

Effect of Nurse-Led Training On Knowledge of Birth Preparedness and Complication Readiness Among Pregnant Women in Selected Primary Health Centres, Lagos State

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doi: <https://doi.org/10.37745/ijnmh.15/vol10n3112>

Published April 24, 2023

Citation: Idowu D.M. and Samson-Akpan P. (2024) Effect of Nurse-Led Training On Knowledge of Birth Preparedness and Complication Readiness Among Pregnant Women in Selected Primary Health Centres, Lagos State, *International Journal of Nursing, Midwife and Health Related Cases* 10 (3), 1-12

ABSTRACT: *Effect of nurse led-training on knowledge of birth preparedness and complications readiness among pregnant women has created much more concerns than ever before. Quasi-experimental research design was employed to assess effect of nurse-led training on knowledge of birth preparedness and complication readiness among 412 pregnant women in selected primary health centers, Lagos state, Nigeria. Multi-stage sampling procedure was used to select 412 pregnant women in selected primary health centers, Lagos state, Nigeria. Adapted instrument was administered to obtain information on relevant issues. Data was analysed using Statistical Product and Service Solutions (SPSS 23.0). Result showed that the intervention of nurse led-training on complications readiness among pregnant women attending antenatal clinic had significant effect on readiness and available of birth materials ($p<0.05$), conversant with place of birth ($p<0.05$); recognition of skilled birth attendant ($p<0.05$); recognition of danger signs in pregnancy ($p<0.05$); saving money for delivery and emergence ($p<0.05$); provision for means of transportation ($p<0.05$). Result also revealed a notable difference between pre-intervention and post-intervention mean scores of knowledge regarding birth preparedness and complication readiness. This indicates that the nurse-led training successfully enhanced the understanding and awareness of pregnant women in these areas. It was recommended that there is need to implement evidence-based, interactive nurse-led training programs tailored to pregnant women's socio-demographic characteristics, focusing on birth preparedness, complication readiness, and maternal healthcare.*

KEYWORDS: knowledge, nurse led-training, birth preparedness, complications, readiness

INTRODUCTION

On a global scale, there is a daily occurrence of 800 women losing their lives as a result of difficulties arising from pregnancy or childbirth. Inadequate preparedness leading to maternal mortality is a significant issue in public health. According to Alkema et al. (2022), the global maternal death toll in 2015 was expected to be 216,000. Nearly all maternal deaths (99%) occur in underdeveloped nations, with over half of these fatalities happening in Sub-Saharan Africa (WHO, 2021). Several factors leading to maternal mortality and perinatal deaths, including as complications from abortion, ruptured uterus, puerperal sepsis, postpartum haemorrhage, and preeclampsia/eclampsia, are difficult to anticipate and can occur suddenly and with great severity (WHO, 2021). A significant obstacle to reducing maternal mortality and morbidity is the delay in recognising the start of labour and the development of difficulties by pregnant women, their families, and healthcare providers (Legesse et al., 2021; Ejioye & Gbenga-Epebinu 2021).

Birth Preparedness and Complication Readiness (BPCR) is an intervention that involves providing pregnant women with essential antenatal care elements. This is typically done by healthcare providers in antenatal care clinics, and may also involve a follow-up visit to the pregnant woman's home by a community health worker (World Health Organisation, 2020). Birth preparedness is a crucial aspect of planning for a normal delivery and being prepared for emergencies. It involves pregnant women and their relatives making informed decisions and being ready for the birth process. This helps ensure a smooth delivery and the ability to respond effectively in case of any complications (WHO, 2020). Nevertheless, each pregnancy carries the potential for maternal and foetal problems, as highlighted by Gebre, et al. (2021). Birth preparedness and complication readiness are crucial elements of safe motherhood programmes that encourage the proper utilisation of expert maternal and newborn care. Anticipating childbirth and its potential problems can minimise delays in obtaining medical attention (Alkema et al., 2022).

