness and complication readiness in this study did not resultin a moderately prepared group of women. This discrepancy in the knowledge and practice could be due to factors such as poor financing, inadequate preparation for transportation, failing to plan for a blood donor and poor antenatal clinic visits.

Recommendations

There must be continuous education of pregnant women and their families by health workers, on the need to plan for a blood donor before delivery to avoid delays during emergencies thereby reducing the incidence of maternal mortality. Pregnant women should be encouraged to consider partnering with road transport workers in their localities who will be willing to transport them to the health facilities when labor commences. Finally, health care providers should actively involve the male partners during the antenatal visits by expediting consultation with women who come with their partners.

Conflict of Interest

The authors declare no conflict of interest in the conduct, analysis, and reporting of the study

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