Practice of Birth Preparedness and Complication Readiness amongst Rural and Urban Women Attending Immunization Clinics in Primary Healthcare Centers in Bayelsa State: A Comparative Analysis

Eguvbe AO[1], Egbi GO[2], Udechukwu C[2], Oluoha U[4]

[1]Department of Community Medicine,
Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria,

[2] Department of Internal Medicine, Faculty of Clinical Sciences,
College of Health Sciences, Niger Delta University,
Wilberforce Island, Bayelsa State, Nigeria

[3]Department of Community Medicine,
Imo State University Teaching Hospital, Orlu, Imo State, Nigeria

Corresponding author:
Dr. Anthony O. Eguvbe,
Consultant Public & Community Physician,
Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria;
Tel: +234-8036087938;
E-mail: doceguvbe@yahoo.com

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ABSTRACT

Introduction: *According to statistics, there are roughly 556 pregnancy-related deaths and 512 maternal deaths for every 100,000 live births in Nigeria. There are already alarmingly high rates of maternal fatalities worldwide; of the projected 289,000 deaths in 2013, 62% (179,000) occurred in sub-Saharan Africa alone. One of the several reasons these maternal deaths occur is due to insufficient or nonexistent birth and emergency preparedness.*

Objective: *To assess and compare the practice of birth preparedness and complication readiness amongst rural and urban women attending immunization clinics in primary healthcare centers in Bayelsa State.*

Methods: *It was a cross-sectional study. A multistage sampling technique was used for the selection of LGAs, and a Simple random sampling technique was used for the selection of study participants. Data were collected using a semi-structured interviewer-administered questionnaire, and the data were analyzed using SPSS version 25. Chi-square statistics were used for the comparison of*

proportions between rural and urban categorical variables. The level of statistical significance was set at 5%.

Results: *The practice of birth preparedness, as shown by respondents taking specific action to prepare for childbirth and potential complications in this study, was higher among urban respondents (198, 93.4%) compared to rural respondents (152, 70.7%). The respondents who selected a place of birth in their past or present pregnancy and those who chose healthcare provider in the rural group were 166(77.2%) and 151(70.2%) respectively, and in the urban group, they were 198 (92.1%) and 201(93.5%) respectively, and the differences were statistically significant.*

Conclusion: *The practice of BPCR, as regards most of the variables studied, was higher amongst the urban respondents as compared to the rural ones. There is a need for more health education on BPCR in the rural areas.*

KEYWORDS: Practice, birth preparedness, complication readiness, rural and urban, women, Bayelsa.

INTRODUCTION:

Birth preparedness and complication readiness (BPCR) concept is based on the premise that preparing for birth and being ready for complications reduces all three phases of delay to a bad obstetric outcome [1,2]. This common responsibility matrix encompasses pregnant women, their families, the community, healthcare providers, and policymakers. Since normal pregnancy, labor, and puerperium are retrospective diagnoses, the concept of BPCR helps each group in advance to proactively prepare for the ultimate goals of the safe childbirth process. The impact of these delays on maternal mortality was highlighted by studies carried out in Nigeria[1].

Identification of a skilled birth attendant, identification of the nearest suitable care facility, planning for transportation to this care facility for delivery and/or obstetric emergencies, saving money to pay for care and other resources, identification of a potential blood donor, and decision-making in an emergency are the main components of BPCR[3].

Any nation's efforts to attain fairness, lessen poverty, and foster social capital must center on maternal health. One of the main metrics for achieving the Millennium Development Goals was lowering maternal death rates. The World Health Organization (WHO) stated that 99% of maternal deaths worldwide occur in underdeveloped nations, with Sub-Saharan Africa accounting for 66% of these deaths and Southern Asia for 22%4. Birth preparedness and complication readiness, or BPCR, is one of the main strategies for lowering maternal death rates [4,5]. Inadequate readiness for birth and complications has been linked to maternal death, particularly in low- and middle-income nations[6]. As of 2015, Nigeria had an 814 maternal mortality ratio (MMR) per 100,000 live births, and the country had 40,000 maternal deaths annually, or 14% of the global total. Despite this unacceptable high MMR, some treatments have been shown to reduce the risk of maternal fatalities. These include birth preparedness and complication readiness, resulting in skilled attendance for pregnancy and

childbirth, as well as access to emergency obstetric care[6].