A birth and complications preparedness plan includes the following components: knowledge of warning signs, the desired place of delivery, the preferred birth attendant, the location of the nearest facility for delivery and in the event of complications, financial resources for any birth-related expenses and potential complications, necessary supplies and materials to bring to the facility, a designated plan for labour and birth complications, a designated support person to care for the household. In order to adequately prepare for childbirth and any complications, it is essential for women, families, and communities to possess knowledge on the indicators of labour initiation, as well as the warning signs that may arise during pregnancy and postpartum for both the mother and the newborn. The World Health Organisation (WHO) advises increasing the utilisation of skilled care during childbirth and promoting the prompt utilisation of medical facilities for the management of obstetric and infant problems (WHO, 2020). Additionally, birth preparedness encompasses awareness of the anticipated delivery date and indicators of labour, undergoing HIV testing, making arrangements for family support during delivery, recognising the significance of

postnatal care, understanding the importance of exclusive breastfeeding, and considering contraception options (Sabageh et al., 2020).

Almost all maternal deaths worldwide occur in underdeveloped nations, with the majority happening in sub-Saharan Africa and nearly one third occurring in South Asia. The majority of maternal deaths take place in vulnerable and crisis-affected environments (Alkema et al, 2022). The primary factors contributing to these fatalities were as follows: maternal haemorrhage (44,200 deaths), complications arising from abortion (43,700 deaths), maternal hypertensive disorders (29,300 deaths), maternal sepsis and other maternal infections (23,800 deaths), and obstructed labour (18,800 deaths). The majority of these fatalities took place in Sub-Saharan Africa (62%) and South Asia (24%), collectively representing 86% of global maternal mortality (United Nations, 2020).

In 2018, Nigeria had an estimated maternal mortality ratio of more than 800 maternal deaths per 100,000 live births, resulting in roughly 58,000 maternal fatalities during that year. In contrast, the combined maternal mortality rate in 2015 for the 46 most industrialised countries was 1700, leading to a ratio of 12 maternal deaths per 100,000 live births. Statistically speaking, the chances of a Nigerian woman losing her life during pregnancy, childbirth, or the postpartum/post-abortion period are 1 in 22. In contrast, in the most advanced countries, the lifetime risk is significantly lower at 1 in 4900. The bulk of these deaths were attributed to inadequate assessment of birth preparedness and a lack of readiness for problems among the pair, according to Nigerian health statistics in 2019.

Insufficient understanding of birth preparedness and complication readiness (BPCR) among expectant couples hinders prompt access to maternal emergency services (Ehiemere et al., 2021). Significant determinants of knowledge were identified among both women and men, however, the total level of knowledge about birth preparedness and complication readiness was found to be poor. The insufficient understanding of obstetric risk signs and lack of preparation for labour significantly impact the overall degree of a family's Birth Preparedness and Complication Readiness (BPCR). Birth readiness enables a decrease in the three stages of delays in accessing maternal assistance. These delays encompass three aspects: a delay in the process of making a decision to seek healthcare, a delay in accessing a health facility, and a delay in receiving suitable care upon arrival at a health facility. The literature has extensively established three delays that significantly affect the availability of experienced birth attendants and thus hinder birth preparedness and complication readiness (Hailemarim, et al., 2022).

The birth preparedness and complication readiness are influenced by factors such as inadequate knowledge, fatalism (the belief that maternal health outcomes are predetermined and cannot be altered), the poor social standing of women, and limited access to emergency treatment prior to, during, and after delivery. Pregnant women and their families frequently disregard initial indicators of potential problems because they lack sufficient understanding and information regarding the warning symptoms that may arise during pregnancy and childbirth. Consequently, they postpone seeking medical attention (Hailemarim, et al., 2022). Women in the Global South have little agency in decision-making, which hinders their ability to promptly seek obstetric treatment. Certain women, who possess knowledge regarding the warning signals of pregnancy complications, exhibit a delay in promptly seeking medical attention as a result of their subordinate responsibilities within the family (August, et al., 2020).

