Fetomaternal Outcome of Pre-Eclampsia and Eclampsia in Lautech Teaching Hospital, Ogbomoso: A 4-Year Review

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ABSTRACT

Background: Preeclampsia and eclampsia form the apex of the spectrum of hypertensives disorders that plague pregnant women. It has devastating possibilities especially when not identified and properly managed. The usual meter for assessing care in this clinical setting becomes the outcomes. This will help identify gaps to be filled and successes already achieved and also a baseline for future comparisms. Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital Ogbomoso is a referral centre thus findings will reflect surrounding towns and hospitals. **Objectives**: To determine the incidence of pre-eclampsia and eclampsia at LAUTECH Teaching Hospital, Ogbomoso, Nigeria and the fetomaternal outcomes. **Materials and Methods**: A review of the obstetric cases managed between January 2012 and December 2015 was done. Data was retrieved from hospital records. Data was cleaned and analyzed using SPSS version 20.0. Results are presented in tables and charts. Chi Square and ANOVA were used to test for association with P-value < 0.05 considered statistically significant. **Results**: The prevalence of preeclampsia/eclampsia was 3.97% (3.1% preeclampsia and 0.87% eclampsia). Pulmonary oedema (77.4%) was the most common complication while 49.1% had acute renal failure, 58.5% had preterm delivery and 57.3% required caesarean delivery. There was no maternal death however 20.8% had still birth or early neonatal death and 25% of the babies had SCBU admission. The mean systolic blood pressure (192.8+/-28.4) was significantly higher among women who had perinatal death (p=0.019). **Conclusion**: Preeclampsia/eclampsia is associated with significant maternal morbidity and perinatal mortality. Appropriate measures to reduce these figures are required.

Keywords: Preeclampsia, eclampsia, fetomaternal outcome

INTRODUCTION

Worldwide, hypertensive disorders of pregnancy especially pre-eclampsia and eclampsia are the leading cause of maternal and perinatal mortality and impose an amount of burden on the families of pregnant women and the health care system. [1] Hypertensive disorders are the most common medical complication occurring in 2-10% of all pregnancies. Pre-eclampsia is a leading cause of hypertension complicating about 5-8% of pregnancies. [1,2]

Pre-eclampsia is the new onset of elevation of blood pressure to ≥140mmHg

systolic and ≥90mmHg diastolic measured on 2 occasions at least 6 hours apart and significant proteinuria (≥300mg in 24 hours urine specimen) after 20 weeks of gestation in a previously normotensive woman. Eclampsia is the presence of new onset of generalized tonic-clonic seizure in a pregnant woman or within 10 days of delivery when other causes of seizure have been excluded. [3]

Each year, it is estimated that pre-eclampsia/eclampsia complicates 10 million pregnancies worldwide resulting in 76,000 maternal death and 500,000 fetal/newborn death and about 99% of these deaths occur in low and middle-income countries.[4,5] In Nigeria, pre-eclampsia/eclampsia is one of the leading cause of maternal and perinatal morbidity and mortality, contributing about 43-46.3% of maternal death in Northern part of Nigeria.[6-8] A similar study done at Korle Bu Teaching Hospital in Ghana revealed that pre-eclampsia/eclampsia contribute 30% of maternal death.[9] Perinatal mortality due to pre-eclampsia/eclampsia in Nigeria varies between 4.1% and 12.3%. [10,11] Incidence of eclampsia in Nigeria varies between 0.3% in the South to as high as 9% in Northern Nigeria. [12-17] Of these cases, 44.9% occurs antepartum, 35% intrapartum and 20.1% occurs postpartum. [18]

The aetiology of pre-eclampsia/eclampsia is poorly understood and various studies have been inconclusive. In most cases, the onset of pre-eclampsia is insidious and pathological changes occur weeks before clinical detectable hypertension and proteinuria. Symptoms occur only at the end-stage of the disease. It has been established that good antenatal care can prevent the occurrence of bad outcome but not in all cases. [19,20]

