



BIRTH PREPAREDNESS AND COMPLICATION READINESS KNOWLEDGE AND PRACTICE AMONG PREGNANT WOMEN IN SELECTED PRIMARY HEALTH CARE CENTERS IN PORT HARCOURT, RIVERS STATE

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ABSTRACT: *The birth of a baby usually brings unending joy in a family. What is most pleasing is when the outcome of the pregnancy results in both mother and baby being alive. Birth preparedness and complication readiness (BPCR) is an approach for achieving this objective. Descriptive cross-sectional study design was adopted to assess BPCR knowledge and practice among pregnant women in selected primary healthcare centers in Port-Harcourt Local Government area, Rivers state. A self-structured questionnaire was used to collect data from 380 conveniently selected pregnant women with a response rate of 370(97%). Data was analyzed using descriptive and inferential statistics at 5% level of significance. Findings showed that the majority of the respondents were married, between the ages of 25 – 32 years, had secondary education and of the Christian faith. The majority 252(68.9%) had good knowledge about BPCR while 118(31.1%) had poor knowledge. Practice of BPCR showed that 283(76.5%) had not made transport arrangement, 201(54.3%) had not identified a skilled birth attendant for the delivery, 213(57.6%) had not saved money for delivery. Overall, 199(53.8%) did not practice BPCR while 171(46.2%) practiced it. Statistical analysis using chi-square test showed that there was a significant association between knowledge and practice of BPCR. It is recommended that midwives should provide regular counseling sections and health teaching on BPCR during antenatal visits.*

KEYWORDS: Birth Preparedness, Complication Readiness, Pregnant Women, Knowledge, Practice, Antenatal Clinic

INTRODUCTION

The global and national incidence of maternal mortality is frightening and is unacceptably high. In 2015, it was estimated that over 300,000 maternal deaths occurred globally, the majority of which was seen in Sub-Saharan Africa (66%) while South Asia was next with about 22% (Alkema, et. al., 2015). In 2017, a joint report by the World Health Organization (WHO), United Nations Children Education Fund (UNICEF), United Nations Populations Fund (UNFPA), World Bank Group and the United Nations Population Division (2019) has it that globally, about 295 000 women died during and following pregnancy and childbirth and nearly 100% of these deaths occur in developing countries with more than half occurring in sub-Saharan Africa.



Unfortunately, Sub-Saharan Africa alone accounted for roughly two-thirds (196 000) of maternal deaths. Women in this region face a 1 in 37 lifetime risk of dying during pregnancy and childbirth. In Nigeria, the estimated maternal mortality ratio surpassed 800 per 100 000 live births, with approximately 58 000 maternal deaths in 2015 alone (WHO Factsheet, 2019).

Most women lost their lives due to complications during and following pregnancy and childbirth. Sadly, majority of these deaths could have been prevented. Usually, it is difficult for midwives and obstetricians to design which pregnant woman would have complication during and immediately after delivery. A key strategy to reduce such mortality is when pregnant women have knowledge of birth preparedness and are ready for any complication (Tsegaw, et. al., 2019). Inadequate knowledge of BPCR has been reported to contribute to delays in timely access to maternal emergency services (Moshi, et. al., 2018). According to Limenih, et. al., (2019), birth preparedness and complication readiness (BPCR) is the process of planning for normal birth and anticipating actions needed in case of emergency. Moinuddin, et. al., (2017) opined that BPCR aims to reduce delays in care seeking, promote skilled birth attendance, and facility deliveries. If pregnant women prepare for the birth of their babies and are ready for any complication, it is hoped that maternal and child mortality may reduce drastically. Tobin, et. al., (2014) posited that the principle and practice of BPCR in resource poor settings have the potential of reducing maternal, and neonatal morbidity and mortality rates.