In Nigeria, about 512 maternal deaths occur in every 100,000 live births, and about 556 pregnancy-related deaths occur in every 100,000 live births[7]. The number of maternal mortalities globally is concerning at the moment; in 2013, there were an estimated 289,000 deaths, and of those, 62% (179,000) happened in sub-Saharan Africa alone. The inadequate or nonexistent birth and emergency preparedness is one of the many reasons these maternal deaths happen 8. According to the World Health Organization, Nigeria is responsible for over 20% of maternal fatalities worldwide (WHO). A mere 39% of live births take place in medical facilities, with 59% of births occurring at home, according to the Nigeria Demographic Health Survey 2018. While the 2024 Nigeria Demographic and Health Survey (NDHS) reported that 43.3% of women gave birth in health facilities, the highest percentage in NDHS history. Specifically, 46% of women had a birth attended by a skilled birth attendant, and 43.3% delivered in a health facility, an increase from previous surveys [9]. The United Nations Population Fund (UNFPA) estimates that maternal deaths in Nigeria cost the country $1.5 billion annually[10].

A cross-sectional descriptive study conducted in Edo State on birth preparedness and complication readiness among pregnant women attending Primary Health Care Centers reported that two hundred and one (87.4%) respondents were found to be well-prepared for the birth. Having a tertiary education and being married were factors found to be significantly associated with birth preparedness[11]. A similar descriptive cross-sectional study on Birth Preparedness and Complication Readiness (BPCR) knowledge and practice by pregnant women in a cottage hospital in Port-Harcourt, Nigeria reported that the practice of birth preparedness and complication readiness among the respondents showed that 381 (93.6%) had identified a place of delivery, 342 (84.03%) were saving money in case of emergencies, 366 (89.93%) were preparing essential items for safe delivery and the post-partum period, and 237 (58.23%) could detect early signs of an emergency. No statistically significant relationship was found between the level of education of the pregnant women in the study and their practice of birth preparedness and complication readiness[12].

A study in Benin City on knowledge and Practice of Birth Preparedness and Complication Readiness Among Pregnant Women Attending Mission Hospitals, amongst 405 pregnant women in their third trimester, reported that One hundred and seventy respondents (42.0%) were knowledgeable about BPCR, and 231 (57.0%) were birth prepared and complication ready. Primiparity and knowledge of BPACR were predictive of BPACR[13].

Nigeria continues to experience high maternal mortality rates. This study will contribute to efforts to reduce maternal mortality by examining and understanding the levels of birth preparedness and complication readiness among women in Bayelsa State especially those living in underserved rural and riverine communities. Insights gained from this study can inform targeted interventions to enhance maternal healthcare practices. Within Nigeria, Bayelsa State is a unique regional setting with unique

socioeconomic, cultural, and healthcare system features. Studies carried out in this condition can offer context-specific information, which makes it possible to create solutions that are customized to the requirements of the State[1,14].

Methodology

The study was carried out in Bayelsa State. The State is located between latitudes 4°15′ North and 5°23′ South. It also falls within the longitudes of 5<°22′ West and 6<°45′ East. The State's borders are with Rivers State to the east, Delta State to the north, and the Atlantic Ocean to the West and South[15,16]. The predominant tribe is the Ijaw. The majority religion is Christianity. Bayelsa state has an area of 9,391 km2 and a projected population of 2,537,400 people in 2022 from the 2006 census [15,17]. The State consists of eight (8) local government areas in all. Southern Ijaw, Yenagoa, Nembe, Ogbia, Sagbama, Brass, Ekeremor, and Kolokuma/Opokuma are the local government areas.

Yenagoa is the capital of the state and the only Urban local government area (LGA)–16,18 The State has a total of two hundred and ten (210) PHCs scattered across the eight (8) LGAs of the State.

