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Original Research Article

Prevalence and Outcome of Preeclampsia among Women Attending the Rural Hospital in Karu Abuja

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Abstract

Background: Preeclampsia is a major public health problem especially in low- and middle-income countries. It is associated with a serious burden on the health care system and the economy of the family. This study aimed to determine the prevalence of preeclampsia and feto - maternal outcome of women diagnosed with preeclampsia in a secondary health facility in North central Nigeria. ***Materials and Methods*:** This was a retrospective cross-sectional study carried out among women diagnosed with preeclampsia at Nigeria Customs Hospital KaruAbujaover a seven-month period from 1st of January 2022 to 31st July 2022.Case notes were identified from records in the labour ward, antenatal clinic, theatre, gynaecological emergency and the intensive care unit. The case notes were retrieved from the Central Medical Record's library. Data was entered and analyzed using the IBM Statistical Product and Service Solutions (SPSS Statistics) Version 27. Armonk, NY: IBM CorpA. ***Results*:** The total of 420 deliveries were reported during the study period of which 56 cases developed preeclampsia and only 47 has the complete information and were included in the statistical analysis. The retrieval rate was 83.9%. The prevalence of preeclampsia among the study participants was 13.0%. The mean age of the study participants were 31.04 (5.01) years, The mean gestational age at the booking was 23.86 (4.73) weeks. The mean gestational age at the diagnosis preeclampsia was 35.60(4.87) Only12 (25.5%) participants had severe preeclampsia. Perinatal mortality was 8.5 per 1000, Thirty-three (77.0%) of the neonate were born prematurely, and 2 (4.6%) had birth asphyxia. No maternal death or stroke were reported among the study participants. Only six (12,8) of the women sustained acute kidney injury. ***Conclusion***: The prevalence of preeclampsia was high in the rural community of Karu Abuja. No maternal death was reported among the study participants. The perinatal mortality was 8.5 per 1000 birth.

Keywords: Preeclampsia, prevalence, maternal outcomes, fetal outcome.

INTRODUCTION

Preeclampsia is a multi-systemic disorder unique to human species (Ugwu AU 2022) (Chattopadhyay 2015). It has significant impact on the health and quality of life of both mother and newborn. It associated with a serious burdenon health care system and economic of the family, (Ugwu AU 2022). Preeclampsia is a major public health problem especially in low and middle income countries. (Olaoye T 2019). It is one of the leading causes of direct maternal and perinatal morbidity and mortality (Orisabinone IB 2020) (Olowokere AE 2017). It is responsible for about third of

a millionmaternal deaths in developing countries (Birhanu MY 2020). Study has shown pre-eclampsia accounted for 40–60% of maternal death in the low income countries (Birhanu MY 2020). In Nigeria, preeclampsia is responsible for about 37,000 women death every year (Olaoye T 2019). It accounts for 28.2% -40% of maternal deaths and5.84/1000 births perinatal mortality rate (Olotu FI 2019) (Chattopadhyay 2015).

About ten million mothers each year develop pre-eclampsia worldwide. The World Health Organization (WHO) estimated that the incidence rate of pre-eclampsia in developing countries is 7-times higher (2.8%) than in developed countries (0.45%) (Birhanu MY 2020). The prevalence of pre-eclampsia in sub Saharan African has been reported to be high as up to 16% (Guerrier *et al*., 2013). While the prevalence of 2% to 16.7% were reported in difference centrein Nigeria (Chattopadhyay 2015).

Pre-eclampsia is defined as a hypertension and significant proteinuria(urinary protein>0.3g/day or >30mg/mmol of urinary creatinine in random sample) after 20 weeks gestation (Chattopadhyay 2015). Preeclampsia could be classified as mild or severe. Mild preeclampsia is defined as diastolic blood pressure 90mmHg to < 110 mmHg and/or systolic blood pressure is 140 to < 160mmHg with significant proteinuria while severe preeclampsia is defined as diastolic blood pressure of ≥110 mmHg or systolic blood pressure of ≥160 mmHg and/or marked proteinuria and or sign of end of organ damage (Orisabinone IB 2020) (Chattopadhyay 2015).