In Africa, several studies have been done to assess knowledge and practice of BPCR among pregnant mothers. In Ethiopia, the knowledge and prevalence of birth preparedness practice in different study settings was unacceptably low (Endeshaw, et. al., 2018; Gebrevesus, et. al., 2019; Tsegaw, et. al., 2019; Limenih, et. al., 2019). However, a study conducted in Tanzania showed that majority of the women in Mpwapwa district had practiced BPCR (Urassa, et. al., 2012). In Nigeria, there are available studies in different parts of the country reporting varied findings about knowledge, and practice of BPCR among pregnant women. For example, knowledge of BPCR was reported in approximately 11.2% of pregnant women in a study in Northwest Nigeria (Ishola, et. al., 2017), majority of mothers poorly prepared for birth and complication in a community in Edo state Nigeria (Ibadin, et. al., 2016). In Ile-Ife, BPCR of pregnant women (less than 36 weeks gestation) attending antenatal clinics in selected health facilities revealed that though majority (61%) of the respondents made adequate preparations for delivery, only about 4.8% were ready for emergency/complication (Onayade, et. al., 2010). A study conducted by Nkwocha, et. al., (2017) in a cottage hospital in Port Harcourt found that BPCR among respondents was satisfactory.

In Port Harcourt, the Primary Healthcare (PHC) centers are the major source of healthcare service delivery for the people and they enjoy good patronage from pregnant women. However, the researchers have observed a very disturbing trend of how most pregnant women present late with complicated delivery and unfortunately, pregnancy outcomes most of the time are negative with death of baby, or mother or both. If pregnant women prepare for the birth of their babies and are ready for any complication, it is hoped that maternal and child mortality may reduce drastically. The question then is, do pregnant women know about BPCR and practice it? There is dearth of documented studies on BPCR knowledge and practice among pregnant women in Port Harcourt L.G.A. This study therefore assesses the BPCR knowledge and practice among pregnant women in selected PHC Centers in Port Harcourt Local Government area, Rivers state. It will also ascertain if knowledge is associated with the practice of BPCR.



METHODOLOGY

This study adopted a descriptive cross-sectional design that was carried out in five randomly selected PHCs in Port Harcourt local government area, Rivers State. The PHCs are owned and management by the Rivers State government under the Primary Health Care Management Board (PHCMB). There are 10 primary health centers in Port Harcourt Local government. However, the study settings (model PHC Churchhill road, model PHC Elekahia, model PHC Nkpolu/Mini Mile 3, model PHC Bundu, and model PHC Mgbundukwu) were randomly selected through balloting. A total population of 490 pregnant women aged 17 – 49 years and between 12 weeks – 36 weeks gestation attend antenatal clinic in these facilities. A sample size of 380 pregnant women who attend antenatal clinic of these facilities was derived after 10% attrition rate through the Cochran formula for a population with known proportion was used as shown; $n = Z^2pq/d^2$ (where n = minimum sample size required; Z = level of statistical significance at 95% confidence level i.e. 1.96, p = proportion of respondents who are prepared for birth and for possible complication which is 33.4% in a study in Lagos, Nigeria by Mbonu, 2018; d = sampling error 0.05, $q = 1 - p$).