The study was a comparative cross-sectional study in design. The study was carried out amongst women of childbearing age attending immunization clinics in primary healthcare centers who gave birth within the past 12 months preceding the study period in both the rural and urban Primary Healthcare Centers. To estimate the minimum sample size for comparing independent groups and considering alpha and beta errors, the following formula was used[19].

$$\frac{n = 2[Z\alpha + Z\beta]^2 \ \pi[1 - \pi]}{d^2}$$

Where,

n = minimum sample size required.

Zα = Normal Standard deviation which corresponds to the desired confidence level of 95% for this study.

Zβ = this is the statistical power and 80% is selected.

π = Arithmetic average of the two proportions; i.e., arithmetic average of the rural and urban proportions.

d = Arithmetic difference between the two proportions; i.e., arithmetic difference between the rural and urban proportions.

Reports from a cross-sectional study in rural General hospitals in Lagos State, Nigeria reported that the practice of BPCR was low in the rural center with 13.2% practice 20, while, in a study on birth preparedness complication readiness and determinants among pregnant women in Ethiopia reported a practice of BPCR of 24.1%21. Zα = 1.96

Zβ = 0.80

π = 0.241 + 0.132/2

= 0.1865

d = 0.241 – 0.132 = 0.109

Substituting these values in the formula above, $n = 2[1.96 + 0.80]^2 \times 0.187[1 - 0.187]/0.109^2$

$= 2 \times 7.618 \times 0.187 \times 0.813/0.109^2$

$= 2.316/0.011881 = 194.9$

= 195

Adjusting for possible non-response of 10%

Minimum sample size will now be 215

n = 215.

Two hundred and fifteen (215) women of reproductive age group who gave birth within the preceding one year who are attending immunization and antenatal clinics in both the rural and urban PHCs will be interviewed making up a total number of respondents of four hundred and thirty (430) in both the rural and urban groups.

A multistage sampling technique was used; the first stage was to stratify the eight local government areas (LGAs) in Bayelsa State into urban and rural local government areas. Stage 2: Yenagoa LGA was purposively selected as it is the only urban LGA in State 16. A simple random sampling method by balloting was used to select one rural LGA out of the remaining seven rural LGAs in the State. Ogbia LGA was selected. One urban (Yenagoa LGA) and one rural (Ogbia LGA) were studied, and the findings were compared in this study. Yenagoa LGA has thirty-three (33) PHCs, while Ogbia LGA has thirty-one (31) PHCs.

Yenagoa LGA has fifteen (15) political wards, while Ogbia LGA has thirteen (13) political wards[22]. Stage 3: Study participants were selected by proportionate allocation using the political wards both in the urban LGA (Yenagoa) and the rural LGA (Ogbia). Using the minimum calculated sample size of 215 for both the urban and rural LGAs, and considering that the urban LGA has 15 political wards and the rural LGA has 13 political wards, dividing 215 by the number of political wards in each LGA results in the urban LGA being allocated 14 participants to be studied, while each political ward in the rural LGA has been allocated 16.5, rounded up to 17 participants to be studied. Stage 4: Simple random sampling by balloting was used to select participants in the different health centers in these wards, as the researcher and his research assistants visited these primary health care centers (PHCs) on immunization clinic days until the sample size was achieved. All health centers were visited and studied. Study participants were selected by simple random sampling by balloting as the researcher and his research assistants visited these primary healthcare centers (PHCs) on immunization clinic days until the sample size was achieved. The balloting process involved the use of a deep bag with pieces of papers labelled "yes" and "no" with double the number of study participants allocated to the health centres and the study was on nursing mothers who visited the centers for immunization only on the said day of visits and not from medical records.

The instrument that was used for data collection was a semi-structured questionnaire, with closed and open-ended questions that was interviewer-administered to the women of reproductive age group who gave birth within the last twelve months and were attending immunization clinics in the selected rural and urban PHCs in the LGAs of study. Validation of the questionnaire (Study Instrument) was done by carrying out a reliability test on the questionnaire to ensure the degree of internal consistency of the study instrument. Operationally, to test for the reliability of the study instrument used, a pre-test study was carried out using 10% of the sample size, which was 22 respondents. The pre-test was carried out in Delta State, Ughelli North, and South Local Government Area in their urban and rural PHCs respectively, with 22 respondents in each of the LGAs.

