Blood Pressure Apparatus and Maternal Healthcare Delivery Service in Rural Bayelsa State, Nigeria

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Abstract
Unavailability and low level of blood pressure apparatus utilisation in a hospital particularly rural communities are a critical challenge that threatens the lives of pregnant women in rural Bayelsa State. This research explores the role of blood pressure apparatus on maternal healthcare service delivery in rural Bayelsa State, Nigeria. Survey research design was adopted and the instruments for data collection were in-depth interview and questionnaire. Data from the questionnaire were analysed using the Statistics for Social Sciences (SPSS), presented in tables. Findings revealed that blood pressure apparatus has significantly contributed to improve maternal healthcare service delivery in rural Bayelsa State in the area of blood pressure status of pregnant women in order to offer drug prescription and timely intervention in times of emergencies. However, in some primary healthcare facilities, blood pressure apparatus was not available. It is recommended among others that Bayelsa State Government to provide Blood Pressure Apparatus in the available healthcare facilities in rural Bayelsa State. And to properly educate people rural women through local languages on the importance of using blood pressure apparatus for their maternal healthcare.

Keywords: *Blood Pressure Apparatus and Maternal healthcare*

Introduction

Accessibility and utilisation of blood pressure apparatus by pregnant women in hospital is essential for maternal mortality reduction particularly rural communities (WHO, 2012). This research becomes critical against the backdrop that there is an alarming rate of maternal mortality triggered by high blood pressure among rural women in Bayelsa State, Nigeria. This study evaluates the role of blood pressure apparatus on maternal healthcare delivery service in rural Bayelsa State, Nigeria. Existing literature shows that available healthcare facilities in rural communities lacks blood pressure apparatus for maternal healthcare (Ujah, Aisien, Mutihir, Vandergt, Glen, & Uguru, 2005). As a result, the blood pressure status of pregnant women are unknown, this has led to numerous mother-child mortality in rural areas. This research therefore seeks to provide answer to the role of blood pressure apparatus on maternal health delivery service in rural Bayelsa State.

Blood pressure apparatus has significantly contributed to maternal health delivery service (Thomas, 2009). It helps pregnant women and healthcare providers to check the blood pressure of pregnant women, the heartbeat, vital organs, and as well as whether blood is pumping through the artery (Silverstone, hirsch, & Morely, 1992). Babalola and Fatusi, (2017) posits that insufficient access to healthcare equipment has been recognised as an underlying cause of poor quality of childbirth care and is linked with increased risks of adverse health outcomes leading to the high rate of maternal mortality in remote areas. Pappas, Mikalet, Giannakos, Krogstic and Lekakos (2018) further notes that, most aspects of our lives have been transformed by digital equipment in the last decade's especially maternal health delivery service. Healthcare is one of the last frontiers where digital modernisation through the utilisation of blood pressure apparatus is now steadily changing the nature of maternal healthcare. The promises of digital equipment like blood pressure apparatus in medical services are substantial and rooted in ongoing practical applications. It holds great potential to address important issues in the healthcare industry including rural communities, which would make healthcare services patient or pregnant women-focused and unimaginable more effective and efficient in terms of maternal health delivery service.

In spite of the growing literature on the subject matter, the use of blood pressure apparatus to advance maternal health delivery service in that respect has scarcely been explored. This study therefore seeks to contribute in filling this gap in order to advance the frontier on blood pressure apparatus and maternal health delivery service in rural Bayelsa State, Nigeria.

Conceptual Clarification

The concepts of blood pressure apparatus and maternal healthcare are essential in this discourse. The two concepts are succinctly articulated within the context of this study in order to provide their understanding in this discourse.

