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# Knowledge of birth preparedness and complication readiness among pregnant women in Enugu, Nigeria

## Abstract

**Background**: Avoidable maternal mortality remains a huge burden, especially in sub-Saharan Africa. Expectant mothers have faced life life-threatening complications that birth preparedness and complication readiness plan help to actively avoid.

**Objective**: The study assessed knowledge of birth preparedness and complication readiness among women in selected health care facilities in Enugu State.

**Method**: Descriptive cross-sectional questionnaire-based method was adopted. Multiple stage sampling was used to select 422 pregnant women from 8 selected health care facilities for the study. A validated structured questionnaire developed by the researchers was used for data collection. Findings were analyzed using descriptive and inferential statistics.

**Result:** Findings revealed that only 20.5% of the respondents had good knowledge of the components of Birth Preparedness and Complication Readiness(BPCR) Most of the respondents 87.6% lacked good knowledge of key danger signs of pregnancy, labour and postpartum, while the majority of the respondents 78.6%, 96.7% and 95.5% knew that vaginal bleeding is a key danger sign of pregnancy, labour and postpartum respectively. Age P=0.000, marital status P=0.001, level of education P=0.000 and occupation P=0.000 of the respondents had significant relationships with their knowledge of BPCR.

**Conclusion**: There was poor knowledge of BPCR among the studied population. There is a need for nurses and midwives to intensify health education on the components of BPCR, and key danger signs of pregnancy, labour and post-partum during an antenatal visit.

**Keywords**: knowledge, birth preparedness, complication readiness, enugu, pregnant women

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## Introduction

Poor maternal health, which leads to maternal death and severe acute maternal morbidity, is still a major issue, particularly in Sub-Saharan Africa, where health care is in short supply.[1] In 2015, an estimated 303,000 women and adolescent girls died as a result of pregnancy and delivery difficulties, while 2.6 million newborns died in the same year. Almost all maternal (99%) and child (98%) deaths occurred in low- and middle-income nations.[2] These maternal deaths may have been avoided if pregnant women or adolescent girls had access to high-quality antenatal care (ANC), sufficient prenatal preparation, and were prepared for any type of difficulty before giving birth. In Nigeria, the maternal death rate has decreased, from 1100 per 100,000 live births in 2005 to 840 per 100,000 live births in 2008, then to 560 per 100,000 live births in 2013.[3] The rate of decline, however, is insufficient to meet the third Sustainable Development Goal,[4] which aims to reduce global maternal death to less than 70 per 100 000 births, with no nation having a maternal mortality rate greater than twice the global average.[3]

Birth preparedness and complication readiness are one of the keys to a safe motherhood strategy to promote the timely use of skilled maternal and neonatal care during childbirth by making a birth plan and promoting active preparation and decision-making for the delivery of pregnant women and their families.[5] Several donor agencies and the Federal Government of Nigeria have done a lot and adopted various policies to improve safe motherhood but all these efforts have not translated to any meaningful reduction in maternal mortality.[6] More so focused antenatal care aimed at providing individual counselling on birth preparedness and complication readiness including danger signs of obstetric complications during the antenatal visits has been adopted to improve the timely utilization of the services of skilled providers by mothers and subsequent reduction in maternal mortality.[7] Despite all these efforts to reduce maternal mortality, it has continued to be high.

A study at Enugu State University teaching hospital by Ezeugwu, Agu, Nwoke and Ezeugwu (2014) reported an unacceptably high maternal mortality rate MMR of 645 per 100,000 live births and identified eclampsia and haemorrhage as the two most common causes of maternal death.[8] These two most common causes of maternal death are preventable complications of pregnancy and delivery, which could have been averted if the signs were recognized on time and prompt medical care given to the pregnant woman. The reasons for the persistently high maternal mortality in Enugu, as in most parts of Nigeria are not quite clear and it has not been established if expectant mothers in urban and rural communities in Enugu State are well informed about BPCR. The study was aimed at assessing the knowledge of birth preparedness and complication readiness among pregnant women in Enugu, Nigeria.