Data collected were thoroughly checked for completeness and then analyzed using the

computer software package SPSS (Statistical Package for the Social Sciences) version 25. A descriptive analysis of the data was done using frequency tables. Chi-square statistics were used for the comparison of proportions between rural and urban categorical variables. The level of statistical significance was set at 5%.

Ethical clearance for this study was obtained from the Research and Ethics Committee of the Niger Delta University Teaching Hospital, Okolobiri, Bayelsa State with research and ethics number NDUTH/REC/0090/2024. Signed consent was obtained from participants after detailed explanations about the research.

Results:

A total of 430 mothers who were attending immunization clinics in the selected PHCs, both in the Ogbia (rural PHCs) and the Yenagoa (Urban PHCs), participated in this study, giving a response rate of 100%.

Table 1: Socio-demographic characteristics of respondents (n=215)

Table 1 shows the socio-demographic characteristics of the respondents. The mean age of respondents was 27.2 ± 7.6 for the Rural, and that for the Urban was 36.2 ± 9.0.

Variable	Rural(%)	Urban (%)	χ2 (pValue)
Age (years)			
15-24	61(28.4)	54 (25.1)	25.6*
25-34	109 (50.7)	69 (32.1)	(<0.001)
35-44	39 (18.1)	78 (36.3)	
45 or >	6 (2.8)	14 (6.5)	
Marital Status			
Single	33 (15.3)	6 (2.8)	25.5*
Married	132 (61.4)	153 (71.2)	(<0.001)
Cohabiting	38 (17.7)	50 (23.3)	
Divorced	9 (4.2)	6 (2.8)	
Widowed	3 (1.4)	0(0)	
Religion			
Christianity	171 (79.5)	198 (92.1)	34.8*
Islam	12 (5.6)	17 (7.9)	(<0.001)
African Trad. Religion	21 (9.8)	0(0)	
Others	11 (5.1)	0(0)	
Ethnic group			
Ijaw	153 (71.2)	115(53.5)	17.4*
Hausa	13 (6.0)	18(8.4)	(<0.015)
Yoruba	9 (4.2)	18(8.4)	
Igbo	16 (7.4)	20 (9.3)	
Delta/Edo	15(7.0)	20 (9.3)	
Rivers	3 (1.4)	9 (4.2)	
Akwa Ibom/Cross River	3 (1.4)	9 (4.2)	
Others	3 (1.4)	6 (2.8)	

***indicates statistical significance**

The age group 25-34 constituted the majority (50.7%) of the rural participants and the age 35-44 constituted the majority (36.3%) of the urban participants. The differences in the ages of the rural participants as compared to those of the urban participants were statistically significant (p<0.001). Most participants, 132(61.4%) amongst the rural

respondents and the urban 153(71.2%), were married. There was a statistically significant difference in the marital statuses between the rural and the urban respondents ($p<0.001$).

One hundred and ninety-eight (92.1%) of the urban and rural respondents, 171 (79.5%) were Christians. The differences between the urban and rural respondents' choices of religion were found to be statistically significant ($p<0.001$). The majority of the respondents, both in the rural group, 153 (71.2%), and the urban group, 115 (53.5%), were from the Ijaw ethnic group. The Igbo ethnic group came in second with 16 (7.4%) among rural respondents, followed by the Edo/Delta ethnic group with 20 (9.3%) among urban respondents. The differences observed in the ethnic groups in the rural group as compared to the urban group were found to be statistically significant ($p<0.001$).

Table 2: Socio-demographic characteristics of respondents (n=215).

