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Assessment of Compliance with National Guidelines on the Management of Severe Preeclampsia and Eclampsia in Public Health Facilities in Bayelsa State

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Authors' contributions

This work was carried out in collaboration among all authors. Authors OMA and PWA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author OMA managed the literature searches. Authors IJA and PWA reviewed the literature and Author IJA prepared the second draft. All authors read and approved the final manuscript.

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ABSTRACT

Background: The Federal Ministry of Health in Nigeria developed a national guideline for the management of severe preeclampsia/eclampsia (Severe PE/E). Effective compliance with these guidelines is essential for delivery of quality care to women with these conditions. This study sought to determine the availability of the national guidelines and assess compliance by healthcare workers (HCWs) in public health facilities in Bayelsa State.
Methodology: This is a mixed-method (quantitative and qualitative) descriptive study involving 155 HCWs responding to a self-administered structured questionnaire and 29 in-depth interviews with health facility managers in 16 randomly selected health facilities in Bayelsa state. Thirty-six questions and 16 questions assessed knowledge of severe preeclampsia and compliance with

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guideline respectively among respondents. Respondents were scored and graded as poor, fair and good level of knowledge and compliance. Chi-squared test and logistic regression were used to identify factors influencing level of compliance with the national guideline. The in-depth interviews were analyzed along thematic areas using NVivo 11.0 QSR software. Level of significance was set at $p<0.05$.

Results: Slightly above half of the respondents (58.1%) had at least a local treatment guideline in their facility. However, only 69 study respondents (44.5%) knew about the existence of a national guideline on the management of Severe PE/E and even less than this (36.1%) reported that the national guideline was available in their centres. Less than a fifth of participants (17.4%) were found to have good level of compliance with the guidelines. The factors that influenced compliance included level of healthcare (OR – 26.13; p – 0.001) and level of knowledge. (OR- 53.90; $p<0.001$). From the in-depth interviews the main theme affecting compliance is non-availability of the national guideline at the centres.

Conclusion: The level of compliance with the national guideline on the management of severe PE/E is low in Bayelsa state. Level of knowledge among health workers and non-availability of these guidelines are contributory factors. Training of health workers and provision of the guideline at all levels of care are recommended to guarantee quality care for women with severe PE/E.

Keywords: Severe eclampsia; management; national guideline; compliance; public health.

1. INTRODUCTION

Pre-eclampsia/eclampsia (PE/E), is one of the leading causes of maternal mortality in low and middle-income countries with an annual estimate of 18% of women being affected worldwide [1,2]. In Nigeria, its prevalence ranges between 2% to 16.7% [3-5]. Over half of the maternal mortality worldwide occurs in six countries: India, Nigeria, Pakistan, Afghanistan, Ethiopia, and Democratic Republic of the Congo [6]. Between 50 to 70 thousand women are thought to die annually from complications resulting from preeclampsia and eclampsia [7,8]. Pre-eclampsia is associated with high risks of maternal complications such as abruptio placenta, premature delivery, disseminated coagulopathy, pulmonary oedema, acute renal failure, eclampsia, liver failure, haemorrhage, and maternal death. It is also associated with higher risks of adverse perinatal outcomes such as low birth weight, intrauterine foetal growth restriction, hypoxic-neurologic injury and foetal death. Pre-eclampsia also impacts the social and economic life of a pregnant woman. In addition, infants who are born after a pregnancy complicated by preeclampsia are at increased risk of metabolic syndrome, stroke and cardiovascular disease later in life [9].

Due to its impact, it is recommended that the management of pre-eclampsia and eclampsia be carried out at a health facility with the capacity to deal with the complications. However, an important component of the recommended management is that stabilization of patients be initiated at the first level of care before referral to the higher levels of care in order to increase patients' chance of survival with good outcome. Prevention of pre-eclampsia is difficult because its cause is unknown. The focus of prevention is on early detection of pre-eclampsia in order to prevent its progression to eclampsia. It is recommended therefore that close monitoring both in hospital and on out-patient basis is done for these patients [10,11].