Pre-eclampsia is a disease of the theories and defective trophoblastic invasion play a central role (Orisabinone IB 2020). The risk factors for pre-eclampsia include hypertensive disease in the previous pregnancy, chronic kidney disease, systemic lupus erythematosus, antiphospholipid syndrome, type 1 or type 2 diabetes mellitus, chronic hypertension, blackrace, assisted reproductive technology, change of spouse, history of pre-eclampsia in the mother, and spouse being product of a pregnancy complicated by pre-eclampsia (Birhanu MY 2020) (Chattopadhyay 2015) (Olowokere AE 2017).

Preeclampsia is preventable and the deaths due to preeclampsia can be avoided through timely detection and management of complications during and after pregnancy (Chattopadhyay 2015).

There is no data on the prevalence and outcome of preeclampsia in the rural area of Karu Abuja. This study will provide useful information onprevalence and outcome of pre-eclampsia rural area of Karu Abuja, and provide potential recommendations to reduce maternal mortality due to preeclampsia in Karu Abuja.

METHODOLOGY

Study design: This was aretrospectivecross-sectional study carried out among women diagnosed with preeclampsia in Nigeria Customs Hospital KaruAbujaover a seven months period from 1st of January, 2022 to 31st July, 2022.

Study setting: the study was carried out at antenatal clinic of Nigeria Customs Hospital Karu Abujaa. The hospital is a rural hospital located centre of Karu town, Abuja. The hospital operates a 24-hour service from Monday to Sunday every week. The antenatal clinic holds every Wednesday and booking every Friday.

Study duration: This was carried out between the 1st January 2022 to 31st July 2022.

Study Population: The consisted of pregnant women who presented with preeclampsia at Karu Customs Hospital during the study period.

Selection Criteria:

Inclusion Criteria: All retrievable case files of cases of preeclampsia managed within the study period.

Exclusion Criteria: Those with incomplete records and irretrievable case files were excluded from the study.

Method of Data Collection

Cases were identified from records in labour ward, antenatal clinic, theatre, gynaecological emergency and the intensive care unit. The case notes were retrieved from the Central Medical Record's library. Information obtained will included socio-demographic characteristics such as age, parity, occupation, educational status, marital status, Other information includes gestational age booking, gestational age at diagnosis, types of preeclampsia, risk factors, maternal and fetal outcome.

The number of deliveries during the 6 months of review were extracted from the labour ward record.

Outcome Measures: The main outcome measures where the prevalence of preeclampsia, type of preeclampsia, risk factors, maternal and fetal outcome.

Data management

Data were entered and analyzed using the IBM Statistical Product and Service Solutions (SPSS Statistics) Version 27. Armonk, NY: IBM Corp. The categorical variables where summarized and presented as frequency distribution tables while continuous variables were presented as mean (± standard deviation.

Limitations of the study: Difficulty in retrieving case notes from record office and missing folders.

Maternal outcomes were cerebrovascular accident, acutepulmonary edema, HELLP syndrome, acute kidney injury, abruptio placentae, maternal death.

Perinatal outcomes were prematurity, birthasphyxia, neonatal sepsis, stillbirth, low birth weight, early neonatal death.

Ethical Considerations

The study was carried out after obtaining ethical approval from the Health Research Ethics Committee (HREC) of the health service commission. Confidentiality and protection of participants identity were ensured throughout the study.

RESULTS

A total of 420 deliveries were reported during the study period of which 56 cases developed preeclampsia and only 47 has the complete information and were included in the statistical analysis. The retrieval rate was 83.9% and the prevalence of preeclampsia among the study participants was 13.0%.

Table 1 shows sociodemographic and clinical characteristic of the study participants; The mean age of the study participants were 31.04 (5.01) years, The mean gestational age at the booking was 23.86 (4.73) weeks. The mean gestational age at the diagnosis preeclampsia was 35.60(4.87) Majority of the participants had tertiary education and were booked. Only12 (25.5%) participants had severe preeclampsia.

Table 2 show the fetal outcome from the women with preeclampsia. Perinatal mortality was 8.5 per 1000, Thirty-three (77.0%) of the neonate were born prematurely, and 2 (4.6%) had birth asphyxia.

Table 3 show the outcome of the women with preeclampsia. No maternal death or stroke were reported among the study participants. Only six (12,8) of the women sustained acute kidney injury.