Variable	Rural (%)	Urban (%)	χ2 (pValue)
Mother's Level of Education			
None	5 (2.3)	3 (1.4)	4.0
Primary	16 (7.4)	17 (7.9)	(0.259)
Secondary	73 (34.0)	56 (26.0)	
Tertiary	121 (55.3)	139 (64.7)	
Father's Level of Education			
None	10 (4.9)	6 (2.9)	5.5
Primary	12 (5.9)	6 (2.9)	(0.140)
Secondary	42 (20.7)	58 (27.8)	
Tertiary	139 (68.5)	139 (66.5)	
Mother's Occupation			
Civil servant	53 (25.0)	47 (22.2)	73.5*
Private sector/Business	99 (46.7)	42 (19.8)	(<0.001)
Artisan	6 (2.8)	65 (30.7)	
Farmer	17 (8.0)	18 (8.5)	
House wife/unemployed	16 (7.5)	13 (6.1)	
Student	21 (9.9)	27 (12.7)	
Father's Occupation			
Civil servant	99 (49.5)	61 (29.2)	34.3*
Private sector/Business	73 (36.5)	86 (41.1)	(<0.001)
Artisan	11 (5.5)	6 (2.9)	
Farmer	6 (3.0)	27 (12.9)	
unemployed	5 (2.5)	20 (9.6)	
Student	6 (3.0)	9 (4.3)	
Number of children			
One	111 (51.6)	47 (22.2)	44.4*
Two	47 (21.9)	53 (25.0)	(<0.001)
Three	31 (14.4)	57 (26.9)	
Four	14 (6.5)	32(15.1)	
Five and above	12(5.6)	23 (10.8)	
How far is your home from the nearest health center			
2 hours or less	135 (62.8)	84 (39.6)	57.1*
More than 2 hours	35 (16.3)	107 (50.5)	(<0.001)
I don't know	45 (20.9)	21(20.9)	

***indicates statistical significance**

Table 2 above shows that the majority of the mothers interviewed in both the rural group 121 (55.3%) and the urban group 139 (64.7%) had a tertiary education. Higher in the urban group, however, and other variations in mother's education between the rural and urban groups were not found to be statistically significant (p=0.259). In both the rural group (139, 68.5%) and the urban group (139, 66.5%), the majority of the husbands of the women interviewed who were the fathers of the children had postsecondary education. There was no statistically significant difference between the fathers' educational backgrounds in either group. (p=0.140).

The majority of the mothers in the rural group were private sector or business owners 99(46.7%), followed closely by civil servants 53(25.0%) while, the majority of the mothers in the urban group were Artisans 65(30.7%), followed closely by civil servants 47(22.2%) and others. These differences in the mother's occupations were found to be statistically significant ($p<0.001$).

The majority of the fathers in the rural group were civil servants 99(49.5%), followed closely by private/business owners 73(36.5%) while amongst the urban group majority of the fathers were private sector/business owners 86(41.1%) followed closely by civil servants 61(29.2%). The differences observed in the occupations of the fathers in both groups were found to be statistically significant ($p<0.001$).

Table 3: Practice of Birth Preparedness and Complication Readiness (BPCR).