Blood Pressure Apparatus

Blood pressure apparatus/monitor is a device used to check or measure blood pressure (Fleming, 2014). In this study, blood pressure apparatus is an equipment used by healthcare providers to provide healthcare service to patients' including pregnant women. It enables healthcare providers to know if the blood pressure of a pregnant woman is high, low or normal. It also helps healthcare personnel to know if there is an history of blood pressure from the patients' family and the adequate drug prediction help to save the lives of mother and child (Hafkin, & Taggart, 2001). Essentially, the device is employed to identify whether there is an emergency that requires quick intervention.

Maternal healthcare

Maternal healthcare focuses on the overall well-being of pregnant women at the stage of prenatal, antenatal and postnatal period (Aluko & Ademiluyi, 2015). Maternal healthcare in this research refers to the care given to a pregnant woman during pregnancy, childbirth, as well as the postnatal period. It also looks at issues related to pregnancy knowledge to foster good health, mitigate complications in order to promote safe delivery and better health outcome.

Methodology

This research adopted a survey research design in order to provide answer to the objective of the study. Primary and secondary sources of data were used for the collection of data and analysis. Secondary data were collected from the library, books, journals, internet, and healthcare policy

documents from the Bayelsa State Ministry of Health. While primary data were collected from key informant interview (KII) and the instrument of the questionnaire. Stakeholders interviewed in this research include doctors, nurses, pregnant women and government officials. The data collected from the field were imputed into Statistics for Social Sciences (SPSS) and presented using tables and simple percentages.

Theoretical framework

This research adopts the Rational Choice Theory (RCT). This theory postulates that an individual makes a choice that he/she feels is for the interest of every citizen (Coleman, 1990; Hechter &Kanazawa, 1997). This theory is predicated on three assumptions (i) that an individual have selfish preferences or interests (ii) their utilities are maximised and (iii) they act independently based on available information. Following these assumptions, the absence of blood pressure apparatus available and utilised in the available healthcare facilities in rural Bayelsa is as a result of the choices made by public officer holders or politicians in the state. As a result, rural women are constraint by the preferences and interests of politicians. In rural Bayelsa State, particularly primary healthcare facilities, blood pressure apparatus are not available, funds meant for such equipment are grossly diverted or misappropriated by public office holders, thereby increasing the rate of maternal mortality in the state (Elem, & Nyeche, 2016). Thus, the absence of blood pressure apparatus has contributed immensely to the poor maternal health delivery service in the state. The preferences and interests of politicians denote the positive or negative outcome of an action. Political actors in the society have different choices i.e. either to concentrate on the delivery of maternal health service to women or to focus on other social issues like provision of water supply, construction of road and building of school. The theory presupposes that, if there are alternatives for a politician to make a choice, he/she sees that choice as being rational.

Results and Analysis

The results and summary of the findings from the instrument of the questionnaire and the data collected using semi-structured interviews with stakeholders in the health sector are presented. The summary of respondents' reactions is shown in table 1.

Table 1. The nexus between Blood Pressure Apparatus and Maternal Healthcare Delivery Service