Data collection was through researcher designed structured questionnaire. The questionnaire comprised of four sections; section A elicited information on the socio-demographic characteristics of respondents, section B assessed BPCR knowledge among pregnant women, while section C examined level of practice of BPCR among pregnant women. The instrument was given to experts and researchers who have publications on BPCR for their comments and suggestions which were affected to assure its face and content validity. To test for reliability, a test-retest method was conducted by administering the questionnaire to 30 pregnant women who registered and are attending antenatal care services in model PHC Ozuboko, one of the PHCs not included in this study. Two weeks later, the respondents were asked to complete the same questionnaire. Reliability coefficient was calculated using the Pearson moment correlation which yielded a coefficient of 0.8 thus making the instrument reliable. An introductory letter was then submitted to the Research Ethics Committee (REC) of the University of Port Harcourt who gave ethical clearance for the study. The introductory letter and the ethical clearance letter were subsequently submitted to the Rivers State Primary Health Care Board who then gave written permission to carry out the study in the various facilities. Permission was sought from the medical officer in-charge/Chief Nursing Officer in-charge of each PHC by submitting a copy of the ethical clearance and permission letter respectively. A written inform consent detailing the purpose of the study and the rights of the prospective respondents was attached with the questionnaire and this information was explained to the respondents and verbal consent was sought before data was collected. Two student nurses served as research assistance and were trained on the research instrument and data collection process for two days. Data gathered was sorted, cleaned and tallied using an Excel worksheet. It was then transferred into Statistical Product and Service Solutions (SPSS) version 23 which was used for data analysis. Data was presented on tables and charts and analyzed using descriptive and inferential statistics as appropriate.

Descriptive statistics of frequency distribution and simple percentages was used to describe data on socio-demographic characteristics and other research objectives. Chi-square was used to test association between knowledge and practice of BPCR. Regarding knowledge of BPCR: A total of 4 questions was given to the respondents to assess their level of knowledge on BPCR. The questions bother on knowledge of danger signs during pregnancy (3 items), labour and childbirth (4 items), postpartum period (3 items) and knowledge of danger signs for the



newborn (4 items). Total maximum score is 14. Those who scored between 7-14 marks (above 50%) were said to have good knowledge, while those who scored between 0-6 marks (below 50%) were said to have a poor knowledge of BPCR.

A total of eight questions (Q17, Q18, Q19, Q22, Q23, Q25, Q26, Q27) relating to the respondents' practice of BPCR was used. The questions are presented on a two scale of Yes or No. A response of Yes was scored 1 point while a response of No was scored 0. Total maximum point was 8. A pregnant woman was considered "prepared" for birth and its complications if she is reported to follow at least 4 of the 8 basic components of BPCR (scores between 4-8points) while those who scored between 0-3 points was considered as "not prepared" for birth and its complications.

RESULT

Out of the 380 questionnaires distributed, 370 were retrieved giving a response rate of 97%.

Socio-demographic characteristics of respondents

Table 1 below showed the socio-demographic data of respondents. The majority of the respondents were married, between the ages of 25 – 32 years, and of the Christian faith. Regarding respondent's highest level of education, majority 154(41.6%) had secondary education, followed by 121(32.7%) who had tertiary education, 80(21.6%) had primary education, while 15(4.1%) had no formal education. The majority of the respondents 276(74.6%) had antenatal booking at second trimester, and 285(77%) had intention to have the pregnancy while 192(77%) had not heard of BPCR.

Table 1: Socio-demographic distribution of respondents **n=370**

Items	Frequency (F)	Percentage (%)
Age (in years)		
17 – 24	42	11.4
25 – 32	141	38.0
33 – 40	112	30.3
41 – 49	75	20.3
Marital status		
Single	95	25.7
Married	233	62.9
Widowed	14	3.8
Divorced	28	7.6
Level of Education		
No formal education	15	4.1
Primary	80	21.6
Secondary	154	41.6
Tertiary	121	32.7
Religion		
Christianity	333	90.0
Islam	37	10.0



Occupation		
Civil servant	109	29.5
Public servant	48	13.0
Self-employed	103	27.8
Artisan	78	21.1
Housewife	32	8.6
Current gestational age		
12 – 20weeks	16	4.3
21 – 32weeks	103	27.8
Above 32weeks	251	67.9
Gestational age at booking for antenatal		
First trimester	11	3.0
Second trimester	276	74.6
Third trimester	83	22.4
Number of antenatal visits		
1 – 2	147	39.7
3 – 4	131	35.4
5 and above	92	24.9
Parity		
Nulliparous	94	25.4
1 – 3	235	63.5
4 and above	41	11.1

Respondents' Knowledge about BPCR

This section of questionnaire dealt with respondents' knowledge of BPCR. It was a 3-point Likert scale response of Yes, No, and I don't know.