## Material and methods

This is a descriptive cross-sectional study. The population for the study comprised 17,565 female adults.[9] The target population was all the pregnant women receiving antenatal care in public and private healthcare facilities in Enugu. The sample size of 422 was calculated using the Creative Research System (2012). This sample size was split equally between the public and private facilities providing antenatal care giving 211 respondents in each sector of the healthcare delivery. All pregnant women attending both public and private healthcare

facilities in Enugu and those present at the time of data collection were used for the study.

A multi-stage sampling technique was utilized. The first stage involved the use of a simple random sampling technique to select one out of the three public secondary healthcare facilities, three out of the nine public primary healthcare facilities, three out of the forty private facilities and one out of the five private maternities. An equal percentage of the sample unit was allotted to each of the eight selected health facilities such that each of them accounted for 12.5% of the 422 sample units, and translated to about 53 respondents each. This was done because the population of pregnant women that receive antenatal services in any of the healthcare facilities was not known. The respondents that met the inclusion criteria were selected using the convenience sampling technique. No participant was permitted to respond twice.

A 27-item validated questionnaire developed by the researchers was used to elicit information from the respondents. It consisted of three parts (sections A, B and C). Section A consisted of five questions that were used to describe the socio-demographic characteristics of the respondents. Section B comprised five questions that elicited the obstetric data of the respondents. Section C consisted of 17 questions that measured the respondents' knowledge of BP/CR. Ethical approval was obtained from the research and ethical committee of the Ministry of Health, Enugu while informed consent was obtained from individual respondents before data collection. Descriptive statistics of frequency and percentage were used to analyze the data on socio-demographic variables and knowledge of birth preparedness and complication readiness. Inferential statistics were used to test the association among variables using the Pearson chi-square test. Data generated from the study were analyzed using the Statistical Package for Social Science (SPSS) version 20 for windows.

## Results

**Demography:** mean age of the respondents was 27.78 (6.75). Married 386 (92.1%), unmarried 17(4.1%) Majority 215 (51.3%) had tertiary education, 181 (43.2%) secondary school education, 21 (5.0%) had primary school education while only 2 (0.5%) had no formal education, Housewives were 131 (31.3%), civil servants 130 (31.0%), traders 84 (20.0%), self-employed 62(14.8%), farmers and artisans. 12 (2.9%) (Table 1).

**Level of Knowledge of BPCR:** Summary of the responses on knowledge of BPCR revealed that 247(59%) of the respondents had poor knowledge of the components of birth preparedness and complication readiness, while 86 (20.5%) had fair knowledge, and 86(20.5%) had good knowledge (Table 2).

**Level of Knowledge of danger signs of pregnancy, labour and postpartum:** The majority of the respondents 215 (51.3%) had poor knowledge, 152(36.3%) had fair knowledge while 52(12.4%) had good knowledge of the key danger signs of pregnancy, labour and postpartum (Table 3).

**Relationship between socio-demographic characteristics of mothers and knowledge of birth preparedness and complication readiness:** The result shows that the test of association between socio-demographic characteristics of mothers and knowledge of birth preparedness and complication readiness using the Pearson Chi-square test revealed a significant relationship between the age of mothers and knowledge of birth preparedness ($P<0.05$). This implies that mothers that were advanced in age had good knowledge of birth preparedness than younger mothers. Marital status has a significant relationship with the knowledge of birth preparedness ($P<0.05$) indicating that mothers that were married had good knowledge of birth preparedness than single mothers. The educational level of mothers had a significant relationship with the knowledge of birth preparedness and complication readiness ($P<0.05$). This implies that the higher the educational level the better their knowledge of birth preparedness. Similarly, the occupation of the mothers had a significant relationship with the knowledge of birth preparedness ($P<0.05$) implying that civil servants had better knowledge of birth preparedness than mothers in other occupational groups (Table 4).