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree n=367

Variables	SD (*f*-%)	D (*f*-%)	U (*f*-%)	A (*f*-%)	SA (*f*-%)	Mean	Std. Deviation
Use of blood pressure apparatus in a hospital help pregnant women to know whether blood is pumping through artery	0(0%)	0(0%)	0(0%)	127(35.1%)	238(64.9%)	4.6485	0.47809
Use of blood pressure apparatus in a hospital check the blood pressure of a pregnant woman	0(0%)	0(0%)	2(5%)	146(39.8%)	217(59.1%)	4.5967	0.51299
Use of blood pressure apparatus in a hospital help to monitor the vital signs of a pregnant woman	0(0%)	0(0%)	0(0%)	165(45.0%)	201(54.8%)	4.6594	2.16935
Use of blood pressure apparatus in a hospital help to check the heartbeat of a pregnant woman	0(0%)	0(0%)	4(1.1%)	131(35.7%)	230(62.7%)	4.6267	0.51708
Use of blood pressure apparatus in a hospital help to check the heart rhythm of a pregnant woman	0(0%)	0(0%)	5(1.4%)	114(31.1%)	245(67.0%)	4.6676	0.51066
Use of blood pressure apparatus in a hospital improve standard care of a pregnant woman	0(0%)	0(0%)	2(5%)	111(30.2%)	252(68.7%)	4.6921	0.48532
Use of blood pressure apparatus in a hospital enhances medical advice on blood pressure	0(0%)	0(0%)	7(1.9%)	136(37.1%)	224(61.0%)	4.5913	0.52970
Use of blood pressure apparatus in a hospital aid BP related drug prescription for pregnant women	0(0%)	0(0%)	2(5%)	125(34.1%)	236(64.3%)	4.6594	0.50793
Use of blood pressure apparatus in a hospital enhances medical advice on adequate diet for blood pressure	0(0%)	0(0%)	0(0%)	114(31.1%)	253(68.9%)	4.6894	0.46338
Blood pressure apparatus in a hospital is easily accessible by pregnant women	0(0%)	0(0%)	3(8%)	120(32.7%)	242(65.9%)	4.6621	0.50165
Use of blood pressure apparatus in a hospital provide quick results to pregnant women	0(0%)	0(0%)	0(0%)	99(27.0%)	267(72.8%)	4.7330	0.44914
Use of blood pressure apparatus in a hospital shows whether a pregnant woman blood pressure is high, low or normal	0(0%)	0(0%)	6(1.6%)	88(24.0%)	272(74.0%)	4.7302	0.48557

Source: Field Work, 2025

Table 1 shows the nexus between blood pressure apparatus and maternal health service delivery in rural communities in Bayelsa State. The result of the study showed that the majority of the respondents, 238(64.9%) strongly agreed, supported by 127(35.1%) who agreed that the use of blood pressure apparatus in a hospital helps pregnant women to know whether blood is pumping normally (mean = 4.6485, std = 0.47809). In order to affirm this view, none of the respondents disagreed/strongly disagreed, and was even uncertain of the view.

On blood pressure of pregnant women, most of the respondents, 217(59.1%), strongly agreed, and 146(39.8%) also agreed that blood pressure apparatus utilisation in hospitals helps to check the blood pressure of pregnant women (mean = 4.5967, std = 0.51299). None of the respondents disagreed/strongly disagreed and were even uncertain of the opinion. In terms of vital signs of a pregnant woman, the result of the study showed that the majority of the respondents, 201(54.8%), strongly agree, and 146(39.8%) agreed that the use of blood pressure apparatus in hospital helps to monitor the vital signs of pregnant women (mean = 4.6594, std = 2.16935). None of the respondents disagreed/strongly disagreed, as well as was unsure of the opinion.

The results of the study further revealed that the majority of the respondents, 230(62.7%), strongly agreed, and also 131(35.7%) agreed that blood pressure apparatus utilisation in hospitals helps to check the heartbeat of pregnant women (mean = 4.6267, std = 0.51708). None of the respondents strongly disagreed/disagreed, only 4(1.1%) were not sure of the view. On standard care, the results of the study revealed that most of the respondents, 252(68.7%), strongly agreed, 111(30.2%) also agreed that blood pressure apparatus utilisation in hospitals improves standard care for a pregnant woman (mean = 4.6921, std = 0.48532). While only 2(5%) of the respondents were not sure of the view, none disagreed or strongly disagreed.

