



Pre-eclampsia Management in Hospitals; Assessing the Extent of Compliance with International Guidelines in Selected Hospitals in Abia State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://prh.globalpresshub.com/review-history/1609>

Original Research Article

Received: 05/05/2024
Accepted: 08/07/2024
Published: 16/07/2024

ABSTRACT

The study is aimed at investigating Pre-Eclampsia Management in Hospitals; Assessing the Extent of Compliance with International Guidelines in Selected Hospitals in Abia State. A descriptive survey design was adopted for the study. The study used a non-proportionate sampling technique to select 165 midwives from a population of 400 midwives in Federal Medical Centre Umuahia and Amachara General Hospital. A self-structured validated instrument was used to collect data. Statistical Package for Social Science version 22.0 was used to analyze the data. Descriptive statistics was used as the data analysis method. Hence, measures of central tendency statistics (mean), simple percentages, and charts were used to answer the research questions while z-test

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Cite as: Doris, Orji, Ocheze, and Basil, Omieibi Altraide. 2024. "Pre-Eclampsia Management in Hospitals; Assessing the Extent of Compliance With International Guidelines in Selected Hospitals in Abia State, Nigeria". *Asian Journal of Research in Medicine and Medical Science* 6 (1):147-54. <https://jofmedical.com/index.php/AJRMMS/article/view/78>.

statistics was used to test the hypothesis. The result revealed that 15.5% of the respondents were between the age of 20 – 30years, 35.3% were between 31 – 40years, 27.4% were between 41 – 50years while 19.8% were between 51years and above, 61.4% of the respondents had B.NSc, 22.5% had M.Sc while 16.1% had PhD, 68.5% of the respondents were full-time staff while 31.5% were part-time staff, 15.5% of the respondents had less than 1 year work experience, 37.3% had 1 – 5years working experience, 27.4% had 6 – 10years working experience while 19.8% had more than 11years working experience. The study further revealed that the level of availability of the International Guidelines of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara General Hospital is low, the extent of compliance with international guidelines of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara general hospital is low, the factors influencing compliance with the international guideline of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara general hospital were age, years of experience, type of employment amongst others. The study concludes that there are practice gaps in compliance with the guidelines among all cadres of healthcare providers with the unavailability of the guidelines topping the list. The researcher therefore recommends that there is a need to strengthen the knowledge of healthcare providers toward the prevention and management of pre-eclampsia.

Keywords: Pre-eclampsia; pregnancy; high blood pressure; gestation.

1. INTRODUCTION

“Pre-eclampsia is a disorder of pregnancy that can affect nearly every organ system” (Cunningham, 2010). “Worldwide, 14% of maternal deaths in pregnancy has been attributed mainly to gestational hypertension, pre-eclampsia and eclampsia” [1-3]. “Preeclampsia has been described as a systemic syndrome of pregnancy, which is characterized by a new onset high blood pressure (systolic ≥ 140 mmHg or diastolic ≥ 90 mmHg) and proteinuria of ≥ 0.3 grams per 24 hours that occurs after 20 weeks of gestation in a woman that was previously normotensive” [4]. “It has been suggested to be a disease of the placenta, which possibly resulted from impaired trophoblast differentiation and invasion during early pregnancy. This impairment possibly stimulates sustained oxidative stress and a systemic inflammatory response in the affected women” [5].

“Pre-eclampsia is a pregnancy-associated multisystem in order with no definite aetiology. However, it is thought to occur in two stages. The first stage encompasses the impairment of fetal trophoblastic invasion of the decidua and local placental hypoxia” [6]. “The second stage is the release of placental blood-related factors into the maternal circulation and aberrant expression of pro-inflammatory, antiangiogenic and angiogenic factors” [7]. “It is grouped into two main types: early-onset pre-eclampsia (occurring before 34 weeks of gestation) and late-onset pre-eclampsia (occurring after 34 weeks of gestation)” [8].