The table below shows response of respondents' knowledge of BPCR. Majority of the respondents accounting for over 50% answered correctly. For example, 74.6% and 75.7% knew that severe vaginal bleeding was a danger sign in pregnancy, and during postpartum period respectively. 73% know about convulsion, 76.5% knew that prolonged labor >12 hours were danger signs during labour and childbirth. For knowledge of danger signs in the newborn, 57.6% knew of convulsion, while 258(69.7%) knew about difficult or fast breathing.

Table 2: Knowledge about BPCR

n = 370

ITEM	YES F (%)	NO F (%)	I DON'T KNOW F (%)
Knowledge of a danger sign in pregnancy			
Severe vaginal bleeding	276 (74.6)	82 (22.2)	12 (3.2)
Swollen hands and face	189 (51.1)	102 (27.6)	79 (21.4)
Blurred vision	157 (42.4)	113 (30.5)	100 (27.0)
Knowledge of the key danger signs during labor and childbirth			
Severe vaginal bleeding	178 (48.1)	150 (40.5)	42 (11.4)
Prolonged labor >12 hours	283 (76.5)	59 (15.9)	28 (7.6)
Convulsion	270 (73.0)	31 (8.4)	69 (18.6)
Retained placenta	215 (58.1)	121 (32.7)	34 (9.2)



Which of these danger signs during the postpartum period do you know?

Severe vaginal bleeding	280 (75.7)	55 (14.9)	35 (9.5)
Foul-smelling vaginal bleeding	160 (43.2)	170 (45.9)	40 (10.8)
High fever	145 (39.2)	172 (46.5)	53 (14.3)

The key danger signs in the newborn include

Convulsions/spasms/rigidity	213 (57.6)	122 (33.0)	35 (9.5)
Difficult/fast breathing	258 (69.7)	75 (20.2)	37 (10.0)
Very small baby	190 (51.4)	132 (35.7)	48 (13.0)
Lethargy/unconsciousness	181 (48.9)	111 (30.0)	78 (21.1)

F = Frequency % = Percentage

Respondents' Level of Knowledge

The figure showed the respondents' level of knowledge about BPCR. The majority 252(68.9%) had good knowledge of danger signs during pregnancy, labour and childbirth, post-partum period, and danger signs for the newborn while 118(31.1%) had poor knowledge.