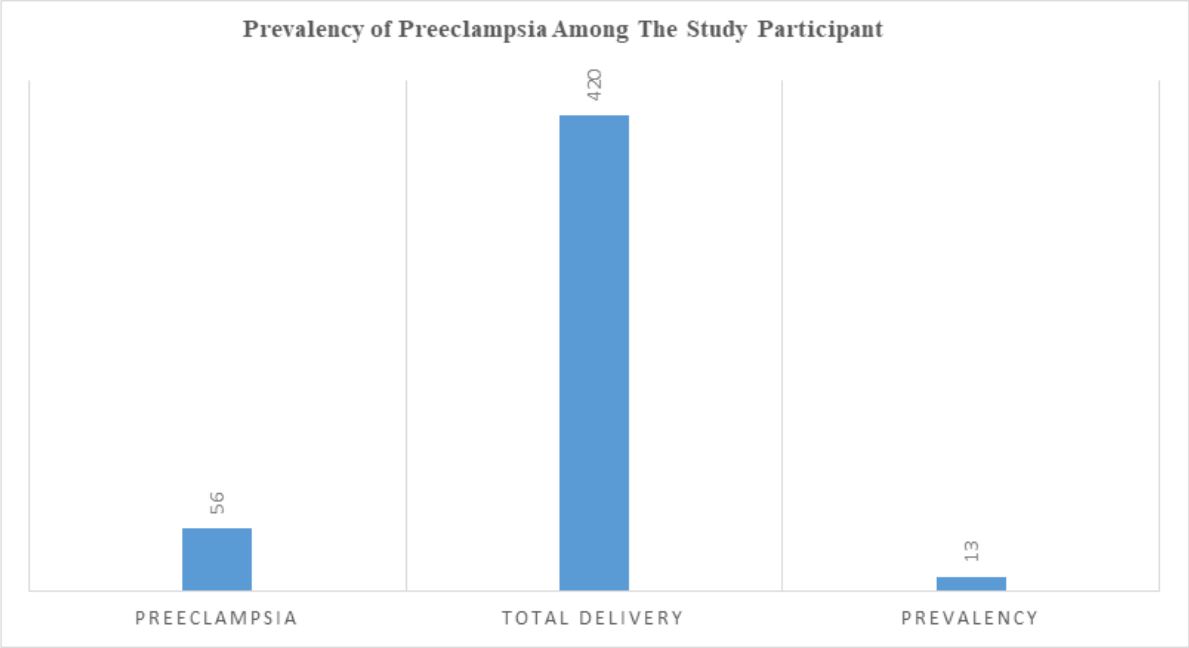

Figure 1: Prevalence of preeclampsia among the study participants

Figure 1 shows the prevalence of preeclampsia among the study participants was 13%

Table 1 Shows sociodemographic and clinical characteristics of the study participants; the mean age of the study participants were 31.04 (5.01) years, the mean gestational age at the booking was 23.86 (4.73) weeks. The mean gestational age at the diagnosis preeclampsia was 35.60(4.87) majority of the participants had tertiary education and were booked. Only12 (25.5%) participants had severe preeclampsia and had a background risk factors of chronic hypertension.

Table 1: Sociodemographic and clinical characteristic of the study participants

Variable	Number n = 47	Percentage (%)
Age (Years)		
<25	4	8.5
25 – 34	27	57.5
≥35	16	34.0
Mean age (SD)	31.04 (5.01)	

Educational status		
Primary certificate	11	23.4
Secondary certificate	15	31.9
Tertiary	21	44.7
Parity		
1	13	27.7
2	08	17.0
≥3	26	55.3
Booking status		
Booked	35	74.5
Unbooked	12	25.5
Gestational age at booking (weeks)		
<18	2	5.6
18 – 24	20	58.3
≥25	13	36.1
Mean gestational age at booking	23.86(4.73)	
Gestational age at diagnosis		
<32	12	25.5
32 – 36	21	44.7
≥37	14	29.8
Mean gestational age at diagnosis	35.60 (4.87)	
Mode of delivery		
Spontaneous vaginal delivery	28	30.4
Caesarean section	19	59.6
Types preeclampsia		
Mild	35	74.5
Severe	12	25.5
History of chronic hypertension		
Yes	13	27.7
No	34	72.3

Table 2 show the fetal outcome from the women with preeclampsia. Perinatal mortality was 8.5 per 1000, Thirty-three (77.0%) of the neonate were born prematurely, and 2 (4.6%) had birth asphyxia.