Variable	Rural (%)	Urban (%)	χ2 (pValue)
Have you taken specific actions to prepare for childbirth and potential complications during your current or last pregnancy?			
Yes	152 (70.7)	198 (93.4)	37.2*
No	63 (29.3)	14 (6.6)	(<0.001)
Total	215 (100.0)	212 (100.0)	
Did you select a place of birth in your last or present pregnancy			
Yes	166 (77.2)	198 (92.1)	18.3*
No	49 (22.8)	17 (7.9)	(<0.001)
Total	215 (100.0)	215 (100.0)	
How often do you engage in birth preparedness practices when you are pregnant			
Daily	23 (10.8)	53 (25.0)	49.6*
Weekly	41 (19.3)	54 (25.5)	(<0.001)
Monthly	65 (30.7)	82 (38.7)	
Occasionally	53 (25.0)	15 (7.1)	
Rarely	30 (14.2)	8 (3.8)	
Total	212 (100.0)	212 (100.0)	
Can you recognize the onset of labour			
Yes	182 (84.7)	198 (93.4)	8.3*
No	33 (15.3)	14 (6.6)	(<0.001)
Total	215 (100.0)	212 (100.0)	
Do you understand the birth preparedness plan			
Yes	170 (79.1)	198 (93.4)	18.4*
No	45 (20.9)	14 (6.6)	(<0.001)
Total	215 (100.0)	212 (100.0)	
Can you recognize danger signs			
Yes	196 (91.2)	195 (90.7)	0.03
No	19 (8.8)	20 (9.3)	(0.866)
Total	215 (100.0)	215 (100.0)	
Do you understand the complication readiness plan			
Yes	161 (74.9)	201 (93.5)	27.9*
No	54 (25.1)	14 (6.5)	(<0.001)
Total	215 (100.0)	215 (100.0)	
What will you do in case of an emergency			
Rush to hospital	195 (94.7)	192 (91.9)	21.5*
Rush to TBA	9 (4.4)	2 (1.0)	(<0.001)
Wait for it to resolve on its own	2 (1.0)	0(0)	
Go to your pastor/Church	0(0)	9 (4.2)	
Others	0(0)	6 (2.9)	
Total	206 (100.0)	209 (100.0)	

***indicates statistical significance**

According to Table 3 above, 152 (70.7%) and 198 (93.4%) of the respondents in the rural and urban groups, respectively, had taken specific steps to prepare for childbirth and potential complications during their current or previous pregnancies, while 63 (29.3%) and 14 (6.6%) in the rural and urban groups had not. The observed differences were statistically significant (p<0.001). The respondents who selected a place of birth in their past or present pregnancy in the rural group were 166(77.2%) and in the urban group, they were 198 (92.1%), and those who did not select a place of birth in their past or present pregnancy 49(22.8%) and 17(7.9%) in the rural and urban groups respectively. The observed differences were statistically significant (p<0.001). The frequency of birth preparation practices among respondents in the rural group was primarily 65 (30.7%) per month. It was primarily 82 (38.7%) per month in the urban group. The observed differences were statistically significant (p<0.001).

There were significantly more respondents in the Urban group;198 (93.4%) compared to those in the Rural group; 182(84.7%) who could recognize the onset of labor, and this difference was statistically significant (p<0.001). The respondents who could understand the birth preparedness plan in the rural group were 170(79.1%) and in the urban group they were 198(93.4%) and those who could not understand the birth preparedness plan 45(20.9%) and 14(6.6%) in the rural and urban groups respectively. The observed differences were statistically significant (p<0.001).

One hundred and ninety six respondents (91.2%) in the rural group and 195 respondents (90.7%) in the urban group were able to identify danger signs, while 19 respondents (8.8%) and 20 respondents (9.3%) in the rural and urban groups, respectively, were unable to do so. The observed differences were not statistically significant (p=0.866). 161 respondents (74.9%) in the rural group and 201 respondents (93.5%) in the urban group were able to comprehend the complication readiness plan, while 54 respondents (25.1%) and 14 respondents (6.5%) in the rural and urban groups, respectively, were unable to do so. There was a statistically significant difference (p<0.001).

In the situation of an emergency, most of the respondents, both in the rural group 195(94.7%) and in the urban group 192(91.9%), reported that they would rush to the nearest hospital. While a few said they would rush to a traditional birth attendant, rural 9(4.4%) and urban 2(1.0%), some others in the rural group 2(1.0%) said they would wait for it to resolve. Some in the urban group said they will go to church 9(4.2%) and other measures 6(2.9%). The observed differences were statistically significant (p<0.001).

Table 4: Practice of Birth Preparedness and Complication Readiness (BPCR).