**Table 1** Demographic distribution of the respondents

| Demographic characteristics | Frequency | Percentage |
|---|---|---|
| **Age Range** | | |
| 15 – 19years | 31 | 7.40% |
| 20 – 24years | 153 | 36.50% |
| 25 – 29years | 79 | 18.90% |
| 40years & above | 28 | 6.70% |
| Mean 27.78 (6.75) | | |
| **Marital Status** | | |
| Married | 386 | 92.10% |
| Single | 17 | 4.10% |
| Separated | 8 | 1.90% |
| Widow | 5 | 1.20% |
| **Highest educational level** | | |
| No formal education | 2 | 0.50% |
| Primary education | 21 | 5.00% |
| Secondary education | 181 | 43.20% |
| Tertiary education | 215 | 51.30% |
| Occupation | | |
| Housewife | 131 | 31.30% |
| Civil Servant | 130 | 31.00% |
| Self-employed | 146 | 34.80% |

## Discussion

The findings showed that health talk on birth preparedness and complication readiness were among the services provided to pregnant women during their antenatal visits. Although all the respondents agreed that a woman should prepare in advance for the birth of her child, only67.3% understood that the appropriate time to start the preparation for childbirth was the second trimester. This could be because most pregnant women believe that it was best to wait till they are in the later stages of pregnancy before active preparation for delivery was considered a priority. They can start getting prepared as they are almost sure the pregnancy is for real at that time. Even when pregnancies are diagnosed early, most expectant mothers procrastinate concerning issues of early preparation. Those in early pregnancy felt they have ample time to get prepared for delivery hence they wait till the pregnancy is advanced before initiating any form of preparation.

Very few pregnant women (7.4%) knew that they were supposed to arrange for blood in the event there is a need for transfusion which is a vital component of complication readiness based on the fact that bleeding is one of the key danger signs of pregnancy, labour and childbirth. The availability of blood is very essential and this will help provide immediate care in case of emergency without further delay in receiving care. Very few of the respondents (19.8%) and (7.4%) knew that they were supposed to arrange for transportation and emergency transportation as the case may be. Adequate transportation arrangement is very necessary for preventing the second delay in seeking help during obstetric complications which is a delay in arriving at the appropriate facility. When a woman with obstetric complication arrives at the appropriate facility on time, there is a high possibility of saving the lives of the woman and that of the baby

**Table 2** Pregnant women's knowledge about preparation for birth and its complication

| Knowledge about preparation | Frequency | Percentage |
|---|---|---|
| Is health talk one of the services provided in the antenatal clinic? | | |
| Yes | 419 | 100.00% |
| No | 0 | 0.00% |
| If yes, have you been taught about how to prepare for childbirth and the complications that may arise during pregnancy, labour and childbirth? | | |
| Yes | 419 | 100.00% |
| No | 0 | 0.00% |
| Do you think a woman should prepare in advance for the birth of her child? | | |
| Yes | 419 | 100.00% |
| No | 0 | 0.00% |
| If yes, when should a woman start preparing for the birth of her child? | | |
| 1-3months | 77 | 18.40% |
| 4-6months | 282 | 67.30% |
| 7-9months | 60 | 14.30% |
| If you have been taught, what are you supposed to do in preparation for childbirth? | | |
| Buy delivery requirements | 395 | 94.30% |
| Know your expected date of delivery | 380 | 90.70% |
| Save some money | 291 | 69.50% |
| Arrange for someone to accompany you to the place of delivery | 134 | 32.00% |
| Select a qualified birth attendant | 127 | 30.30% |
| Arrange for transportation | 83 | 19.80% |
| Select a place for delivery | 9 | 2.10% |
| What are you supposed to do in preparation for any complications that may arise? | | |
| Arrange access to emergency funds/ money | 321 | 76.60% |
| Be able to identify the danger signs of pregnancy, labour and childbirth when they occur | 291 | 69.50% |
| Plan for emergency transportation | 164 | 39.10% |
| Arrange for blood | 67 | 16.00% |
| Make a plan for decision making in case your husband is away | 31 | 7.40% |
| Knowledge of the components of birth preparedness | | |
| Poor knowledge | 247 | 59.00% |
| Fair Knowledge | 86 | 20.50% |
| Good knowledge | 86 | 20.50% |