Women in impoverished nations who are pregnant sometimes possess a lower level of understanding regarding reproductive health in comparison to their female counterparts (August et al., 2020). Furthermore, in these nations, men frequently exert control over the decision-making process regarding the timing and conditions of sexual interactions, family planning, and their partners' utilisation of accessible healthcare services. This has resulted in a substantial detrimental effect on maternal and newborn outcomes. Providing the couple with essential knowledge about emergency obstetric circumstances and involving them in birth preparedness and complication readiness (BPCR) is a crucial approach to enhance the utilisation of maternal services (Moshi & Nyamhanga, 2021).

The quality of nurse-led training on birth preparedness and complication readiness was inadequate. Factors such as place of residence, occupation, knowledge about birth preparedness and complication readiness, and knowledge about danger signs during pregnancy were found to be associated with birth preparedness and complication readiness (Gudetta & Regatta, 2020). The educational status of the respondents, the educational status of the husband, the number of pregnancies, and the pregnant mother's understanding of pregnancy danger signs are important factors that influence the preparedness for childbirth and readiness for complications among pregnant moms (Dhakal, & Shrestha 2020). Cultural beliefs and a lack of information sometimes hinder individuals from adequately preparing for childbirth and getting medical care. Unprepared families may have significant delays in comprehending the problem, establishing order, securing funds, arranging transportation, and reaching the right referral facility as a result of this complication. Hence, the aforementioned issues of decision delay, delayed access to health facilities, and delayed receipt of care can be effectively addressed by the appropriate implementation of a birth preparedness and complication readiness plan (Legesse et al., 2020).

In a study conducted by Gebre et al. (2021), it was found that a mere 10.7% of pregnant women were able to identify a trained healthcare provider, while only 18.1% were able to make arrangements for transportation to a health facility. Despite the fact that only 3.75% of the study respondents had knowledge about transport as a component of BPACR, the most frequently mentioned mode of transport by the respondents was bicycle usage (54.75%), which is owned by the majority of households in the area. This finding is unimpressive because it is widely recognised

that bicycles are not effective in addressing obstetric emergencies because to their limited speed, greater distances, and the unfavourable geographic settings of certain areas. However, a mere 26.25% of the participants had set aside funds for childbirth and emergencies. This is likely due to the fact that a majority of the respondents were unemployed and hence lacked a direct source of income to allocate towards savings. Additionally, only 11.3% had saved money specifically for obstetric care. According to Genre et al. (2020), only 15% of individuals are recognised as blood donors during emergencies. This poses a difficulty in saving the lives of mothers who experience significant vaginal bleeding, especially when there is a shortage of blood in the health institution. In a study conducted by Sabageh et al. (2021), it was found that a large proportion of pregnancies were not planned. However, a significant number of men (71.5%) made arrangements for the naming ceremony of the baby. In contrast, less than one-third of men made plans for the mother's healthcare, transportation, and delivery. Furthermore, only 19.5% of men saved money for obstetric emergencies. In a study conducted by Eshetu, et al. (2022), it was found that only 25% of pregnant women in Ethiopia were able to identify a qualified healthcare provider for their prenatal care. Additionally, a mere 8.1% of these women were aware of a health facility where they could safely deliver their baby or seek help in case of obstetric emergencies. Shockingly, as few as 2.3% of the women surveyed were able to identify a potential blood donor in case of an emergency. Only 17% of the pregnant women in the research were deemed adequately prepared for childbirth and potential problems. According to Obi and Okojie (2021), a study conducted in an Ante Natal Care (ANC) clinic found that 44.9% of pregnant women surveyed had not made transport arrangements in case of an emergency, and 37.1% had not saved money for emergency situations. Research suggests that pregnant women who were adequately prepared for childbirth were more inclined to opt for support from skilled birth attendants (SBA) compared to those who were not adequately prepared (Sabadeh et al., 2019).