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 [12,13]. 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 PE/E [14]. Despite evidence on its proven safety and efficacy in the management of PE/E, $MgSO_4$ use is still uncommon and infrequent in many healthcare facilities in low income countries [12,14,15]. Also, even though included in Nigeria's essential drug list as the first line drug in the management of severe PE/E [13], the use of this drug by healthcare providers, still seems infrequent in managing these conditions [12].

With or without adequate supplies, providers are often reluctant to use $MgSO_4$ due to the complexity of administration and a fear of adverse effects [16]. Dosage quantities vary widely, with providers sometimes giving less than the recommended dosage and sometimes giving

more [16,17]. In other cases, women are referred immediately to higher-level facilities, without any emergency management, creating greater risk for the patient [18]. 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 [16,17]. 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 [17]. Vata et al. [19] in Ethiopia found out 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. [20] conducted a mixed method research in Pakistan to determine the knowledge of different cadres of health care 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 $MgSO_4$.

The high case fatality rate associated with eclampsia in Nigeria has been attributed to its poor clinical management in healthcare institutions [21]. This evokes some concerns especially as regards the use of set national guidelines in the management of these cases of eclampsia. Do health care personnel who provide obstetric health care services follow laid down guidelines in the management of severe preeclampsia and eclampsia in public health facilities in Bayelsa State and in Nigeria? To the best of our knowledge, there is no published literature that can be used to objectively answer this question which thus inspired the desire to conduct this study. Study objectives included determining the availability of these national guidelines in health facilities in Bayelsa State as well as compliance with the guidelines among the health personnel. This study was conducted to provide data that could possibly show gaps in the management practices of preeclampsia/eclampsia among health personnel in Bayelsa State, Nigeria.

2. MATERIALS AND METHODS

A mixed-method descriptive design was used in the conduct of this research that assessed the compliance with national guidelines for the management of severe preeclampsia and eclampsia in Bayelsa state. The unit of analysis were health facilities where severe pre-eclampsia and eclampsia cases were managed in the three senatorial districts of the State. Sample size for the quantitative aspect of the study was calculated using the sample size formula for descriptive studies [22]. The sample size was adjusted to compensate for non-response, using a non-response rate of 10%. Altogether, a total of 155 workers were recruited for the quantitative part of the study. For the qualitative aspect, using purposive sampling, 29 health facility managers were selected for the in-depth interviews, 2 from each facility. However, in 3 health facilities there was the existence of only 1 facility manager that could provide needed information.

A multi-stage sampling technique was employed to select health facilities for the study. Bayelsa state comprises three (3) senatorial districts. Health facilities were selected from the three senatorial districts of the State. In stage 1, Ogbia local government area (LGA) was selected from the 3 LGAs in Bayelsa East senatorial district, Kolokuma/Opokuma LGA from Bayelsa Central senatorial district and Sagbama LGA from Bayelsa West senatorial district by simple random sampling (balloting). From each of the selected local government areas, one general hospital was selected for the study by simple random sampling (stage 2). From all the primary health centres referring patients to the selected General hospitals, 4 primary health centres were selected by simple random sampling (Stage 3). Finally, by simple random sampling (Balloting), the Federal Medical Centre was chosen for the study from the two (2) tertiary healthcare facilities in the State. Healthcare providers in the employ of these selected facilities were recruited for the quantitative part of the study. Twenty-nine health facility managers from the facilities chosen for the study were purposively selected for the key informant interviews (KIIs) using an interview guide; Compliance with the national guidelines was further explored in the qualitative aspect of this study.

The study instruments included a self-administered structured questionnaire, an interview guide, and an inventory checklist for supplies, drugs and equipment. The structured questionnaire was pretested respectively in one primary, secondary and tertiary healthcare centre. The review of the responses from health workers during the pre-test of the questionnaire led to adjustments in some sections of the questionnaire to ensure clarity and to elicit appropriate responses from study respondents.

Mixed methods were used for data collection; this comprised of quantitative and qualitative methods. Six research assistants were recruited and trained for the study. The training exposed the research assistants to the objectives and methods of the study. They were trained on the administration of the study questionnaire, the use of the interviewer guide, recording of the interview and how to apply the inventory checklist to ensure that the data collection was systematic and consistent. They were also trained on how to obtain an informed consent from respondents and to observe the ethics of medical research. The training was conducted by Experts from the Public health department of the Federal Medical Centre, Yenagoa. The training was followed by a field trial by the trainees supervised by the Public health experts and the principal Investigator before data collection commenced for the actual study.