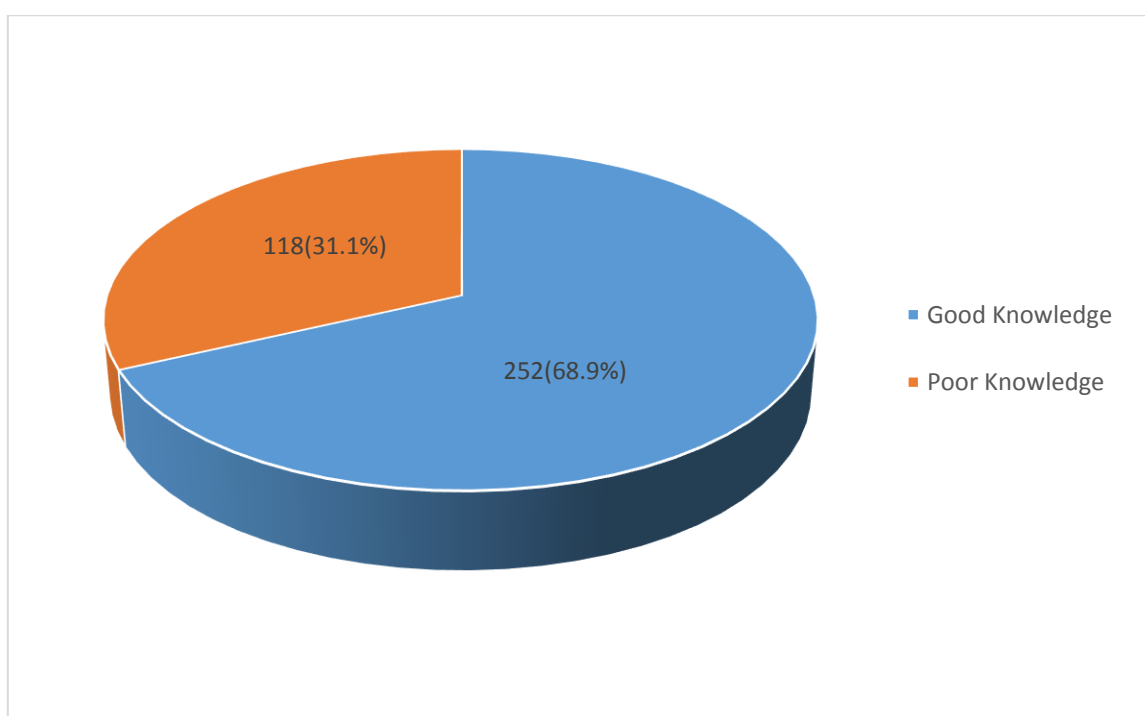


Figure 1: Level of knowledge of BPCR

n = 370



Practice of BPCR

This section of questionnaire dealt with respondents' practice of BPCR. Eight questions (Q17, Q18, Q19, Q22, Q23, Q25, Q26, Q27) relating to the respondents' practice of BPCR was used.

Table 3: Practice of BPCR **n = 370**

ITEM	YES F (%)	NO F (%)
Transport arrangement	87 (23.5)	283 (76.5)
Identification of skilled birth attendant that will take delivery	169 (45.7)	201 (54.3)
Identification of facility/place for delivery	206 (55.7)	164 (44.3)
Purchasing of delivery & new born care items	252 (68.1)	118 (31.9)
Identification of someone to accompany to health facility for delivery	129 (32.9)	241 (65.1)
Saved money for delivery	157 (42.4)	213 (57.6)
Identification of blood donor in case of emergency	94 (25.4)	276 (74.6)
Arrangement for someone to take care of the family while away for delivery	121 (32.7)	249 (67.3)

The table above shows respondent's practice of BPCR. Majority of the respondents 283(76.5%) had not made transport arrangement, 201(54.3%) had not identified a skilled birth attendant for the delivery, 241(65.1%) had not identified someone to accompany them to health facility for delivery, 213(57.6%) had not saved money for delivery, 276(74.6%) did not identified a blood donor, while 249(67.3%) had not made arrangement for someone to take care of the family while away for delivery.

However, regarding identifying a facility or place for delivery, and the purchase of delivery and newborn care items majority of the pregnant women 206(55.7%) and 252(68.1%) respectively had made preparation for them.

Level of practice of BPCR

Figure below showed respondent's level of practice of BPCR. The eight questions on practice of BPCR was used. A response of Yes to correct option will be scored 1 point while a response of No will be scored 0. Total maximum point will be 8. A pregnant woman will be considered "prepared" for birth and its complications if she is reported to follow at least 4 of the 8 basic components of BPCR (scores between 4-8points) while those who will score between 0-3 points will be considered as "not prepared" for birth and its complications.

Majority of the respondents 199(53.8%) were not prepared for birth and its complications while 171(46.2%) were prepared for it.