In terms of medical advice on blood pressure, the study revealed that the majority of the respondents, 224(61.0%), strongly agreed, and 136(37.1%) agreed that blood pressure apparatus utilisation in hospitals enhances medical advice on blood pressure to pregnant women (mean = 4.59613 std = 0.52970). While 7(1.9%) of the respondents were not certain of the opinion, none 0(0%) either disagreed or strongly disagreed. Furthermore, the results of the study showed that most of the respondents, 236(64.3%), strongly agreed, and 125(34.1%) also agreed that blood pressure apparatus utilisation in hospitals aids blood pressure-related drug prescription for pregnant women (mean = 4.6594, std = 0.50793). However, none disagreed or strongly disagreed, and only 2(5%) were not sure of the opinion. In terms of adequate diet, the results further revealed that the majority of the respondents, 253(668.9%), strongly agreed, and 114(31.1%) also agreed that blood pressure apparatus utilisation in hospitals also fosters medical advice on adequate diet to reduce the blood pressure of pregnant women (mean = 4.6894, std = 0.46338). But none 0(0%) strongly disagreed or disagreed as well as was not sure of the view. On easy accessibility, the results of the study showed that most of the respondents, 242(65.5%) strongly agreed, and corroborated by 120(32.7%), who also agreed that blood pressure apparatus utilisation in hospital is easily accessible by pregnant women (mean = 4.6621, std = 0.50165). While 3(8%) weres not sure of the view, none disagreed nor strongly disagreed.

In addition, the results of the study also revealed that the majority of the respondents, 267(72.8%) strongly agreed, and 99(27.0%) agreed that blood pressure apparatus utilisation in hospitals provides quick results for pregnant women (mean = 4.7330, std = 0.44914). However, none strongly disagreed or disagreed and was not sure of the opinion. Finally, in terms of whether the blood pressure status of a

pregnant woman is high or low, the results revealed that most of the respondents, 272(74.0%), strongly agreed, and 88(24.0%) also agreed that blood pressure apparatus utilisation in hospitals shows whether a pregnant woman's blood pressure is high, low, or normal (mean = 4.7302, std = 0.48557). While 6(1.6%) were not certain of the view, none strongly agreed or disagreed.

The quantitative data presented in table 4.3.4 was corroborated by qualitative data generated through interviews with stakeholders. One of the respondents, Dennis Koki, a medical doctor in Cottage Hospital Ebedebiri, Sagbama LGA, stated that:

> *The blood pressure apparatus is not only helpful to pregnant women but also to all patients admitted into the hospital. The machine helps healthcare providers to know the blood pressure of pregnant women. This is carried out to know if the patient is losing more blood. This has helped to reduce untimely death or any other complication that may arise during delivery (Dennis, male, 37 years).*

Another respondent, Tumon Kekebou, a nurse in Cottage Hospital, Ebedebiri, in Sagbama LGA, posited that:

> *According to the WHO, all patients are expected to know the range of their blood pressure. Specifically for pregnant women, pregnancy comes with a lot of complications the machine helps healthcare providers to know the pre-ecclesia (when the blood pressure is high, low, or normal). This has aids prompt intervention, especially, for pregnant women with a history of blood pressure in their family due to genetics. But the machine has helped improve healthcare service delivery (Tumon, male, 41 Years).*

Another respondent, Glory Godspower, a pregnant woman in the Nembe community, Nembe LGA, stated that:

> *My experience in this hospital is that I never knew that there is a history of blood pressure in my family. With the use of blood pressure apparatus in this hospital, I was told by the doctor of the information. I am very okay because the drugs prescribed for me are really working for me. Any time I am in pain, the doctors are able to monitor my blood pressure, and I am not the only one; there are other women who have the same experience. The machine has drastically reduced unnecessary deaths arising from blood pressure. Also, in the case of elevation or low blood pressure, there is proper management, and this has really helped my maternal health care services (Glory, female, 29 years).*

Yet another respondent from the Bayelsa State Ministry of Health, Nathaniel Owen, has this to say:

> *On the part of the Federal Ministry of Health, we have ensured that blood pressure apparatus is made available in all our health care facilities. This is as a result of the relevance of the machine in the health sector. I can assure you that almost all facilities have this machine for health care services. In our last yearly report, it was reported that the rate of blood pressure cases has been reduced, and it was as a result of the availability and utilisation of blood pressure machine. This has no doubt saved the lives of patients and pregnant women (Nathaniel, male, 39 years).*

Personal observation in the field also confirms that of all the healthcare facilities visited, blood pressure apparatus was available for maternal health care service delivery, and the doctors and nurses confirmed the usefulness and relevance of the machine. Data have clearly shown that blood pressure apparatus has improved maternal health service delivery. The machine has been able to help healthcare providers to

monitor the blood pressure of pregnant women for timely intervention in order to prevent untimely death and any other complication that may arise from the pregnancy.