Respondents were given the questionnaires by the principal investigator and the research assistants to fill after the objectives of the study were explained and informed consent was obtained. They were encouraged to fill the questionnaire as soon as possible and return to the research assistants. Respondents were assured of confidentiality of the information provided, which encouraged them to respond sincerely to the questions in the study instrument. The questionnaires were checked for completeness of response and respondents were also encouraged to give answers to any question they might have omitted and if they did not, their right to decline answering questions from the questionnaire was respected. The inventory checklist was administered in the different facilities after informing the officer in charge and fixing an appointment he or she were comfortable with. The checklist was administered in the antenatal clinic or wards (where applicable), labour wards (where applicable) and the pharmacy/drug store to sight and quantify commodities, materials and equipment needed in the management of severe PE/E.

The qualitative research method was used to gain better insight into the contextual issues on the quality assurance of severe PE/E management across the three levels of care in Bayelsa State, Nigeria. Key Informant Interviews (KIIs) were conducted among Community Health Extension Workers (CHEWs)/ Community Health Officials (CHO), Pharmacists, Pharmacy Technicians, Nurses, hospital-based Medical Doctors and Medical Consultants across the three levels of healthcare in the state. The study took place in four Local Government Areas (LGAs) of the three senatorial districts of the State. Each interview took place in a convenient office/venue chosen by the respondents, to ensure that they were relaxed and provided honest answers. Each interview was conducted by an interviewer and a note taker, with each lasting for an average of 20 minutes. The interviews commenced with a brief introduction of the interviewers and the respondents, the aim and objectives of the study in general and then the interview proper. All data collection was done using laid down ethical principles.

Data entry, cleaning and analysis was done using the Statistical Package for Social Sciences (SPSS) 22.0 version. Categorical variables were summarized as frequencies and percentages while continuous variables were presented by the most appropriate measures of central tendency and dispersion. The level of compliance with the national guidelines was assessed using 16 questions from the study instrument, which were derived from the national guideline; each correctly answered question was apportioned 1 point and otherwise zero. Total score for each respondent was calculated; mean score and standard deviation were derived and used to categorize the respondents into poor, fair and good level of compliance according to their score. To categorize the scores into different levels of compliance, the ‘mean score’ and ‘standard deviation’ of the scores from all the respondents was calculated. Scores above the ‘mean score plus one standard deviation’ were categorized as good level of compliance, scores between the mean score and ‘mean score plus one standard deviation’ were graded as fair level of compliance while every score below the mean score was considered poor level of compliance.

A two-step binary logistic regression was carried out to explore factors in the study that influence the level of compliance with the national guideline among study respondents. First, the dependent variable (level of compliance) was dichotomized to make it suitable for use in a logistic regression analysis. ‘Poor’ and ‘fair’ level of compliance was recorded as zero (‘Non-compliance’) and good level of compliance coded as one (compliance). A univariate binary logistic regression was done between the recoded dependent variable and explanatory variables in the study (Gender, age, marital status, and professional cadre of respondents, level of care, number of years post qualification etc.) to derive

an unadjusted odd ratio for the likelihood of compliance in the study respondents. The second step was a multivariate regression analysis where all explanatory variables found to be statistically significant in the univariate regression analysis were used in creating a model that explored their different weighted contribution to the likelihood of compliance among study respondents. Statistical significance was set at p-value: ≤ 0.05.

Data from the qualitative aspect of the study was transcribed from the recorders with inputs from the notes taken during the interviews. All the written and recorded materials were transcribed in English. The analysis followed the analytic hierarchy: from data management to descriptive and explanatory account. Thematic analysis was done using the NVivo 11.0 QSR software and this involved making sense of what the interview respondents had said. Transcribed interviews were imported directly into NVivo and the heading styles (from the interview guide) were used to group the responses into thematic areas. Each interview was read through and four main themes were coded. The identified themes were then pooled together and used to develop a summary for the study findings. Approval for the study was obtained from the ethical committee of the Federal Medical Centre, Yenagoa and the Bayelsa State Ministry of Health.