“Although the presenting features of early- and late-onset PE may overlap, early-onset PE is associated with increased odds of complications, particularly preterm birth, fetal growth restriction and maternal morbidity and mortality compared to late-onset pre-eclampsia” [6]. “Women with pre-eclampsia also present with diverse signs and symptoms associated with multiple organ systems. Headaches, visual disturbances, abnormal kidney function, severe hypertension, chest pain, pulmonary edema and low oxygen saturation, nausea and abnormal liver function are among the common outcomes of multi-organ system dysfunction in pre-eclampsia” (Hung et al., 2012).

“Risk factors of pre-eclampsia include first pregnancy, age (pregnancy at an advanced age or under 18 years of age), family history of pre-eclampsia, personal history of pre-eclampsia, obesity, gestational diabetes, multifetal gestation and preexisting medical conditions such as chronic hypertension” [9]. “Pre-eclampsia remains one of the leading causes of maternal mortality and morbidity, complicating an estimated 2–8% of pregnancies worldwide and up to 10% in developing countries” [10]. “In Nigeria, the prevalence of pre-eclampsia is estimated to be between 6.55 and 7.03%” [11]. “It is one of the top five leading causes of maternal and neonatal deaths. Pre-eclampsia can progress to eclampsia and cause adverse fetal outcomes such as preterm birth, small-for gestational-age babies, placental abruption, perinatal death and increase the risk of cardiovascular and cerebrovascular diseases

and venous thromboembolism later in life” (Owolabi et al., 2018). “Furthermore, women who suffer from pre-eclampsia are predisposed to mental health issues such as shame, guilt, feelings of failure, loss of control, personal inadequacy and postpartum depression” [9].

“As recommended by the International Society for the Study of Hypertension in Pregnancy, the diagnosis of preeclampsia should require blood pressures of 140/90 mmHg or higher on two occasions combined with either urinary protein excretion of ≥ 300 mg/day or new onset of maternal organ dysfunction (creatinine $\geq 90\mu\text{mol/l}$), liver involvement (elevated transaminases), haematological complication (thrombocytopenia platelet $< 150,000/\text{cmm}$), neurological complications, and fetal growth restriction” (ISSHP et al., 2014). “Laboratory tests, such as liver function tests, quantification of urinary protein, or serum creatinine, may be helpful in characterizing the degree of end-organ damage, but none is specific for preeclampsia. It has been observed that preeclampsia has deleterious effects on maternal and perinatal health, particularly in the developing nations of the world” [5].

“Preeclampsia is a major complication of pregnancy. It has been suggested that pregnant women with preeclampsia or eclampsia are likely to be at higher risk of end-stage kidney disease and high blood pressure late in life” [12]. “A previous study suggested that women with severe preeclampsia possibly exhibit more prominent signs and symptoms of end-organ damage that may result in life-threatening disease” (Alper, Yi, and Webber, 2007). “Multiple organ systems may be affected in severe preeclampsia including dysfunction of the central nervous system (could lead to blurred vision, altered mental status, severe headache, and cerebrovascular accident), liver (which results in elevated serum transaminases), cardiovascular system (systolic blood pressure ≥ 160 mm Hg or diastolic ≥ 110 mm Hg), lungs (pulmonary edema, cyanosis), and/or kidneys” [5].

“Preeclampsia is more common in women with an underlying kidney disease. On the other hand, it has been suggested that preeclampsia itself increases the risk of kidney disease later in life” [13]. It is a disease with worldwide significance to mothers and infants; it may have health hazards that increase maternal, fetal, and infant morbidity and mortality.

“It has been shown that preeclampsia has the greatest impact in developing countries, where it accounts for 20-80% of strikingly increased maternal mortality, while in developed countries, preeclampsia has a major effect on fetuses and neonates” (Wilson et al., 2003).