**Table 3** Level of knowledge of danger signs during pregnancy, labour and postpartum periods

| Knowledge of danger signs | Frequency | Percentage |
|---|---|---|
| **Do you think a woman can develop some problems at any point during her pregnancy till delivery?** | | |
| Yes | 419 | 100.00% |
| No | 0 | 0.00% |
| **What are the problems a woman may experience during pregnancy?** | | |
| Bleeding or gush of fluid from the vaginal | 413 | 98.60% |
| Pelvic or abdominal pain | 314 | 74.90% |
| Swollen face and leg | 294 | 70.20% |
| Not seeing clearly | 123 | 2.94% |
| Fast or reduced foetal movement | 84 | 20.00% |
| Regular contraction before 37weeks | 83 | 19.80% |
| High fever | 70 | 16.70% |
| Unusual weight gain | 31 | 7.40% |
| Headache | 29 | 6.90% |
| **What are the major danger signs during labour and childbirth?** | | |
| Severe vaginal bleeding | 405 | 96.70% |
| Prolonged labour over 12 hours | 190 | 45.30% |
| Placenta not delivered 30 minutes after the baby | 159 | 37.90% |
| Convulsion | 136 | 32.50% |
| Severe headache | 16 | 3.80% |
| Loss of consciousness | 5 | 1.20% |
| **What are the major danger signs a woman could have after delivery?** | | |
| Severe vaginal bleeding | 400 | 95.50% |
| Foul-smelling vaginal discharge | 199 | 47.50% |
| High fever | 164 | 39.10% |
| Blurred vision | 35 | 8.40% |
| Swollen hands and face | 12 | 2.90% |
| Headache | 7 | 1.70% |
| Convulsion | 5 | 1.20% |
| **Knowledge of danger signs of pregnancy, labour and postpartum** | | |
| Poor knowledge | 215 | 51.30% |
| Fair Knowledge | 152 | 36.30% |
| Good knowledge | 52 | 12.40% |

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**Table 4** Relationship between socio-demographic characteristics of mothers and knowledge of birth preparedness and complication readiness

| Demographic | Knowledge of Birth Preparedness | | | Total | χ2 | P-value |
|---|---|---|---|---|---|---|
| | Poor Knowledge | Fair Knowledge | Good Knowledge | | | |
| **Age range** | | | | | | |
| 15 – 19years | 30 (12.1%) | 1 (1.2%) | 0 (0.0%) | 31 (7.4%) | 261.31 | 0.000* |
| 20 – 24years | 144 (58.3%) | 9 (10.5%) | 0 (0.0%) | 153 (36.5%) | | |
| 25 – 29years | 49 (19.8%) | 21 (24.4%) | 9 (10.5%) | 79 (18.9%) | | |
| 30 – 34years | 17 (6.9%) | 30 (34.9%) | 25 (29.1%) | 72 (17.2%) | | |
| 35 – 39years | 5 (2.0%) | 21 (24.4%) | 30 (34.9%) | 56 (13.4%) | | |
| 40years & above | 2 (0.8%) | 4 (4.7%) | 22 (25.6%) | 28 (6.7%) | | |
| **Marital Status** | | | | | | |
| Married | 227 (91.9%) | 77 (89.5%) | 82 (95.3%) | 386 (92.1%) | 1.398 | 0.001* |
| Single | 15 (6.1%) | 1 (1.2%) | 1 (1.2%) | 17 (4.1%) | | |
| Separated | 1 (0.4%) | 6 (7.0%) | 1 (1.2%) | 8 (1.9%) | | |
| Widow | 3 (1.2%) | 2 (2.3%) | 0 (0.0%) | 5 (1.2%) | | |
| Divorced | 1 (0.4%) | 0 (0.0%) | 2 (2.3%) | 3 (0.7%) | | |
| **Highest educational level** | | | | | | |
| No formal education | 2 (0.8%) | 0 (0.0%) | 0 (0.0%) | 2 (0.5%) | 80.749 | 0.000* |
| Primary education | 19 (7.7%) | 0 (0.0%) | 2 (2.3%) | 21 (5.0%) | | |
| Secondary education | 144 (58.3%) | 19 (22.1%) | 18 (20.9%) | 181 (43.2%) | | |
| Tertiary education | 82 (33.2%) | 67 (77.9%) | 66 (76.7%) | 215 (51.3%) | | |
| **Occupation** | | | | | | |
| Housewife | 120 (48.6%) | 6 (7.0%) | 5 (5.8%) | 131 (31.3%) | 191.925 | 0.000* |
| Civil Servant | 16 (6.5%) | 53 (61.6%) | 61 (70.9%) | 130 (31.0%) | | |
| Trading | 59 (23.9%) | 12 (14.0%) | 13 (15.1%) | 84 (20.0%) | | |
| Self-employed | 40 (16.2%) | 15 (17.4%) | 7 (8.1%) | 62 (14.8%) | | |
| Others (farming, artisan) | 12 (4.9%) | 0 (0.0%) | 0 (0.0%) | 12 (2.9%) | | |