3. RESULTS

One hundred and sixty questionnaires were given to the health care workers and one hundred and fifty-five questionnaires were returned with responses giving a response rate of 96.8%. However non-response rate to different items (item non-response rate) on the study questionnaire ranged between 0.6 – 15.5%. A total of 29 KIIs were conducted and the checklist was applied in sixteen health facilities – (12) primary, (3) Secondary and (1) tertiary health facilities.

3.1 Sociodemographic Characteristic of Respondents

Of the 155 respondents in the quantitative study, majority were female (66.5%). The mean age of the respondents was 34.9±7.6 years, 41.9% were aged between 31-40 years and most of the respondents were married (56.1%). Nurses constituted the highest proportion (40.0%) of respondents, followed by doctors (37.4%) and the remaining were the CHEW/CHO (22.6%). Majority worked at the tertiary level of healthcare (44.5%), followed by the primary level of healthcare (36.8%). The mean post-qualification working years was 8.98±7.58 years, with 33.5% of them having 6-10 years working experience. These details are shown in Table 1.

3.2 Availability of the National Guideline

Regarding the availability of a treatment guideline for PE/E in the health facilities as well as the knowledge and availability of the National Eclampsia Management Guideline. It was discovered that 90 (58.1%) of the respondents had at least a local treatment guideline in their facility. However, only 69 (44.5%) of study respondents knew about the existence of a national guideline on the management of Severe PE/E and even less than this (36.1%) reported that the national guideline was available in their centres (Table 2).

3.2.1 Level of compliance with the national guidelines

Table 3 shows the mean score for compliance to be 10.57 with a standard deviation of 4.51. After this categorization, it was discovered that most respondents had a fair level of compliance (45.8%), while 36.8% had poor level of compliance and 17.4% had good compliance level. The distribution of good compliance level was 3.5%, 34.5% and 21.7% in the primary, secondary and tertiary health centres respectively (Table 4).

3.2.2 Factors influencing compliance with the national guideline

Table 5 shows the results from the binary logistic regression between the level of compliance (dependent variable) and the explanatory variables in the study. Professional cadre, level of care of the facility the respondent works, number of years post professional qualification, number of patients seen by respondents and the level of knowledge seems to impact significantly on the level of compliance with the national guideline on the management of severe preeclampsia and eclampsia.

When the multivariate model was tested the impact of professional cadre, number of years post professional qualification and number of patients seen in the last one month were not significant statistically ($p>0.05$). The statistically

significant determinant of compliance in the study were the level of care of the facility where the respondents worked and the level of knowledge of the disease among the respondents. The likelihood of compliance was 26 times more in the secondary health facility when compared to the primary health centres (OR – 26.13; 95% C.I.:3.52 – 193.65; p – 0.001). This increased likelihood was not significant in the tertiary health facility. Level of knowledge among respondents showed the same trend with the odds of compliance as high as 53 times more among those with good knowledge in relation to respondents with poor knowledge (Table 6).

3.2.3 Qualitative aspect of the study

3.2.3.1 Sociodemographic characteristic of respondents

A total of 29 health care workers comprising the facility heads or their deputies and the pharmacy heads who were directly involved in the management of the different public health facilities that manage severe preeclampsia/eclampsia in Bayelsa State were purposively selected for the key-informant interview (KII). Of the 16 facilities visited, 3 facilities (18.8%) had one health worker working as the facility head and the pharmacy head. These 3 facilities were at the primary level of care. Majority of the respondents in the KIIs were females (58.6%). Of the 18 facility heads, 8 (44%) were doctors, matron/nursing officers were 4 (22%) and the rest were CHEW/CHO 6 (33%). There were 8 pharmacy heads and 3 pharmacy technicians. 52% had spent less than 4 years in the facility they managed.

3.3 Availability of National Guidelines

The content analysis of responses from majority of the respondents in KII about this thematic area showed that for 76% of the facilities (Fig.1), there was no guideline (either national or a locally developed), hence they refer the patients when they present. Also, for some centres, especially the primary health care centres that had the guidelines, they were drafted by the management of the health centres or from their standing order, which affected the way they attended to the patients because their management was restricted by the standing order.