“The Federal Ministry of Health, Nigeria, has developed a national clinical service guideline for obstetric care, which outlines the management of eclampsia and how MgSO_4 can be used and monitored” (Ekele, 2019). “In addition, based on high-quality evidence, the World Health Organization (WHO) has recommended magnesium sulphate as the most effective, safe, and low-cost drug for the treatment of severe pre-eclampsia” (Adekanle et al., 2015). “Despite evidence on its proven safety and efficacy in the management of pre-eclampsia, MgSO_4 use is still uncommon and infrequent in many healthcare facilities in low-income countries” [14]. “Also, even though included in Nigeria’s essential drug list as the first-line drug in the management of severe PE/E, the use of this drug by healthcare providers still seems infrequent in managing these conditions” [14].

“With or without adequate supplies, providers are often reluctant to use MgSO_4 due to the complexity of administration and fear of adverse effects” (Adekanle et al., 2015). “Dosage quantities vary widely, with providers sometimes giving less than the recommended dosage and sometimes giving more. In other cases, women are referred immediately to higher-level facilities, without any emergency management, creating greater risk for the patient. This occurs due to the belief that the drug must be administered at a tertiary facility, and also as well when there are no protocols for its use or guidelines for referral” [15]. “In a study conducted in Brazil, it was revealed that there was no access to MgSO_4 in the assessed primary care facilities, clinical protocols for professional guidance on its adequate use were lacking in emergency sites and the drug was only administered in referral maternity hospitals” [14]. Vata et al. (2018) in Ethiopia found that “there was a lack of guidelines for the management of PE/E in a retrospective study conducted on the care of women with PE/E. Sheikh et al. (2015) conducted a mixed-method research in Pakistan to determine the knowledge of different cadres of healthcare providers regarding the management of PE”.

The study found huge gaps in knowledge among all the cadres of the workers regarding management of PE/E especially in the use of MgSO₄. The high case fatality rate associated with eclampsia in Nigeria has been attributed to its poor clinical management in healthcare institutions [16]. This evokes some concerns especially as regards the use of set

1.1 Aim and Objectives of the study

The study is aimed at investigating pre-eclampsia management in hospitals; Assessing the extent of compliance with international guidelines. The specific objectives of the study are to;

1. Ascertain the knowledge of the international Guidelines of pre-eclampsia management among midwives working in Umuahia South Local Government Area.
2. assess the extent of compliance with international guidelines of pre-eclampsia management among midwives working in Umuahia South Local Government Area.

1.2 Hypothesis

H₀₁: There is no significant comparison in the extent of compliance with international guidelines of pre-eclampsia management among midwives working in Umuahia South Local Government Area.

2. METHODOLOGY

The mixed research technique was used in this study. The population for this study comprised 400 midwives at the Federal Medical Centre

Umuahia and Amachara General Hospital. The sample size for the study was derived using the convenient non-probability sampling method. A total of 160 midwives with preeclampsia were engaged in the study. The instrument for data collection was a self-structured questionnaire developed by the researcher. The questionnaire was divided into two (2) parts. The first part consisted of personal data while the second part consisted of items designed to measure and assess the extent of compliance with international guidelines of pre-eclampsia management. In order to get a tangible result, the researcher administered the instrument by herself alongside three research assistants to the respondents and collected it after it had been filled by the respondents. The data obtained from the retrieved questionnaire was analyzed using mean, standard deviation, simple percentage, and frequency counts, while the Statistical significance will be tested using T-test and chi-square inferential statistics at 0.05 level of significance.

3. RESULTS

The result in Table 1 shows that 15.5% of the respondents were between the age of 20 – 30years, 35.3% were between 31 – 40years, 27.4% were between 41 – 50 years while 19.8% were between 51years and above, 61.4% of the respondents had B.NSc, 22.5% had B.Sc while 16.1% had PhD, 68.5% of the respondents were full time staff while 31.5% were part time staff, 15.5% of the respondents had less that 1 year work experience, 37.3% had 1 – 5years working experience, 27.4% had 6 – 10years working experience while 19.8% had more than 11years working experience.