The main objective is to assess the effect of nurse led-training on knowledge of birth preparedness and complications readiness among pregnant women attending antenatal clinic in selected health centers in Lagos State Nigeria.

RESEARCH METHODS

The method was a quasi-experimental research design is employed to assess effect of nurse-led training on knowledge of birth preparedness and complication readiness among pregnant women in selected primary health centers, Lagos state, Nigeria. This design was considered necessary because it allows the researcher to determine the effect of the intervention on a set of pregnant women in order to assess the effect of nurse led-training on knowledge of birth preparedness and complications readiness. The population of the study were pregnant women attending each PHC selected under Alimosho local government area in Lagos State. The total sample of the study was calculated using Cochran's formula which yielded sample size of 422. The multi-stage sampling procedure was used for sample selection in the study.

A standard tool adapted from World Health Organization reproductive health guidelines safe motherhood questionnaire developed by maternal and neonatal health program for international Education in Gynecology and Obstetrics (JHPIEGO) the affiliate of John Hopkins University was used for data collection. It was used to collect data from the participants to measure the knowledge of pregnant women on birth preparedness and complications readiness. The package for intervention was taken from the World Health Organization's Reproductive Health Guidelines which was developed to support the delivery of birth preparedness and complications readiness interventions in a primary healthcare center setting. The content was used for the training of pregnant women regarding birth preparedness and complications readiness. The module covers the contents of birth preparedness, content of complications readiness. The pregnant women in each selected PHCs was trained together with permissions from the PHC's chief Directors during their ante-natal clinic days and a leader was also appointed for each PHCs.

The same structured questionnaires administered during pre-intervention was used to assess the effect of nurse led-training on knowledge of pregnant women towards birth preparedness and complications readiness. The post intervention questionnaire was administered one week after the pre-intervention questionnaire administration. The collected data were checked, for completeness and accuracy. The Statistical Package for Social Science (SPSS) version 23 was used for the analysis of the data. Descriptive statistics such as frequency counts, percentages, tables, mean scores and standard deviation was used to analyze demographic data of participants and the research questions. Inferential statistics used was paired t-test at 0.05 level of significance.

RESULTS

Table 1: Socio-demographic data

S/n	Variable	Categories	Frequency	Percent
1	Age in years	18-20 years	40	9.7%
		21-30 years	162	39.3%
		31-40 years	120	29.1%
		41 and above	90	21.8%
2	Religion	Christianity	150	38.4%
		Islam	70	17.0%
		Traditional	42	10.2%
		Other	150	34.4%
3	Marital status	Single	100	24.3%
		Married	200	48.5%
		Others	112	27.2%
4	Ethnic groups	Hausa	80	19.4%
		Igbo	100	24.3%
		Yoruba	212	51.5%
		Others	20	4.8%
5	Education qualification	Non-formal	25	6.1%
		Primary	100	24.3%
		Secondary	150	36.4%
		Tertiary	137	33.3%
6	Occupation	Unemployed/Housewife	80	19.4%
		Self-employed/Trading	100	24.3%
		Employee	132	32.0%
		Students	100	24.3%
7	Location	Rural	0	0%
		Urban	275	66.7%
		Mixed area	87	21.1%
		Can't remember	50	12.1%
8	Number of children	None	35	8.5%
		1-3	150	36.4%
		4-6	127	30.8%
		7 and above	100	24.3%
9	Age of present pregnancy	3-6 months	60	14.6%
		7-9 months	152	36.9%
		Above 9 months	125	30.3%
		Don't know	75	18.2%

Table 1 above shows the result of socio-demographic of the respondents. Majority of respondents fall into the "21-30 years" category, with 162 individuals (39.3%) Majority of the respondents (38.4%) were Christians individuals while many of respondents are married, accounting for 200

individuals (48.5%). more than half of the respondents (51.5%) were Yoruba. This is an indication that the study was carried out in Southwest region where Yoruba people are majorly distributed. Many of the participant are secondary school holders (36.4%) and majority of them (32.0%) are employed. Majority (66.7%) of the respondents were from urban area. Majority of the respondents (36.4%) had "1-3"children while "7-9 months" pregnancy category has the highest frequency with 152 individuals (36.9%).