Table 1. Sociodemographic characteristic of respondents

Variable	Frequency N = 155 (%)
Gender	
Male	52(33.5)
Female	103(66.5)
Age Group	
21 – 30 years	55(35.5)
31 – 40 years	65(41.9)
41 – 50 years	30(19.4)
51 – 60 years	5(3.2)
Mean Age of Respondent – 34.9 ± 7.64 years	
Marital Status	
Single/Divorced/Widow(er)	68(43.9)
Married	87(56.1)
Occupation	
Nurse	62(40.0)
Doctor	58(37.4)
CHEW/CHO	35(22.6)
Level of Care	
Primary	57(36.8)
Secondary	29(18.7)
Tertiary	69(44.5)
Post Qualification working years	
Less than 1 year	10(6.5)
1 – 5 years	49(31.6)
6 – 10 years	52(33.5)
Greater than 10 years	44(28.4)
Mean Post Qualification working years – 8.98± 7.58 years	

CHEW- Community health extension worker, CHO- Community health officers

Table 2. Responses to questions on availability of treatment guideline

Questions	Responses		
	Yes (%)	No (%)	No Response (%)
Do you have any treatment guideline in the facility?	90 (58.1)	40 (25.8)	25 (16.1)
Do you know about the National Guideline on Severe Preeclampsia and Eclampsia?	69 (44.5)	59 (38.1)	27 (17.4)
Is the National Guideline available here?	56 (36.1)	68 (43.9)	31 (20.0)
Is $MgSO_4$ available in this facility?	111 (71.6)	39 (25.2)	5 (3.2)
Is Hydralazine available in this facility?	112 (72.3)	38 (24.5)	5 (3.2)

Table 3. Level of compliance with national guidelines among health workers

Level of Compliance	Frequency (%)
Poor level of compliance	57 (36.8)
Fair level of compliance	71 (45.8)
Good level of compliance	27 (17.4)
Mean score for level of compliance: 10.57 ± 4.51 points	

Table 4. Compliance with national guidelines by level of care

Characteristics	Level of care		
	Primary N = 57 (%)	Secondary N = 29 (%)	Tertiary N = 69 (%)
Level of Compliance with Management			
Poor level of Compliance	40 (70.2)	6 (20.7)	11 (15.9)
Fair Level of Compliance	15 (26.3)	13 (44.8)	43 (62.3)
Good Level of Compliance	2 (3.5)	10 (34.5)	15 (21.7)
	χ^2 =48.23; df – 4; p < 0.001		

4. DISCUSSION

In this study conducted to assess compliance with national guidelines for managing cases of severe preeclampsia and eclampsia, it was found that only 36.1% of respondents in the study population reported that the National guideline was available in their centres, which may seem higher than what is reported by Adekanle et al. [23] in Osun state (16.4%) and Adoyi et al. [24] who found out that in seven states across the six geopolitical zones of Nigeria, less than one-fifth (19%) of all facilities had correct guidelines in place for managing PE/E. It should however be noted that more than half of this proportion of the study population was from the tertiary health facility which accounted for only 6.25% of health facilities in the study.

Regarding the level of compliance with the guidelines, it was however found that the level of compliance was much more in the secondary health facilities. This may reflect the over-confidence on the part of the tertiary health care workers and could be a reason for the low compliance with the step by step guidelines/ protocol. The finding suggests that tertiary health care workers might at will adopt other modified protocols for managing preeclampsia/eclampsia. Even though the level of knowledge of eclampsia was more in the tertiary health facilities, good compliance with the National Guidelines was found to be more in the secondary health facilities when compared with the tertiary health facilities. This calls for the importance of on-the-job supervision in the training and retraining of health care workers across all levels of health care.

This study discovered that a lot of the facilities especially the primary and secondary refer patients with PE/E to the tertiary health facility without administering the loading dose of $MgSO_4$, which is required of them by the guidelines. This is not unexpected, as many respondents in these facilities had no access to the national guidelines nor training on the use of $MgSO_4$. This is most likely responsible for inappropriate hasty referrals, non-procurement of $MgSO_4$ and poor treatment patterns in these centres. Smith et al.