Pre-eclampsia and eclampsia are associated with maternal and perinatal complications and these include; preterm labour, preterm deliveries, Intrauterine growth restriction (IUGR), Intrauterine fetal death (IUFD), antepartum and postpartum haemorrhages, pulmonary oedema, cardiac failure, HELLP syndrome, disseminated intravascular coagulopathy (DIC), renal failure, adult respiratory distress syndrome, cerebral haemorrhage and maternal death. [18] Perinatal mortality is increased to about 5 folds in the patients with prematurity being the main culprit. The causes of perinatal death include chronic placental insufficiency, preterm deliveries and placental abruption.

The definitive treatment of pre-eclampsia/eclampsia is delivery through the expedient route as this should halt the progression of the disease. However, the management is faced with the challenge of balancing the timing of the delivery of the patient before the onset of complications with fetal prematurity. [8,9,11] The World Health Organization (WHO) recommend the use of MgSO4 as a safe and low-cost drug to manage severe pre-eclampsia and eclampsia. MgSO4 has been shown to significantly lower the incidence of seizures in patients with severe pre-eclampsia or eclampsia, prevents the progression of severe pre-eclampsia to eclampsia and generally lowers the maternal mortality. [6,8,20] Antihypertensives, transfusion with blood and blood products and neonatal support are some of the other treatment requirements for the patients.

This study was aimed at determining the prevalence of preeclampsia/eclampsia and the associated morbidity and fetomaternal outcomes as an indicator of the burden of the disease and an evaluation of the current management programs.

MATERIALS AND METHODS

The study was carried out in Ogbomoso, Oyo State, Nigeria. It was a retrospective review of women with preeclampsia/eclampsia in a tertiary health facility in Ladoke Akintola University of Technology Teaching Hospital, Ogbomoso, South West Nigeria between January1st, 2012 to December 31st, 2015. Case notes of women who had preeclampsia/eclampsia as defined by systolic blood pressure of ≥ 140 mmHg, diastolic blood pressure of 90 mmHg, proteinuria of at least 1 plus and convulsion in patients with no background history of seizure disorder were retrieved following

the institutional ethical approval. [2]. The study population was women who developed preeclampsia and or eclampsia at the hospital between the stated period.

Demographic information, maternal and neonatal complications were obtained. Data was analyzed using SPSS version 20. Continuous variables were summarized with mean and standard deviation while categorical variables were summarized using number and percentages.

Measure of association was carried out using the Chi-square test and ANOVA and level of significance was put at less than 0.05.

RESULTS

During the review period, a total of 2,063 deliveries were recorded and 64 cases of preeclampsia and 18 cases of eclampsia were traceable, thus accounting for an incidence of 3.97% for preeclampsia/eclampsia and 0.87% for eclampsia alone.

The sociodemographic distribution of the patients is shown in Table 1. Majority of the patients were between ages 21 – 35 years (72.0%). Nulliparous women accounted for 52.4% and 45.1% were educated up to tertiary level of education. Almost all were married and half of the patients were traders.

Table 2 showed obstetric status of the patients. Only 30.5% were booked with gestational age at booking being 14 – 20 weeks (72.0%). The mean systolic blood pressure at booking was 116.4± 14.1mmHg with mean diastolic of 76.6±8.6mmHg. Almost half, 48.0% had 4 – 6 antenatal visits. More than 40% was admitted at 33 – 36 weeks (41.5%) and 42.7% was admitted at 37 weeks and above gestational age with a mean systolic blood pressure of 180 ± 21.7mmHg and mean diastolic blood pressure of 116.2±13.2mmHg. Almost half of the patients, 48.8% had 3+ of protein in urine. Only 22.0% had seizures, 72.2% of which was antepartum. Of the patients who had postpartum eclampsia, 60% of them had 4-5 seizures. More than half of the patients, 57.3% delivered via Caesarean section with more than one third having

indication for CS being Unfavourable cervix (46.8%) and 44.7% for Imminent eclampsia.