Table 1. Percentage of demographic data

Age	Percent
20 – 30	15.5%
31 – 40	35.3%
41 – 50	27.4%
51 and above	19.8%
Educational qualification.	
B.NSc	22.5%
B.Sc	16.1%
Type of employment	
Full time	68.5%
Part time	31.5%
Years of experience	
<1	15.5%
1 – 5	37.3%
6 – 10	27.4%
>11	19.8%

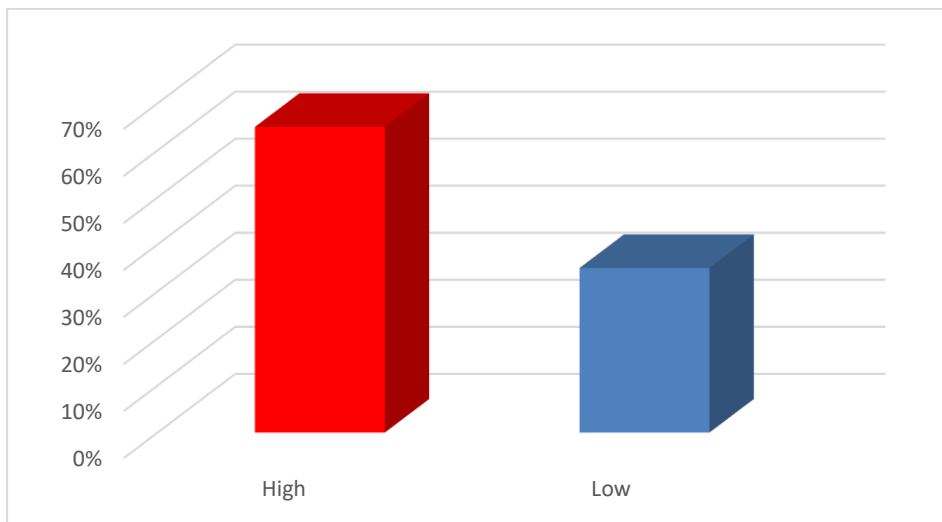


Fig. 1. Level of knowledge of the international guideline of pre-eclampsia management



Fig. 2. Extent of compliance with international guidelines of pre-eclampsia management

Fig. 1 shows majority 65% of the respondents have high knowledge of international guidelines of pre-eclampsia management while 35% have low knowledge of international guidelines of pre-eclampsia management.

Fig. 2 revealed that Majority of the respondents 50% had fair compliance level, 30% had poor compliance level while 20% had good compliance level.

3.1 Test of Hypothesis

H_{01} : There is no significant comparison in the extent of compliance with international

guidelines of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara General Hospital.

Table 2 shows the z-test analysis of the variation in the mean rating between g Federal Medical Centre Umuahia and Amachara General Hospital. The z-calculated value of 2.41 was found to be higher than the z-critical value of 1.96. Consequently, the null hypothesis which holds that there is no significant comparison in the extent of compliance with international guidelines of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara General Hospital is accepted.

Table 2. Z-test Analysis of comparison in the extent of compliance with international guidelines of pre-eclampsia management in Federal Medical Centre Umuahia and Amachara General Hospital

Respondents	N	\bar{X}	SD	Df	SL	z-cal.	z-tab.	Decision
FMC Umuahia	95	3.00	0.72	163	0.05	2.41	1.96	Accepted
Amachara general hospital	70	2.87	0.91					