Table 5. Table showing results of binary logistic regression exploring factors influencing the level of Compliance

Variable (Reference group)	Bivariate Analysis	
	Crude OR (95% CI)	p-value
Gender (Female)		
Male	2.17 (0.93 – 5.06)	0.072
Age group (21 – 30 years)		
31 – 40 years	0.73 (0.30 – 1.77)	0.488
41 – 50 years	0.23 (0.05 – 1.10)	0.066
51 – 60 years	0 (0)	
Marital Status (Married)		
Single/Divorced	1.48 (0.64 – 3.39)	0.359
Professional Cadre (CHEW/CHO)		
Nurse	2.44 (0.48 – 12.22)	0.276
Doctor	6.84 (1.47 – 31.76)	0.014*
Level of Care (Primary Level)		
Secondary level	14.47 (2.91 – 72.07)	0.001*
Tertiary Level	7.64 (1.67 – 35.01)	0.009*
Post Qualification (>10 years)		
< 1 year	5.25 (0.64 – 42.90)	0.122
1 – 5 years	6.81 (1.43 – 32.43)	0.016*
6 – 10 years	5.63 (1.18 – 26.99)	0.031*
No of Patient seen last one month (No Patient)		
1 – 5 Patients	2.04 (0.73 – 5.71)	0.174
6 – 10 Patients	4.74 (1.33 – 16.86)	0.016*
>10 Patients	7.58(1.37 – 41.92)	0.020*
Level of Knowledge (Poor Knowledge)		
Fair level of Knowledge	4.61 (0.89 – 23.95)	0.069
Good level of Knowledge	24.93 (5.39 – 115.28)	0.001*

** Statistically significant*

Table 6. Results of Multivariate analysis of the determinants of compliance in the study

	Multivariate Analysis	
Variable	**Adjusted OR (95% CI)**	**p-Value**
Professional Cadre (CHEW/CHO)		
Nurse	0.32 (0.03 – 2.91)	0.314
Doctor	0.22 (0.02 – 2.53)	0.226
Level of Care (Primary Level)		
Secondary level	26.13 (3.52 – 193.65)	0.001*
Tertiary Level	3.16 (0.46 – 21.72)	0.243
Post Qualification (>10 years)		
< 1 year	2.83 (0.20 – 39.30)	0.438
1 – 5 years	2.24 (0.32 – 15.88)	0.419
6 – 10 years	2.53 (0.39 – 16.29)	0.330
No of Patient seen last one month (No Patient)		
1 – 5 Patients	1.62 (0.38 – 6.78)	0.513
6 – 10 Patients	2.28 (0.36 – 14.32)	0.380
>10 Patients	5.33 (0.30 – 93.83)	0.253
Level of Knowledge (Poor Knowledge)		
Fair level of Knowledge	3.74 (0.61 – 23.16)	0.156
Good level of Knowledge	53.90 (6.25 – 464.74)	<0.001*

**- Statistically significant*

Table 7. Supporting quotes on the above

	Thematic areas	Quote
1	Unavailability of the treatment guideline	'There's no guideline……. at all, Nothing'. <Officer in charge Model Primary health centre, Adagbabiri 'No there's no treatment guideline' <Medical officer Cottage Hospital Opokuma> 'No……(long silence) No we don't have the guideline here'. <Officer in charge Primary health centre Otakeme>
2	Referral of patients when they arrive	'We refer to Sagbama general hospital' *<CHC Adagbabiri1 Pharmacy Technician_Female_Sagbama LGA>*
3	Presence of facility-based guideline	'Yes, I think there is. There is. We developed it by ourselves based on our environment' *<FMC Yenagoa pharmacist Male_Yenegoa LGA>*
4	Inadequacy of standing order	'There is a guideline: our own guideline is the standing order that is our own guideline. This magnesium you are talking about is there. They talk about it there in the national guideline called the standing order.<CHC Sagbama2 CHEW Officer-in-Charge_Female_Sagbama LGA>
5	Availability of guideline	'Yes, yes we do. We have a treatment guideline. They called us for training, for a workshop, was it not? How many days self, on the 6th of February. That was when they called us for the training. (GUIDELINE SEEN). I don't know the year the guideline (that I am showing you now) was published but it was a doctor that was lecturing us in that training of February this year, but I don't know. I don't know who developed it'<PHC Emeyal 2 Officer-in-Charge_Female_Ogbia_LGA> 'There used to be treatment guidelines on the use of $MgSO_4$. It contains the basic drug we use is magnesium sulphate. Then we talk of the anti-hypertensives. In this place, we use labetalol. Yes, and some of our IV drugs for patients with preeclampsia/eclampsia'<Otuasega Medical Officer_Male_Ogbia LGA>