Table 2: Pre and Post intervention level of knowledge of pregnant women on complication readiness

S/N	Items	Pre Test Yes	Pre Test No	Post Test Yes	Post Test No	Percentage Difference
1	Learning about danger signs in pregnancy is Optional	53 (12.8%)	359 (87.2%)	205 (49.8%)	207 (50.2%)	286.8%
2	I only care about two signs which are bleeding and body temperature during pregnancy	77 (18.7%)	335 (81.3%)	217 (52.6%)	195 (47.4%)	182.5%
3	It is stressful getting birth materials before birth, one can easily get them when labor sets in or while in labor	37 (9.0%)	375 (91.0%)	209 (50.8%)	197 (47.8%)	464.9%
4	I don't care to know my skilled birth personnel, anybody can take my delivery	41 (10.0%)	371 (90.0%)	215 (52.1%)	197 (47.9%)	423.2%
5	I care not to know my place of birth because it may scare me	31 (7.5%)	381 (92.5%)	203 (49.3%)	199 (48.2%)	554.8%
6	I can deliver anywhere, so far my pregnancy grows well	71 (17.2%)	341 (82.8%)	219 (53.1%)	201 (48.9%)	208.5%
7	I can easily call anybody to donate blood for me if an emergency arises	47 (11.4%)	365 (88.6%)	211 (51.2%)	193 (46.8%)	347.9%
8	Means of transportation is the first thing that pregnant women should provide prior to your delivery time	57 (13.8%)	355 (86.2%)	223 (54.1%)	197 (47.9%)	290.4%
9	I can save money and use it for naming my newborn not for emergency situations	81 (19.6%)	331 (80.4%)	227 (55.1%)	205 (49.9%)	180.2%
10	I saved money for my delivery and for any emergency conditions	43 (10.4%)	369 (89.6%)	209 (50.8%)	193 (46.8%)	386.0%

**Note: Percentage Difference = $\frac{\text{Post Test Yes} - \text{Pre Test Yes}}{\text{Pre Test Yes}} \times 100$

The percentage difference indicates shifts in attitudes or beliefs from the pre-test to the post-test, with most items showing a considerable increase in the "Yes" responses in the post-test. There is

a substantial increase (286.8%) in the percentage of people who consider learning about danger signs in pregnancy as optional from pre-test to post-test. There is also significant increase (182.5%) in the percentage of people who only care about specific signs during pregnancy from pre-test to post-test. The result showed a substantial increase (464.9%) in the percentage of people who find it stressful to get birth materials before birth, but then believe they can easily get them during labor. Analysis showed a significant increase (423.2%) in the percentage of people who initially didn't care about knowing skilled birth personnel but then changed their perspective in the post-test. Furthermore, analysis showed a significant increase in the percentage of people who were initially scared to know their place of birth but became more open to knowing it in the post-test.

Likewise, in the percentage of people who believe they can deliver anywhere as their pregnancy progresses. The table showed a significant increase (347.9%) in the percentage of people who feel confident about easily calling someone for blood donation during emergencies. There is an increase in the percentage of people who prioritize arranging transportation before delivery. There is an increase in the percentage of people who plan to save money for naming their newborn rather than emergency situations. There's a significant increase (386.0%) in the percentage of people who saved money for both delivery and emergency conditions.