Discussion of Findings

This section focuses on the discussion of findings of the research. This is done based on the objective of this research.

Blood Pressure Status and Maternal Health Delivery Service

The objective of this study was to evaluate the role of blood pressure apparatus on maternal health service delivery in rural communities in Bayelsa State. The study revealed that blood pressure apparatus is available in both tertiary and primary healthcare centres. Findings in this study revealed that blood pressure apparatus aid healthcare providers to know the blood pressure status of pregnant women in order to recommend adequate drug prescription. Pregnant women may have no idea whether there is a family history of blood pressure occasioned by genetics, as this is a major challenge that affects both mother and child during delivery. Hospitals providing blood pressure apparatus services to pregnant women in rural communities include the Comprehensive Health Centre, Oporoma, in the Southern Ijaw Local Government Area; Comprehensive Health Centre, Okoloba, in the Kolokuma Local Government Area and Cottage Hospital Nembe in Nembe Local Government Area of Bayelsa State. This finding is in line with Begum, Khan, Adamou, Ferdous, and Parvez, (2020) and Babar, Usmani, Kayani, Yaqub, and Rehaman (2019), who discovered in their studies that blood pressure apparatus enables healthcare providers to know whether blood pumping is at regular levels with the heartbeat and at normal or abnormal rates. The availability and use of this apparatus has contributed to maternal health service delivery in rural communities in Bayelsa State.

The issue of blood pressure drug prescription was emphasised by healthcare providers and pregnant women. Most patients or pregnant women with BP-related ailment may not be placed on relevant medications when their status is unknown; but with the availability and use of these kits, appropriate medication can be recommended. Findings in this study also align with Farlex (2012), who posits that blood pressure apparatus enable health care providers to prescribe the appropriate medication for patients or pregnant women. In addition to these findings, the Bayelsa State 2020 Annual Report on Maternal Mortality Reduction also emphasises the provision and utilisation of blood pressure apparatus in all healthcare centres in the state in order to improve maternal health service delivery.

Due to the availability of blood pressure apparatus and their effective utilisation in hospitals, healthcare providers have been able to give appropriate medical advice to pregnant women in rural communities. Pregnancy comes with a lot of complications, and it is important that pregnant women eat the right diet, know the best sleeping position, adhere to prescribed drugs, and abstain from self-medication. Knowledge of BP status of pregnant women is key to providing relevant advice on these issues. In line with the findings, the Family Care International and the Safe Motherhood Inter-Agency Group (2009) posited that blood pressure apparatus help healthcare providers to educate pregnant women on the adverse effect of BP on the health of pregnant women. Blood pressure apparatus utilisation has improved maternal health service delivery as the lives of both pregnant women and their babies have been saved.

Conclusion and Recommendations

The purpose of this research was to examine the role of blood pressure apparatus on maternal healthcare service delivery in rural Bayelsa State. Despite the hard-to-reach rural communities occasioned by the riverine terrain, yes, there are no adequate infrastructure, minimal healthcare personnel, poor electricity, inadequate funding on the part of government, however, minimum investment in digital equipment like blood pressure apparatus will improve maternal healthcare service delivery and reduce maternal mortality in rural Bayelsa State. On this note, the following recommendations are critical to improve maternal healthcare service delivery in rural Bayelsa State. Health care providers, NGOs and Bayelsa State to properly educate rural women on the benefits of using blood pressure apparatus for their maternal healthcare. The state government to provide blood pressure apparatus in all primary healthcare facilities in rural communities of the state.

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