Variable	Rural (%)	Urban (%)	χ2 (pValue)
Do you choose a healthcare provider in case of an emergency when u are pregnant			
Yes	151 (70.2)	201 (93.5)	39.2*
No	64 (29.8)	14 (6.5)	(<0.001)
Total	215 (100.0)	215 (100.0)	
Do you live close to the healthcare provider			
Yes	133 (62.7)	165 (77.8)	11.6*
No	79 (37.3)	47 (22.2)	(<0.001)
Total	212 (100.0)	212 (100.0)	
Do you know the transportation system in emergency when pregnant			
Yes	170 (79.1)	189 (89.2)	8.1*
No	45 (20.9)	23 (10.8)	(<0.001)
Total	215 (100.0)	212 (100.0)	
Do you have personal savings you can access in case of an emergency			
Yes	127 (59.1)	189 (89.2)	50.2*
No	88 (40.9)	23 (10.8)	(<0.001)
Total	215 (100.0)	212 (100.0)	
Do you identify a blood donor in case of an emergency			
Yes	91 (42.3)	144 (67.0)	26.3*
No	124 (57.7)	71 (33.0)	(<0.001)
Total	215 (100.0)	215 (100.0)	
How confident are your ability to recognize and respond to potential complications during childbirth			
Very confident	82 (38.1)	98 (45.6)	39.2*
Confident	72 (33.5)	103 (47.9)	(<0.001)
Neutral	29 (13.5)	11 (5.1)	
Not confident	27 (12.6)	3 (1.4)	
Not at all confident	5 (2.3)	0 (0)	
Total	215 (100.0)	215 (100.0)	

***indicates statistical significance**

In the event of an emergency during pregnancy, 151 (70.2%) and 201 (93.5%) respondents in the rural and urban groups, respectively, chose a healthcare provider, whereas 64 (29.8%) and 14 (6.5%) in the same groups did not. This is shown in Table 4 above. There was a statistically significant difference ($p<0.001$).

There were 133 (62.7%) and 165 (77.8%) respondents in the rural and urban groups, respectively, who lived close to their healthcare provider in case of an emergency while pregnant, and 79 (37.3%) and 47 (22.2%) in the rural and urban groups, respectively, who did not. The detected variations were statistically significant (p<0.001).

There were 170 respondents in the rural group (79.1%) and 189 respondents in the urban group (89.2%) who were aware of the transportation system in the event of an emergency while pregnant, while 45 respondents in the rural group (20.9%) and 23 respondents in the urban group (10.8%) were unaware of it. There were statistically significant differences (p<0.001).

Respondents who have personal savings in case of an emergency in the rural group were 127(59.1%), and in the urban group, they were 189(89.2%). Those who do not have personal savings in case of an emergency were 88(40.9%) and 23(10.8%) in the rural and urban groups, respectively. The observed differences were statistically significant (p<0.001).

In the rural group, 91 respondents (42.3%) identified a blood donor in the event of an emergency, while in the urban group, 144 respondents (67.0%) did so. Those who have not identified a blood donor in case of an emergency are 124 (57.7%) and 71 (33.0%) in the rural and urban categories, respectively. The differences were statistically significant (p<0.001).

There was significantly more confidence in respondents' capacity to notice and respond to probable difficulties during childbirth amongst the urban respondents as compared to the rural respondents, as shown in the table above, and the difference was statistically significant (p<0.001).

Discussion

The practice of birth preparedness, as shown by respondents who took specific action to prepare for childbirth and potential complications in this study, was higher amongst the urban respondents as compared to the rural respondents. The difference could be due to better-paying jobs with better socioeconomic standings, access to better health services, and health education in the urban areas as compared to those in the rural areas. The results of this study on BPCR practice among urban respondents were comparable to those of studies conducted in the South-East of Nigeria[23] and Port Harcourt, South-South, Nigeria12 that reported a practice of BPCR of 92.4% and 93.6% respectively. This is not surprising as Bayelsa State is also in Southern Nigeria with similar socioeconomic and education characteristics. Findings from the urban arm of this study were also similar but slightly higher than the report from the study carried out in Vajira Hospital, Thailand 4; tertiary hospital, South-West Nigeria 23 and Edo State, Nigeria 11 that reported a practice of BPCR of 78.4%, 81.5% 87.4% respectively. Reasons could be due high level of female education in the urban settings where these studies were done.