Table 2: Fetal outcome

Variable	Number n=47	Percentage (%)
Alive	44	93.6
Stillbirth	03	06.4
Prematurity	33	77.0
Birth asphyxia	02	04.6
Neonatal sepsis	02	02.4
Low birth weight	06	13.6
Early neonatal death	01	02.4

Table 3 show the outcome of the women with preeclampsia. No maternal death or stroke were reported among the study participants. Only six (12,8) of the women sustained acute kidney injury.

Table 3: Maternal outcome

Variable	Number n=47	Percentage (%)
cerebrovascular accident, acute	0	0.0
HELLP syndrome	2	4.3
Acute kidney injury	6	12.8
Abruptioplacentae	3	6.4
Maternal death	0	0.0
Fully recovered	36	76.5

DISCUSSION

The prevalence of preeclampsia was high in the rural community of Karu Abuja. This was higher than the finding of 10.3% reported by Ugwu *et al*., in Lagos. It was lower than 16% reported in Nasarawa (Ugwu AU 2022) (Olotu FI 2019). The difference in prevalence of preeclampsia may reflect the differences in socio-demographic characteristics of the women studied. A prevalence of 3.60% was reported by Akaba *et al*., in Abuja (Akaba *et al*., 2021). Perhaps a different locality and differences in the sociodemographic characteristics again could be responsible for the contrast in prevalence in the 2 different studies. The study duration of both studies could also be responsible for contrasting prevalence with the index study carried out over a 7 month period and the study from Akaba *et al*., over a 6 year period. A prevalence of 8.8% was reported by Musa *et al*., in Jos Nigeria (Musa *et al*., 2018). This was less than what was reported in this index study. His study was carried out over a period of 10 months (November 2010 to August 2011), a time frame similar to this study, however a different geographical location, could be responsible for contrast in findings from the 2 different studies. A prevalence of 6% was reported in Sokoto Nigeria (Singh *et al*., 2014). Her study involved 216 participants and was a prospective study compared to this study that was a retrospective cross-sectional study, perhaps responsible for contrasting findings in the 2 studies. Tlaye *et al*., reported a prevalence of 2.76% for preeclampsia in an Ethipian study. Tlaye *et al*., study was for 5 years and over 8763 deliveries were recorded in that study period (Tlaye *et al*., 2021). The duration of the study period and number of patients also seen could be responsible to contrasting findings with the index study.

No maternal death was reported among the study participants this not in agreement with the maternal mortality of 3.8% reported the southwest (Birhanu MY 2020). Akaba *et al*., recorded a case fatality rate of 3.9%, and a prevalence of 0.58% for eclampsia (Akaba *et al*., 2021). There was no diagnosis made of eclampsia in this study as well as no maternal mortality. Preeclampsia and its complications were the leading causes of maternal mortality in a teaching hospital in Sokoto Nigeria in 2016 (Yetunde *et al*., 2020). This was in contrast to findings in this index study. In Northern Nigeria preecalmpsia accounted for 40% of maternal deaths while a prevalence rate of 5.6% and 7.6% were reported from another southern Nigerian study (Olaoye T *et al*., 2019).

The perinatal mortality was 8.5 per 1000 birth. This was lower than perinatal deaths of 16.2% reported by Robinson *et al*., A perinatal mortality rate of 2 per 1000 births were recorded in an Ethipian study (Tlaye *et al*., 2020). Perinatal mortality in his study was more in patients with severe Preeclampsia compared to mild eclampsia. This figure was much lower than findings in this index study. The different modalities of managing preeclampsia which Tlaye *et al*., evaluated could be responsible for his much lower and contrasting figures for perinatal mortality.

Complications for preeclampsia in this study, Acute Kidney Injury, Hemolysis, elevated Liver enzymes and low platelets (HELLP syndrome), Abruptio placentae, neonatal death, mirrors complications from preeclampsia reported in several other studies (Swathi *et al*., 2014, Lazarte VR *et al*., 2024). Long term risks can present as late complications and can be assessed in future prospective studies (Theilen LH *et al*., 2024, Ugwu AO *et al*., 2022).

Guarantor: The lead author will act as the guarantor for this manuscript.

DISCLAIMER (ARTIFICIAL INTELLIGENCE): We hereby declare that nogenerative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of manuscripts.

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