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A comparison of the presentation and management of preeclampsia and eclampsia at the federal teaching hospital, Abakaliki: A 3 year review

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Abstract
Background: Preeclampsia and eclampsia are important causes of maternal and perinatal morbidity and mortality in Nigeria. They represent the 3rd leading cause of maternal deaths following postpartum haemorrhage and infections. With the onset of convulsions, maternal and perinatal outcome worsens.
Objectives: This study aims to compare the clinical features, management and outcome among patients with preeclampsia and eclampsia at the Federal Teaching Hospital, Abakaliki.
Methodology: This is a retrospective comparative study of patients managed for preeclampsia versus eclampsia at FETHA from 1st January 2013 through 31st December 2015. Statistical analysis was done using Epi Info 7.2.1.
Result: There were 6585 total deliveries within the period out of which 113 had preeclampsia and 78 had eclampsia giving a prevalence of 17 per 1000 and 12 per 1000 deliveries respectively. There were 4 maternal deaths; all were amongst the patients with eclampsia, giving a case fatality of 5.1%. Majority of the patients were aged between 20-34 years, primigravidae and unbooked, lived in the urban areas and presented at full term. Most had severe proteinuria at presentation, managed with magnesium sulphate alone and had vaginal delivery. Favourable maternal and perinatal outcome was noted in most of the patients. Compared with preeclampsia, eclampsia was significantly likely to be present in the primigravid, unbooked patient and present at full term ($p < 0.05$). Patients with preeclampsia were more likely to have live birth
It was also likely to be present in patients presenting with severe proteinuria. Poor maternal and perinatal outcome were also significantly higher amongst patients with eclampsia.
Conclusion: The unbooked patient is at significantly increased risk of presenting with eclampsia and suffer adverse maternal and perinatal outcome. There is therefore great need for awareness and education for women, and promotion of antenatal care.

Keywords: Preeclampsia, eclampsia, fetal and maternal outcomes

Introduction
Preeclampsia and eclampsia are major causes of maternal and perinatal morbidity and mortality. Preeclampsia is an idiopathic disorder of widespread vascular endothelial malfunction and vasospasm that occurs after 20 weeks gestation and can present as late as 4-6 weeks postpartum [1, 2]. It is clinically defined by hypertension (blood pressure of ≥ 140/90 mmHg) on 2 occasions at least 4 hours apart and proteinuria defined as urinary excretion of ≥ 0.3g protein in a 24 hour urine specimen with or without pathologic edema after 20 weeks gestation in a previously normotensive, non proteinuric woman [3-6]. Eclampsia is a complication of preeclampsia and it's defined as the new onset grand mal seizures in a woman with preeclampsia that can't be attributed to other causes [2, 3]. The incidence of preeclampsia, the precursor to eclampsia, varies greatly worldwide. The incidence of preeclampsia ranges between 2% and 10% of pregnancies [4, 6].

The aetiology of preeclampsia is not known [5, 7, 8]. It has been described as a disease of theories [6, 8]. Although, the primary pathology leading to preeclampsia is still to be defined, complex pathophysiologic pathways and mechanisms have been described [2, 3, 5]. These are closely intertwined and appear to be triggered by the presence of the placental tissue i.e. the pathogenesis of preeclampsia originates in the placenta [6]. This is because the disease can occur in the absence of fetal tissue (molar pregnancy) and manifestations of the disease will only

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resolve following delivery of the placenta [5, 6].

The clinical manifestations of preeclampsia can be heterogenous thus diagnosing preeclampsia may not be straightforward. Mild preeclampsia may be asymptomatic with many cases being detected through routine prenatal screening [2, 3]. Patients with severe preeclampsia may present with end-organ damage [3].

The diagnosis of preeclampsia, and hence the prediction of adverse events, is based on traditional but somewhat unreliable and non specific clinical markers such as blood pressure, urine protein excretion and presence of symptoms which may depict imminent eclampsia [6]. Waugh *et al.* noted that more than 20% of women who have eclampsia will fail to meet the common diagnostic criteria of preeclampsia prior to their event, making the prediction of the adverse outcome extremely difficult [6]. Conversely, only 0.7-5.0% of women with classically defined preeclampsia will experience any composite adverse outcomes [6]. This was similar to a study conducted by Sibai B who noted that hypertension and proteinuria might be absent in 10-15% of women who develop HELLP syndrome and in 38% of those who develop eclampsia [9].

In the management of preeclampsia, maternal interests are best served by stabilization and immediate delivery by the most expeditious route [5, 10]. The decision to proceed with immediate delivery versus expectant management is based on several factors, including disease severity, fetal maturity, maternal and fetal condition and the cervical parameters [3, 5].

Maternal and perinatal outcome in preeclampsia and eclampsia depend on one or more of the following; the gestational age at the time of disease onset, severity of the disease, quality of management and presence or absence of pre-existing medical disorders [3]. Preeclampsia and eclampsia are diseases that are associated with high maternal and perinatal morbidity and mortality [11] therefore an understanding of the presentation and adequate management will help reduce the morbidities and mortalities associated with it. There had not been any recent study comparing preeclampsia and eclampsia with regards to presentation, management and outcome in our facility. Hence this study aims to determine the presentation and management of preeclampsia and eclampsia at FETHA.