Almost all (93.9%) were singleton pregnancies and only two-fifths (41.5%) had term (37weeks or more) delivery as shown in Table 3. About half (48.8%) had live births and more than half (54.9%) or the newborns weighed less than 2500gram. No maternal mortality occurred.

As seen in Table 4, there was no significant differences in preeclamptic and eclamptic patients regarding gestational age at delivery, Apgar score at 5mins, Perinatal outcome and birth weight. Table 5 however shows that most of the term babies were alive and did not require SCBU admission (p<0.001) while the admitting systolic blood pressure was significantly higher among those that experienced perinatal deaths (p=0.019).

Table 1: Sociodemograhic Distribution

Variables	Frequency(n=82)	Percentage
Age in years		
=20	7	8.5
21 - 35	59	72.0
>35	16	19.5
Parity		
Nullipara	43	52.4
Others (primipara and multipara)	39	47.6
Level of Education		
None	2	2.4
Primary	9	11.0
Secondary	34	41.5
Tertiary	37	45.1
Marital Status		
Married	78	95.1
Single	4	4.9
Residence		
Urban	65	79.3
Rural	17	20.7
Occupation		
Unemployed	24	29.3
Trader	41	50.0
Farmer	1	1.2
Professional & C/servant	16	19.5

Table 2 – Obstetric Characteristics

Variables	Frequency(n=82)	Percentage
Booking status		
Booked	25	30.5
Unbooked	57	69.5
Gestational age at booking (n = 25)		
=13	2	8.0
14 – 20	18	72.0
21 – 27	5	20.0
Systolic Blood Pressure at booking in mmHg (n = 25)		
Mean ± SD	116.4±14.1	
Diastolic Blood Pressure at booking in mmHg (n = 25)		
Mean ± SD	76.6±8.6	
Number of antenatal visit (n = 25)		
<4	2	8.0
4 – 6	12	48.0
>6	11	44.0
Gestational age at admission (weeks)		
<28	2	2.4
28 - 32	11	13.4
33 - 36	34	41.5
37 and above	35	42.7
Systolic blood pressure on admission (mmHg)		
Mean ± SD	180.1±21.7	
Diastolic blood pressure on admission (mmHg)		
Mean ± SD	116.2±13.2	
Proteinuria on admission		
2+	30	36.6
3+	40	48.8
4+	12	14.6
Seizures		
Yes	18	22.0
No	64	78.0

	Antepartum eclampsia n=13(72.2%)	Postpartum eclampsia n=5(27.8%)	
Number of seizures			
2-3	8	1	50
4-5	4	3	38.9
>5	1	1	11.1
Mean ± SD	3.9±2.6	4.4±1.2	
Mode of delivery			
SVD	35		42.7
Caesarean section	47		57.3
Indication for CS (n = 47)			
Unfavourable cerxiv	22		46.8
Foetal distress	1		2.1
Imminent eclampsia	21		44.7
Others	3		6.4

Table 3: Perinatal And Maternal Outcome

Variables	Frequency(n=82)	Percentage
Gestational age at delivery (weeks)		
<28	3	3.7
28 – 32	10	12.2
33 – 36	35	42.7
>37	34	41.5
Number of newborns(s)		
Singleton	77	93.9
Multifetal	5	6.1
Apgar score at 5mins (n = 69)		
4 – 6	14	20.3
7 – 10	55	79.7
Perinatal outcome		
Still birth	14	17.1
Early neonatal death	3	3.7
SCBU Admission	25	30.5
Alive	40	48.8
Cause of early neonatal death (n = 4)		
Birth asphyxia	2	50.0
Prematurity	2	50.0
Birth weight (in gram)		
<1500	16	19.5
1500 – 2500	29	35.4
>2500	37	45.1
Maternal outcome		
Alive	82	100