Despite prenatal classes that these women received during booking and follow-ups, findings from the study revealed relatively poor knowledge of the respondents about preparation for birth and its complication despite their relatively high educational qualifications of these respondents. This implies that these classes are not taken seriously by both the educators and the clients, possibly due to reasons that these health workers are usually relatively young staff with little professional teaching experience to impact the needed information to the patients. However active participation on the part of the respondents is as important as the quality of the mode of delivery of these lectures. Personal experience has shown that the number of clients given appointments daily to attend ANC is high and there is no targeted plan for multiple lecture times that will accommodate a smaller number of clients per session in a day. Furthermore, these lectures are often held in informal settings with clients often distracted by frequent phone calls, buying and selling during lectures. These challenges call for a paradigm shift in the general structuring and content of antenatal lectures in order to increase their usefulness in general perinatal mortality prevention.

These findings are consistent with the work of Markos and Bogale (2014) and Mihret and Mesganaw (2006).[10,11] who found that majority of the study participants were not knowledgeable about birth preparedness and complication readiness. Ekabua et al (2011) recorded high awareness of the concept of BPCR among respondents which are not consistent with the finding of this study.[12]

The findings of the study revealed that age (P=0.000), marital status (P=0.001), level of education (P=0.000) and occupation (P=0.000) of the mothers were significantly related to their knowledge of BPCR. Respondents within the age range of 30-39years showed evidence of good knowledge of BPCR more than respondents within the age range of 15-29years. This could be attributed to the maturity level of the older women and their being more experienced than the younger ones and can ask questions about pregnancy-related matters without feeling shy. More so married women were more likely to share their experiences and make enquiries on issues about pregnancy, labour and childbirth than their unmarried counterparts. Findings also showed that the higher the educational level of the respondents, the higher their knowledge of BPCR. Better educated women are more aware of health problems, know more about the availability of health care services and use the information more effectively to maintain or achieve good health status than the less educated women. Similarly, civil servants were more knowledgeable than respondents in other occupations. These findings agree with the authors[12–14] where educational status, age, marital status, occupation, and wealth index/ income were predictors of knowledge of BPCR.

## Conclusion

Although health talks on pregnancy and labour were given during antenatal visits, there was poor knowledge of BPCR among the respondents studied. There is a need for nurses and midwives to adopt other methods of teaching pregnant women to drive essential points home for their understanding during antenatal visits. Restructuring and improving the contents of health education on the components of BPCR like danger signs of pregnancy, labour and post-partum during the antenatal visit should be emphasized.

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## Conflict of interest

None.

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