Materials and Method
The study was carried out in the Obstetrics and Gynaecology Department of the Federal Teaching Hospital Abakaliki, Ebonyi State. The hospital is situated at the centre of the state capital. Ebonyi State is one of the states in the southeast geopolitical zone of Nigeria created in 1996 from the old Abakaliki division of Enugu State and the old Afikpo division of Abia State. It has 13 local government areas with an estimated population of about 2.1 million with a land mass of approximately 5,932 sq km. the state is bordered in the north by Benue State; east by Cross River State; south by Abia State and west by Enugu State.
The Federal Teaching Hospital, Abakaliki is a product of the merger of the then Ebonyi State University Teaching Hospital and the former Federal Medical Centre, all in Abakaliki by the

Federal Government of Nigeria in December 2011. The department of Obstetrics and Gynaecology of the hospital maintains an Accident and Emergency complex, labour ward complex, gynaecological ward complex, gynaecological clinic, family planning clinic, antenatal ward and antenatal clinic complex for booked and unbooked patients.

This was a retrospective study of the presentation, management and outcome of preeclampsia and eclampsia at the Obstetrics and Gynaecology Department of FETHA. The case files of all women managed for preeclampsia and eclampsia at the Federal Teaching Hospital Abakaliki, Ebonyi State, Nigeria from 1st January 2013 to December 31st 2015 were retrieved from the Medical Records Department, Gynaecological Emergency, Labour Ward, Operation Theatre, and data extracted into a study proforma focusing on socio-demographic and obstetric characteristics including age, parity, booking status, gestational age at presentation and blood pressure at presentation. Other information looked for include level of proteinuria at presentation, anticonvulsants used, mode of delivery, the perinatal and maternal outcome. Data collection would be done using a pre-designed proforma. Data analysis would be done using Epi Info software (7.2.1 CDC Atlanta Georgia). The chi-square test of association was used to test the statistical significance of variables and a P-value of <0.05 at 95% confidence interval was taken as significant.

Results
During the period under review, there were 6585 total deliveries out of which 113 were managed for preeclampsia and 78 were managed for eclampsia, giving a prevalence of 17 per 1000 deliveries for preeclampsia and 12 per 1000 deliveries for eclampsia. Out of 191 patients only 156 (92 preeclampsia and 64 eclampsia) case notes were retrieved giving a case note retrieval rate of 81.7%. There were 4 maternal deaths from eclampsia giving a fatality rate of 5.1%. There were no maternal deaths from the preeclamptic group during the period under review.
Table 1 shows the sociodemographic variables of the patients. Most of the patients were primigravidae, unbooked, and presented at full term, these were showed significant difference between eclamptics and preeclamptics. There was no significant difference in the age at presentation. However, preeclampsia was significantly commoner among grandmultiparae, while eclampsia was significantly commoner among rural dwellers and unbooked patients *p* < 0.05.
Table 2 shows the presentation and management of the patients. There was no significant difference in the quantification of proteinuria by dip stick and the use of magnesium sulphate and diazepam but there was significant difference in the mode of delivery as eclamptics were more likely to be delivered by caesarean section.
Table 3 shows the maternal and perinatal outcome. There was significant difference in the maternal and perinatal outcome for both preeclampsia and eclampsia. However the incidence of acute kidney injury was similar in both groups.

Table 1: Sociodemographic characteristics

Parameters	Preeclampsia N (%)	Eclampsia N (%)	Total N (%)	P value
Age:				
<20	8 (8.7)	16 (25.0)	24 (15.4)	0.099
20-34	76 (82.6)	45 (70.3)	121 (77.6)	
>35	8 (8.7)	3 (4.7)	11 (7.0)	
Parity:				
0	46 (50.0)	40 (62.5)	86 (55.1)	0.034
1-4	35 (38.0)	22 (34.4)	57 (36.6)	

≥5	11 (12.0)	2 (3.1)	13 (8.3)	
Area:				
Rural	20 (21.7)	50 (78.1)	70 (44.9)	<0.0001
Urban	72 (78.3)	14 (21.9)	86 (55.1)	
Booking Status:				
Booked	42 (45.7)	2 (3.1)	44 (28.2)	<0.0001
Unbooked	50 (54.3)	62 (96.9)	112 (71.8)	
Gestational Age:				
Preterm (<37)	46 (50.0)	12 (18.7)	58 (37.2)	0.00007
Full term (37-41^{+6})	46 (50/0)	52 (81.3)	98 (62.2)	

Table 2: Presentation and Management

Parameters	Preeclampsia N (%)	Eclampsia N (%)	OR (95% CI)	P Value
Degree of Proteinuria				
+	3 (3.3)	1 (1.6)	Ref	-
2+	50 (54.3)	19 (29.7)	1.14 (0.11 – 11.65)	0.9126
3+	39 (42.4)	44 (68.7)	3.38 (0.34 – 33.89)	0.2763
Anticonvulsant				
Mgso4 Only	90 (97.8)	62 (96.9)	1.45 (0.19 – 10.58)	0.7511
Diazepam + Mgso4	2 (2.2)	2 (3.1)		
Mode of Delivery				
Caesarean Section	45 (48.9)	20 (31.2)	2.10 (1.08 – 4.41)	0.0286
Vaginal Delivery	47 (51.1)	44 (68.8)		