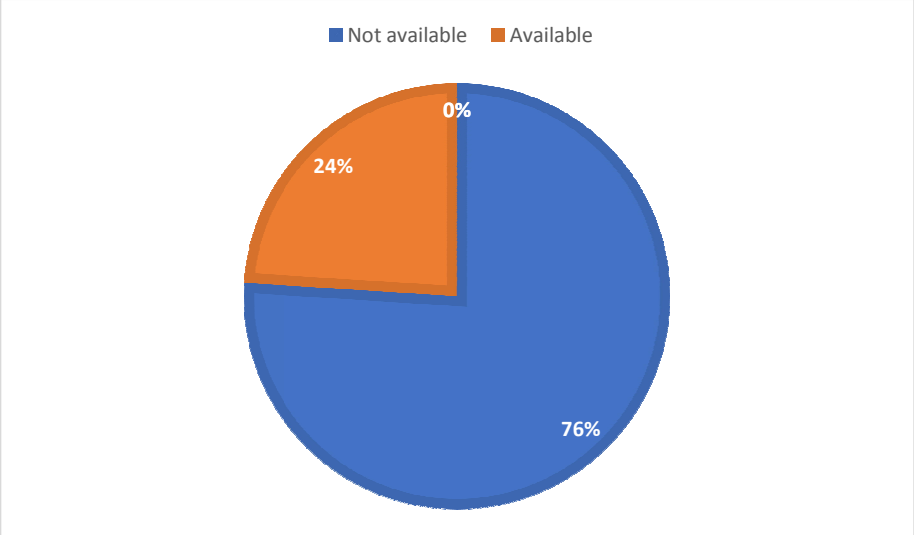

Fig. 1. Overview of availability of guidelines for the management of Preeclampsia

[25] who conducted a global survey across 37 countries and Okonofua et al. [21] in their multi-center study reported that inappropriate policies or lack of clinical protocols contribute to health care providers' lack of competence and confidence in the use of $MgSO_4$ in the management of severe PE/E. Access and compliance with treatment protocols and guidelines increases the likelihood that PE/E is effectively and efficiently managed in health facilities. There is also the added advantage that clinical protocols and national guidelines can be used to guide the provision of technical and/or supportive supervision [26,27]. Several studies with similar findings have been published on barriers to and facilitators in the use of $MgSO_4$ in Low and Middle-Income Countries [14,28]. The strengths of this study include the use of mixed methods and data triangulation techniques for better understanding availability and compliance to the national guidelines for the management of eclampsia.

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 the compliance with the guidelines among all cadres of health care providers with unavailability of the guidelines topping the list. It is recommended that management protocols for PE/E should be reviewed to accommodate deficiencies in knowledge and skills available at all levels of health care; particularly in the ''standing orders'' of community health workers. Also, Health workers with experience should be redistributed to the rural areas especially across the riverine communities with incentives to encourage them which would not only strengthen the work force in these health centres but also provide post-training supervision. There should also be need for strong advocacy for the use of the loading dose of $MgSO_4$ as an emergency treatment before referral from the primary and secondary level health facilities for the best maternal and fetal outcomes.

CONSENT

Respondents were given the questionnaires by the principal investigator and the research assistants to fill after the objectives of the study were explained and informed consent was obtained.

ETHICAL APPROVAL

Approval for the study was obtained from the Ethical Committee of the Federal Medical Centre, Yenagoa and the Bayelsa State Ministry of Health.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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