4. DISCUSSION

The findings of the study revealed that the level of knowledge of the International Guideline of pre-eclampsia management was high. The findings of the study are in line with that of Adoyi et al. [15] who found that in seven states across the six geopolitical zones of Nigeria, more than half (55%) of all midwives in facilities had good knowledge of the guidelines. For instance, in Pakistan, it was found that healthcare providers had less knowledge about pre-eclampsia management due to the lack of refresher training and written guidelines (Sheikh et al., 2016). According to Smith et al., [16] despite evidence of its proven safety and efficacy in the management of pre-eclampsia, MgSO₄ use is still uncommon and infrequent in many healthcare facilities in low-income countries. The use of magnesium sulfate as the most effective and safe drug for the treatment of severe pre-eclampsia and eclampsia has been recommended by the World Health Organization (WHO) and has been advocated for in Nigeria, despite initial challenges in acceptance and adoption (Tukur, 2019; Ekele, 2019) [17-19].

The study revealed that the extent of compliance to international guidelines of pre-eclampsia management is low. Studies have emphasized the significance of compliance with guidelines in improving outcomes for women with pre-eclampsia. For example, a study in Nigeria found that gaps in the knowledge of causes, diagnoses, and treatment of pre-eclampsia may be due to the absence of written practice guidelines and lack of refresher training for healthcare providers. Similarly, in Pakistan, it was found that lesser knowledge regarding the management of pre-eclampsia is due to the lack of written guidelines for its management. These findings underscore the importance of having clear and accessible guidelines to ensure proper management of pre-eclampsia. Furthermore, the implementation of international guidelines for severe pre-eclampsia and eclampsia has been shown to contribute to a lower rate of serious complications, emphasizing

the potential impact of guideline-based care on maternal outcomes. However, studies have also highlighted challenges in the consistent implementation of national and international clinical practice guidelines for pre-eclampsia management. This inconsistency in guideline implementation can potentially hinder efforts to improve the quality of care for women with pre-eclampsia. Additionally, the level of adherence to guidelines on postpartum management of hypertensive disorders in pregnancy in Nigerian tertiary hospitals was found to be poor, indicating a gap between recommended guidelines and actual clinical practice. Similarly, a multi-country survey revealed variations in clinical practice patterns on the use of magnesium sulfate for the treatment of pre-eclampsia and eclampsia, indicating potential discrepancies with international recommendations.

5. CONCLUSION

In conclusion, this study identified that even in the presence of a national policy by the Federal Ministry of Health, Nigeria that supported pre-eclampsia programmes, there were still practice gaps in compliance with the guidelines among all cadres of health care providers with the unavailability of the guidelines topping the list.

6. RECOMMENDATIONS

Based on the available evidence, the following recommendations can be made to improve compliance with international guidelines for the management of pre-eclampsia in hospitals:

1. Dissemination and Implementation of Clinical Practice Guidelines: Hospitals should ensure the dissemination and implementation of clinical practice guidelines on pre-eclampsia management across various settings, including general practice, community and hospital antenatal clinics, antenatal, labor and postnatal wards, renal outpatients, renal wards, and

dialysis units. The target audience and intended users of these guidelines should include nephrologists, obstetricians, obstetric physicians, midwives, renal nurses, pharmacists, and specialist trainees in both nephrology and obstetrics.

2. Consistent Use of Clinical Practice Guidelines: Healthcare facilities should strive for consistent use of clinical practice guidelines for pregnancy hypertension, ensuring that the guidelines are deemed "clinically useful" and have recommendations abstracted. This can contribute to standardized and evidence-based care for women with pre-eclampsia.
3. Strengthening Healthcare Provider Knowledge: There is a need to strengthen the knowledge of healthcare providers toward the prevention and management of pre-eclampsia. Training courses that include current nationally and internationally-approved management of pre-eclampsia can benefit healthcare providers and improve compliance with guidelines.
4. Availability of Necessary Supplies and Medications: Hospitals should ensure the availability of necessary supplies and medications for the management of pre-eclampsia. Factors affecting the use of magnesium sulfate for pre-eclampsia or eclampsia, such as system and market failures that restrict drug availability, should be addressed to improve compliance with guideline recommendations.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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