Table 4: Perinatal Outcome Vs Eclamptic Status

	Eclamptic Status				
Perinatal and maternal outcome	Eclampsia n = 18	Preeclampsia n = 64	Chi-square	df	P-value (P)
	n(%)	n(%)			
Gestational age at delivery (weeks)					
<28	0(0.0)	3(4.7)	1.826	3	0.609
28 – 32	2(11.1)	8(12.5)			
33 – 36	9(50.0)	26(40.6)			
>37	7(38.9)	27(42.2)			
Apgar score at 5mins (n = 69)					
4 – 6	4(22.2)	10(19.6)	0.055	1	0.814
7 – 10	14(77.8)	41(80.4)			
Perinatal outcome					
Still birth	1(5.6)	13(20.3)	4.435	3	0.218
Early neonatal death	1(5.6)	2(3.1)			
SCBU Admission	4(22.2)	21(32.8)			
Alive	12(66.7)	28(43.8)			
Birth weight (in gram)					
<1500	3(16.7)	13(20.3)	1.026	2	0.599
1500 – 2500	5(27.8)	24(37.5)			
>2500	10(55.6)	27(42.2)			

Table 5: Antenatal Characteristics Vs Perinatal Outcome

	Perinatal Outcome					
Variable	Alive n(%)	SCBU Admission n(%)	Perinatal death n(%)	Chi-square	Df	P-value (P)
Age in years						
=20	5(71.4)	0(0.0)	2(28.6)	9.565	4	**0.048***
21 - 35	28(47.5)	22(37.3)	9(15.3)			
>35	7(43.8)	3(18.8)	6(37.5)			
Booking status						
Booked	15(60.0)	6(24.0)	4(16.0)	1.821	2	0.402
Unbooked	25(43.9)	19(33.3)	13(22.8)			
Gestational age at booking						
=13	1(50.0)	1(50.0)	0(0.0)	3.513	4	0.476
14 – 20	10(55.6)	4(22.2)	4(22.2)			
21 – 27	4(80.0)	1(20.0)	0(0.0)			
Gestational age at admission in weeks						
<28	0(0.0)	0(0.0)	2(100.0)	42.555	6	**<0.001***
28 - 32	0(0.0)	2(18.2)	9(81.8)			
33 - 36	15(44.1)	16(47.1)	3(8.8)			
37 and above	25(71.4)	7(20.0)	3(8.6)			
Systolic blood pressure on admission (mmHg)						
Mean ± SD	175.6±17.1	178.7±20.5	192.8±28.4	F=4.151	2	**0.019***
Diastolic blood pressure on admission (mmHg)						
Mean ± SD	114.2±12.9	118.2±10.6	117.9±16.8	F=0.896	2	0.412