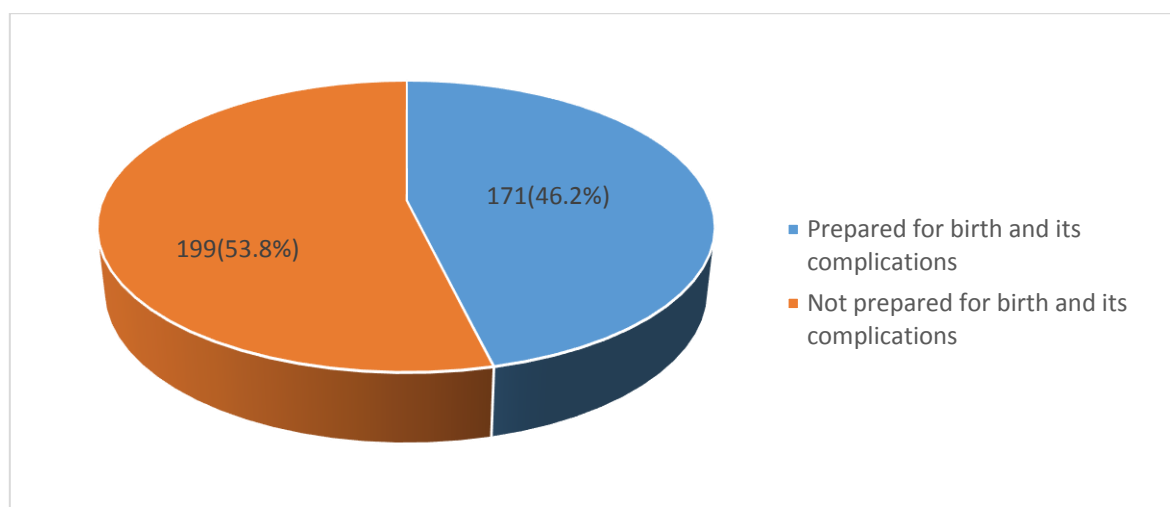


Figure 2: Level of practice of BPCR (n = 370)

Hypothesis Testing

To test the association between independent variables (e.g. knowledge about BPCR) and practice of BPCR at 5% level of significance, chi-square was used after categorization of the selected independent variables.

Hypothesis I: There is no significant association between pregnant women's knowledge and their practice of BPCR.

Table 4: Association of Respondents' knowledge and Practice of BPCR n=370

Variable	Practice of BPCR			X ²	P-value
	Prepared	Not prepared	Total		
Knowledge					
Good	106	146	252	5.48	0.01*
Poor	65	53	118		
Total	171	199	370		

X² = chi-square

* = Statistically significant df = degree of freedom

From the result presented in table 4 above, the null hypothesis of no significant association is rejected. This is because the calculated chi-square (X²) yielded a p-value lesser than 0.05 implying that a significant association exists between respondents' level of knowledge and practice of BPCR.



DISCUSSION

Findings from this study showed that a little over one third are aged 25 – 32 years and approximately two third of the population are married. The majority of the respondents 41.6% accounting for about two-fifth of the study population had secondary education, with about 32.7% of the population having tertiary education. Regarding antenatal booking, a significant proportion of the respondents 74.6% booked in their second trimester. In this study, it was not surprising that majority were within this age range and had secondary education as highest qualification. This is because Port Harcourt L.G.A is a metropolitan city characterized with social living and providing educational opportunities for the young adults. However, it was not expected that most pregnant women would present to antenatal for booking at their second trimester. The findings in this study is similar with the study done by Urassa, et. al., (2012), where two thirds of the women were 20-34 years old and had at least primary education level. They reported that the median gestation age at booking for antenatal care was 16 weeks, with 73.9% of the women haven booked after 16 weeks of gestation. This agrees with a similar study in Nigeria where 71% of the respondents registered for antenatal care by 20 weeks of gestation (Onayade, et al., 2010).