Table 3: Outcome

Parameters	Preeclampsia N (%)	Eclampsia N (%)	OR (95% CI)	P Value
Maternal Outcome				
Live	92 (100)	60 (93.8)	undefined	0.0156
Death	0 (0)	4 (6.2)		
Perinatal Outcome				
Live birth	77 (83.7)	44 (68.8)	2.33 (1.09 – 5.01)	0.0282
Stillbirth	15 (16.3)	20 (31.2)		
Complication:				
Acute Kidney Injury	3 (3.3)	5 (7.8)	0.40 (0.09 – 1.73)	0.2063

Discussion

The incidence of 17 per 1000 deliveries for preeclampsia found in this study was less than 28 per 1000 deliveries estimated by Jido *et al.* for developing countries [5]. The incidence for eclampsia was 12 per 1000 deliveries and this is similar to 12 per 1000 deliveries reported in Calabar, Cross River state [12]. This was also less than 33 per 1000 deliveries reported by Ugwu *et al.* at the University of Nigeria Teaching Hospital, Enugu Southeast Nigeria [8] but higher than 7.8 per 1000 deliveries found in the National Hospital, Abuja [13]. Much lower incidences had been reported in developed countries [5]. This may be attributed to ignorance, poverty and illiteracy in our region and the lack of female empowerment and poor access to antenatal facilities by women in our region where preeclampsia is detected late and thereby making eclampsia a common problem [14].

Case fatality is one of the United Nations process indicators that shows quality of service with regards to saving women's lives in a facility [15]. The case fatality of 5.1% in this study is much higher than the maximum recommended; 1% by the United Nations [15]. This is therefore an indication that a lot more has to be done to save more women from dying from eclampsia in our environment.

Both preeclampsia and eclampsia were highest between the age range of 20-34 years. This was similar to the findings by Agida *et al.* from the university of Abuja Teaching Hospital and Efetie *et al.* also in Abuja who noted that preeclampsia and eclampsia were common within these period [13, 14]. This was however in contrast to the study conducted by Ahadi *et al.* who noted that majority of patients with preeclampsia were aged between 35-39

years [16].

Most patients who had eclampsia were unbooked and were resident in rural areas, this may be a reflection of the poor antenatal care available to these women. This was similar to the report in other studies [13, 17]. This is most likely because the unbooked patient suffers the consequences of antenatal neglect (unchecked blood pressures with resultant hypertensive complications) and neglect in labour and postpartum leading to complications [14, 18, 19]. Various factors have been adduced to unbooked status of most of these patients. These are cultural, financial, social, transportation, telecommunication barriers, and most importantly, illiteracy [14, 18]. Activities of rapidly growing churches have also highly added to the ever growing problem [14].

Qualitative protein estimation in urine at presentation did not show any significant difference between the groups. Recently protein estimation had been down played as a determinant of the disease severity. In contrast some studies had shown significant increased proteinuaria in eclamptics [5, 6, 8]. Magnesium sulphate remains the drug of choice for prevention and management of eclampsia [6]. 97.8% and 96.9% of preeclampsia and eclampsia patients respectively in this study were given magnesium sulphate alone for prevention and treatment and this was similar to a study conducted by Gordon R *et al.* but is in contrast to the study by Agida *et al.* in Abuja where diazepam was mostly used in the treatment of eclampsia [14]. In their study Agida *et al.* attributed it to high cost and occasional non-availability of the drug as was also the case of the study by Ugwu *et al.* [8, 11]. Magnesium sulphate is readily available and has been shown to be very effective.

Once the patient is stabilized, the management of preeclampsia and eclampsia is best served by immediate delivery [3]. In women with preeclampsia or eclampsia without contraindications to vaginal delivery, vaginal delivery is the preferred approach [3]. Majority of the patients (51.1% and 68.8% for preeclampsia and eclampsia respectively) in this study were delivered vaginally. This was similar to findings by Ahadi *et al.* and Guerriera *et al.* in Jahun, Jigawa state [15, 18]. This was however in contrast to the findings from Enugu and Abuja where majority of the patients were delivered by caesarean section [8, 11].

Acute kidney injury was the commonest maternal complication seen in this study and 33% and 7.8% of preeclamptic and eclamptic patients respectively had this complication. Out of the 4 maternal deaths recorded in this study, 3 had acute kidney injury. All maternal deaths were unbooked patients. This may be a reflection of the worsened maternal conditions prior to presentation.

Conclusion
Preeclampsia and eclampsia still remains a major cause of maternal mortality in Nigeria and the developing world. Unbooked status increases the risk of eclampsia at presentation and thus significantly increasing adverse maternal and perinatal outcome. There is therefore need for awareness and enabling factors in assessing antenatal facilities should be made available.

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