*Significant   F= Anova test.
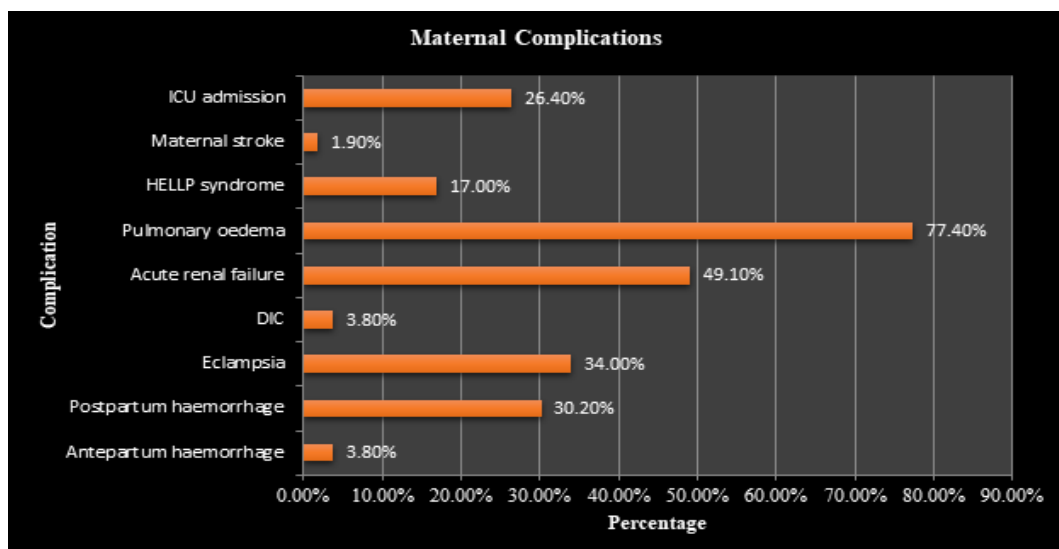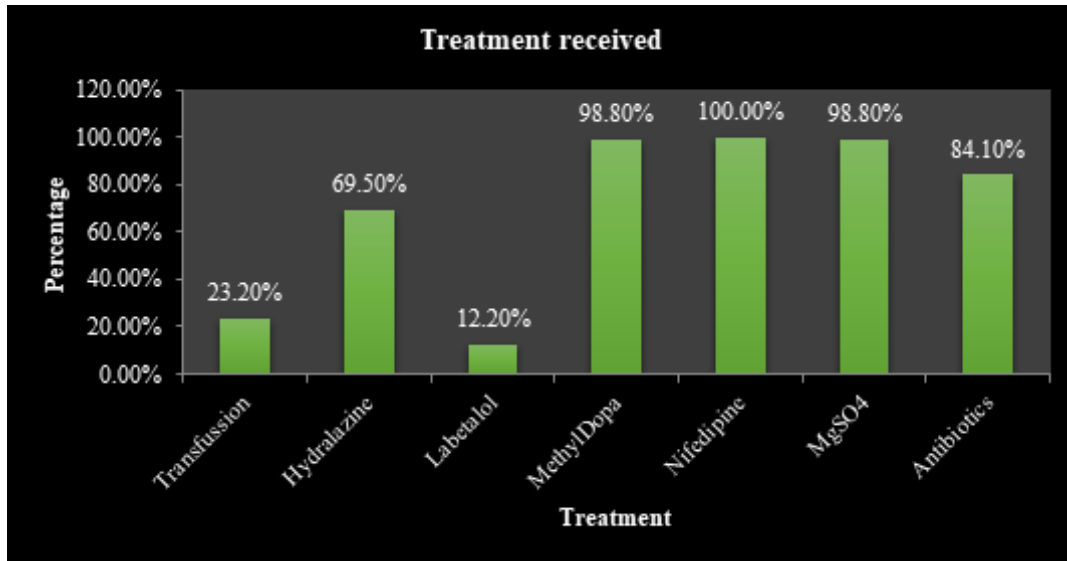
Figure 1

Figure 2

Figure 1 shows that pulmonary edema (77.4%) was the most common complication followed by acute renal failure (49.1%) and maternal stroke was the least (1.9%). Almost all the patients received methyldopa (98.8%) and nifedipine (100%) as the main antihypertensive and received magnesium sulphate as anti-seizure (Figure 2). About four fifths also received antibiotics.

DISCUSSION

Preeclampsia/Eclampsia contributes to the socioeconomic, cultural and public health burden in the sub-Saharan Africa. It is a leading cause of maternal and perinatal mortality and morbidity worldwide. It has been shown that it is responsible for 50,000 annual maternal death globally. [21] Evidently, the severity and damage of preeclampsia/eclampsia is more felt in the developing countries because of the patients lack of health awareness, poverty, illiteracy, poor uptake of antenatal care and poor health seeking behavior. [10,16,21]

The incidence of preeclampsia varies from one geographical location in Nigeria to another. The incidence in this study was 3.97%, this was higher than 1.7% reported in Sagamu but lower than 7.8% reported in the National Hospital, Abuja and 24.5%

reported in Aba. [6,13,14] The observed difference in the incidence has been attributed to the socioeconomic, educational and other infrastructural imbalance prevailing between the urban and rural areas of the country. The incidence of eclampsia alone was 0.87% which is similar to 0.82% reported by Okafor et al in Abuja. Similar lower incidence of 1.2% was reported by Tukur et al in Kano and 1.32% in Benin. Higher value of 5% was reported by Yakasai et al in Kano. [6,17,18]