Our study also showed that a significant proportion accounting for approximately two-third of the respondents (68.9%) had good knowledge about knowledge of danger signs during pregnancy, labour and childbirth, post-partum period, and knowledge of danger signs for the newborn while less than one third had poor knowledge. This may be attributed to the level of education of respondents, the fact that pregnant mothers in their second and third trimesters put together are more in proportion with majority having three or more antenatal visits. Also, the fact that the study settings are located in an urban center which will enhance or favour high use of technology or internet for search of information among the respondents who are majorly young adults. This finding is in consonant with the study in Port Harcourt where pregnant mothers reported having knowledge of BPCR (Nkwocha, et al., 2017). In contrast to this finding, most of the studies in literature reported poor knowledge of BPCR (Urassa, et. al., 2012; Acharya, et. al., 2015; Endeshaw, et. al., 2018). Some studies conducted in other parts of Nigeria have also reported poor knowledge (Onayade, et. al., 2010; Tobin, et. al., 2014).

Result showed that approximately three-fourth of the respondents had not made transport arrangement, 74.6% did not identified a blood donor respectively, a little over half had not identified a skilled birth attendant for the delivery, 57.6% had not saved money for delivery. Result also showed that over two-third of the respondents had not identified someone to accompany them to health facility for delivery, nor made arrangement for someone to take care of the family while away for delivery respectively. Regarding identifying a facility or place for delivery, and the purchase of delivery and newborn care items, majority of the pregnant women 55.7% and 68.1% respectively had made preparation for them. This result is expected because most of the pregnant women are enlightened and may be aware of the importance of delivering in the hospital facility, and the purchase of newborn care items is culturally seen as a way of families preparing for the arrival of their newborn. Overall, level of practice showed that approximately half of the respondents were not prepared for birth and its complications while less than half were prepared for it. This finding agrees with the result of other studies in literature with reports of poor practice of BPCR (Endeshaw, et. al., 2018; Zepre & Kaba, 2017; Akanbi, et. al., 2010; Adam, et. al., 2016). Contrary to this, Nkwocha, et. al., (2017) reported that practice of BPCR was satisfactory with more than half reported to have identified a place



of delivery, saved money in case of emergencies, prepared essential items for safe delivery and the post-partum period, and could detect early signs of an emergency.

Result of hypothesis showed that the calculated chi-square (X^2) yielded a p-value lesser than 0.05. Hence, null hypothesis of no significant association is rejected. This implied that a significant association exists between respondents' level of knowledge and practice of BPCR. This is in congruence with Limenih, et. al., (2019), who found that knowledge of birth preparedness and complication readiness plans; knowledge of key danger signs during pregnancy, and postpartum period were significantly associated with practice of birth preparedness and complication readiness plan.

IMPLICATION TO RESEARCH AND PRACTICE

Midwives play key role in promoting the health and safety of every pregnant woman and ensuring that they get timely intervention with positive outcomes. Hence, the findings of this study have implication for nursing.

First, finding showed that less than half of the respondents have poor knowledge of BPCR. Midwives can therefore address this information need by providing information and communication technology, ICT materials in form of leaflets, and posters that would contain synopsis on BPCR. These materials can be distributed during the antenatal clinic days to all pregnant women especially at booking and anytime in the third trimester.

Second, the result in this study showed that over half of the respondents do not practice BPCR. This result may be attributable to some factors like current gestational age, gestational age at booking for antenatal, number of attended antenatal visits, and parity. There is therefore the need for midwives to integrate into their antenatal program a compulsory counseling and one-on-one interview for all pregnant women who are at 32 weeks gestation. This session could focus on preparing the pregnant women for birth and complication during labour and after delivery. This may help improve the knowledge of and practice level of BPCR among pregnant women who may have presented late for booking and identify any constraints they may be having.

CONCLUSIONS

This study found that a significant proportion of the respondents 74.6% booked in their second trimester, and over three fourth have not heard about BPCR. The knowledge of birth preparedness and complication readiness among majority of the respondents was satisfactory. Result also showed that approximately half of the population were not prepared for birth and its complication. Result of hypothesis showed that knowledge ($p = 0.01$) was significantly associated with practice of BPCR.

Further Research

Based on the findings in this study, it is recommended that factors that may be associated with BPCR should be examined and perceived need for social support should be assessed among these population.



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