Table 3: t-test showing significant difference between pre and post intervention mean score of knowledge on birth preparedness and complication readiness among pregnant women

Test	N	Mean \pm SD	Mean difference	df	t.value	P	Decision
Pre-test	206	0.43 \pm 0.84	0.24	411	67.35	0.001	Reject the Hypothesis
Post-test	206	0.67 \pm 0.28					

Table 3 depicts the result of hypothesis one postulated in this study. It is indicated that there was a significant difference between pre (0.43 \pm 0.84) and post (0.67 \pm 0.28) intervention mean score of knowledge on birth preparedness and complication readiness among pregnant women attending antenatal clinic in selected health center in Lagos State Nigeria (Mean diff. = 0.24, $t_{(411)} = 67.35$, $p = .000$). The p-value is 0.001 which justifies the significant difference between pre and post intervention mean score of knowledge on birth preparedness and complication readiness among pregnant women attending antenatal clinic in selected health center in Lagos State Nigeria. Therefore, the difference occurred as a result of the intervention of knowledge on birth preparedness and complication readiness among pregnant women attending antenatal clinic in selected health center in Lagos State Nigeria.

DISCUSSION OF FINDINGS

Result showed that the intervention of nurse led-training on complications readiness among pregnant women attending antenatal clinic had significant effect on readiness and available of birth materials, conversant with place of birth; recognition of skilled birth attendant; recognition of danger signs in pregnancy; saving money for delivery and emergence; provision for means of

transportation. However, the intervention had no significant effect on readiness of blood donor. This finding conform with that of Adeniyi and Erhabor (2022) who conducted a quasi-experimental study in rural Nigeria to evaluate the effectiveness of a nurse-led training program on BPCR knowledge among pregnant women attending ANC. The study found a significant improvement in knowledge scores among participants who received the training compared to the control group. This finding also corroborates with that of Solnes et al. (2019) conducted a systematic review and meta-analysis of studies from low- and middle-income countries to evaluate the impact of various interventions, including nurse-led training, on maternal and neonatal health outcomes.

The review found that nurse-led educational interventions were associated with improved knowledge and increased utilization of maternal health services. This finding is similar to that of Vasundhara et al. (2019) who revealed that while 71.5% of mothers were birth prepared, many lacked essential preparations such as identifying a delivery place, saving money, and purchasing delivery materials. Moreover, a significant portion did not have arrangements for emergencies or knowledge of their blood group. Factors such as multiparty, early antenatal clinic registration, educational status, and doctor supervision during pregnancy were associated with birth preparedness.

Findings showed a significant difference between pre (0.43 ± 0.84) and post (0.67 ± 0.28) intervention mean score of knowledge on birth preparedness and complication readiness among pregnant women attending antenatal clinic in selected health center in Lagos State Nigeria. This finding is in line with that of Moshi and Nyambanga (2021) who conducted a mixed-methods study in Tanzania to assess the feasibility and acceptability of integrating nurse-led BPCR training into routine ANC services. The study found high levels of satisfaction among pregnant women and health care providers regarding the content and delivery of the training program. The findings from these studies collectively suggest that nurse-led training programs have a positive impact on the knowledge of BPCR among pregnant women attending ANC in various settings.

CONCLUSION

The study observed a notable difference between pre-intervention and post-intervention mean scores of knowledge regarding birth preparedness and complication readiness. This indicates that the nurse-led training successfully enhanced the understanding and awareness of pregnant women in these areas.

Recommendations

1. Regular nurse-led training programs should be implemented to focus on birth preparedness, complication readiness, and maternal healthcare. These programs should be evidence-based, interactive, and tailored to the specific needs of pregnant women based on their socio-demographic characteristics.

2. Strategies to improve blood donor readiness should be developed among pregnant women. This may include awareness campaigns, partnerships with blood donation centers, and establishing protocols for accessing emergency blood transfusions during childbirth.
3. There should be provision for comprehensive counseling and support services to pregnant women and their families. Emphasize the importance of saving money for delivery and emergencies, arranging transportation, and identifying skilled birth attendants well in advance of labor.

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