The majority of the patients, 72% were between the ages of 21-35 which is the age range reported in most of the studies used in this review. The proportion of nulliparous in this study was 52.4% which was similar to the value reported in Benin, higher than 45.8% reported in Osogbo but lower than 60% reported in Northern part of Nigeria. [16,22,23]

This study showed poor antenatal uptake among patients with preeclampsia as majority of the patients (69.5%) were unbooked. Similar higher values (73.68%) was reported by Ekine et al. [24] It was observed from this study that 72.2% of those that had eclampsia was antepartum and this is in support of reports from similar studies in other centers in the country. [16,18,22] Ninety-eight point eight of the patients had Magnesium sulphate and

this could account for no case fatality recorded in the study. Higher case fatality has been recorded in other centers in Nigeria. Multifetal pregnancy accounts for only 6.1% of the cases, which is much lower than 15.8% reported by Itam at Calabar and higher than 3.5% reported in the developing countries. [12,25] In this study, 57.3% had Caesarean section as the option of delivery. This is similar to 54.2% rate reported in Osogbo but higher than 29.4% rate reported in Kano. [18,22] Of the Caesarean delivery, 46.8% had unfavourable cervix as the indication for the Surgery and this is similar to what was reported by Ndaboine et al in Tanzania. [26]

The commonest maternal complication seen in this study was pulmonary edema and this differs from acute renal failure noted in Osogbo and cerebrovascular disease seen in Benin.[22,23] Other complications reported in this study included acute renal failure, admission into Intensive care unit, antepartum haemorrhage, postpartum haemorrhage, Disseminated intravascular coagulopathy and HELLP syndrome.

The perinatal mortality rate in this study was 20.8%, which is almost equivalent to the 21.4% reported in Benin. [23] However, our rate was low compared to 40.9% and 55.2% reported in Kaduna and Aba respectively. [13,27] The high rate of perinatal deaths in our study and other similar studies may be attributed to a poor health seeking behaviour in the patients as most of the perinatal deaths in this study were still births. Another contributing factor is the limitation in resources for managing preterm infants. Our study revealed that the major causes of early neonatal deaths were severe birth asphyxia and prematurity. Other studies have reported similar findings. [8,11,16] A significant number of low birth weight neonates might have been the result of the high number of preterm deliveries among the preeclamptic/eclamptic patients. This study revealed an association between the age of the patient and the perinatal outcome so also is the gestational age at admission and the systolic blood pressure on admission. This study showed no difference in perinatal outcome among those with preeclampsia and eclampsia.

Strength and limitation: The study was faster to conduct and more efficient especially in the condition of preeclampsia/eclampsia. There was an inadequate data on confounding factors.

CONCLUSION
This study has demonstrated the overall incidence of pre-eclampsia/eclampsia to be 3.97% over the study period and that of Eclampsia alone was 0.87%. There was no maternal mortality recorded in the study and there was reduced perinatal mortality compared to similar studies done. These could be attributed to the level of care received by the patients and the prompt usage of Magnesium sulphate.

There was no demonstrable difference in the maternal and fetal outcome between those that had preeclampsia and eclampsia. Also, the higher percentage of unbooked patients in this study revealed the poor uptake of the antenatal care and the poor health seeking behaviour of the patients. The maternal and perinatal mortality and morbidity from preeclampsia/eclampsia could be reduced by the promotion of improvement in the quality of basic care provided by the antenatal clinics and neonatal units and also by making Magnesium sulphate more readily available for the patients.

Author contributions: Akintomiwa O.Bankole conceptualized and designed the study. All authors were involved in the writing and revision of the manuscript. The authors read, approved the final manuscript and agree to be accountable for all aspects of the work.

Data availability: The data used to support the

findings of this study are available from the corresponding author upon reasonable request.

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Ethical approval: The study was approved the hospital Ethics Committee.

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