The results from this study on the practice of BPCR from both the rural and urban respondents were higher as compared to findings from studies done in Saudi Arabia 24 with a practice of 58.5% which could be attributable to religious beliefs and low female exposure to education in Saudi Arabia. It was also higher than the study at Benin City (57.0%) 13; General Hospital Calabar, South-South, Nigeria

(33.1%)''25 and Study in rural (13.2%) and urban (31.6%) general hospital, Lagos, Nigeria 20. This could be due to the fact in this study participants were immunization clinic attendees who were as at the time of the study been exposed to health education during clinic visits as compared to community based studies. Study at Bemenda Health District Cameroon (18.8%)26.

Selection of place to give birth as a practice of BPCR in this study was also higher amongst the urban respondents as compared to the rural respondents and the reasons are the differences in level of female education and access to more sophisticated health care services that is more available in the urban centres. The findings from the urban arm of this study is in line with the report from the Port Harcourt study12 that reported that 93.6% of the respondents in their selected a place of giving birth, and this could be as a result of similar socioeconomic status. The findings from the rural arm of this study were similar to the report from the study in Uganda27 that reported that 76.25% of their respondents selected a place to give birth, though their findings are lower than what is reported by the urban arm of this study. This is not surprising, as the study in Uganda[31] was done in a rural district.

In this study, urban respondents were more likely than rural respondents to choose a trained birth attendant as a BPCR practice. The results of the study conducted at Vajira Hospital in Thailand4 were comparable to the report from the urban respondents, who reported that 92.5% of their respondents chose a skilled healthcare provider before delivery, and this may be a result of studying participants with similar socioeconomic status. Findings as regards the choice of skilled healthcare providers in this study were higher than compared to those reported from the study in Uganda27 and Assiut city, Egypt28, which reported that 66.25% and 7.3% of their respondents chose skilled birth attendants before delivery, respectively. Reasons for these higher findings in our study may be due to the availability of a higher number of skilled birth attendants and their availability to mothers in Nigeria, as compared to other countries. It could also be attributed to improvement in access to information, the internet, and social media, and also better health education in our primary healthcare centers.

Having personal savings in case of emergency as a practice of BPCR was also higher amongst the urban respondents as compared to the rural respondents, and this could be attributed to the higher socioeconomic standings of urban duelers with better access to education. Reports from the study in Port Harcourt were similar to the findings from the urban respondents in this study, with 89.9% of their respondents having personal savings. This is not surprising as Port Harcourt and Yenagoa are both urban cities in the South-South region of Nigeria with similar socioeconomic similarities. The findings in this study as regards having personal savings in preparation for childbirth, was far higher as compared to findings from the study at Assiut city, Upper Egypt28 and the study at Ikenne, South-West, Nigeria 29 with 34.7% and 15.1% of their respondents having personal savings, respectively.
Making transportation plans in case of emergency, as a practice of BPCR was slightly higher amongst the urban respondents as compared to the rural

respondents. This may also be a result of the differences in socioeconomic status and female education amongst the urban and rural participants. Findings from this study on preparation for transportation were far higher than the findings from the study in Abakaliki, South-East, Nigeria 30 and the study at Assiut city, Upper Egypt, 28 that reported 19.1% and 1.0% respectively.

Identifying a blood donor as a practice of BPCR was higher amongst the urban respondents as compared to the rural respondents. Findings from this study were far higher than findings from the study in Uganda 27 that reported that 15.0% of the respondents identified blood donors, and the study Assiut city Upper Egypt 28 with 2.3% identifying blood donors in case of emergency during labor and delivery. The reasons may be ascribed to the level and quality of health education services being rendered to participants in our study during immunization clinic visits, which must have impacted the good knowledge.

Conclusion

The practice of BPCR, as regards variables like selection of place of birth, choosing a skilled birth attendant, having personal savings in case of emergency during delivery, making transportation arrangements, and identifying a blood donor were all higher amongst the urban respondents as compared to the rural ones. There is a need for more health education on BPCR, especially in the rural areas.

Limitations

Limitations were on difficulties accessing the riverine health centers and also with the security challenges within the State during the period of data collection.

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