Research Article

Eclampsia and Pregnancy Outcome at Lautech Teaching Hospital, Osogbo, South West, Nigeria

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Abstract Eclampsia is one of the leading causes of maternal and perinatal morbidity and mortality in sub-Saharan Africa. This problem has continued unabated due to lack of policies supporting financial protection in times of ill health, non-implementation of proven interventions as well as gaps in capacity building by stakeholders in health care delivery in this region. The aim of this retrospective study is to assess the impact of eclampsia on maternal and perinatal survival and suggest ways of reducing maternal death. A 6-year retrospective study was conducted with eighty-three cases of eclampsia. The cases were mainly antepartum patients with poor blood pressure control and resultant eclampsia. The case fatality rate was 8.3% and perinatal death was 24.1%. Magnesiun sulphate may have contributed to improvements in pregnancy outcome as mortality was higher among women with no access to magnesium sulphate. Most of the eclamptic patients were referred late from private health facilities hence the need for public-private collaboration in strengthening the referral system and making magnesium sulphate widely available in maternal care centers.

1 Introduction

Eclampsia has been a threat to maternal survival in Nigeria as one of the major causes of maternal mortality [17]. There are variations in the reported incidence of eclampsia in different parts of Nigeria. Eclampsia contributes 31.3%–43.1% to maternal death in the Northern part of the country with maternal mortality ratio (MMR) of 1,200 per 100,000 live births [3,18]. Whereas in the South West and South South parts of the country with much lower MMR of 500/100,000 live births, eclampsia accounts for 27.5% to 40% of deaths [1,7]. The high maternal morbidity and mortality associated with this condition in this environment result from low utilization of health facilities and the poor quality of antenatal care in most of the referring health facilities. This was evidenced by self referral in patients who delivered at home or referral from traditional birth attendants (TBA) and faith based maternity facilities where basic screening tests could not be carried out [14,17]. Even in tertiary health facilities in Nigeria, case fatality rate is still significantly higher compared with developed settings where high profile life support care is readily available [5]. The aim of this retrospective study was to assess the impact of eclampsia on maternal and perinatal survival and suggest ways of reducing maternal death.

2 Methodology

Study site. Nigeria is a federal republic comprising thirty-six states and one Federal Capital Territory (FCT) within which is the capital city of Abuja. The three largest and most influential ethnic groups in Nigeria are the Hausa in the Northern part, Igbo in South Eastern part and Yoruba in the South Western part of the country. The country is divided into six geo-political zones, which include South West, South South, South East, North West, North East, and North Central zones; see Figure 1. The study was carried out in Osun State, South West, Nigeria where the predominant culture is of the Yoruba ethnic group.
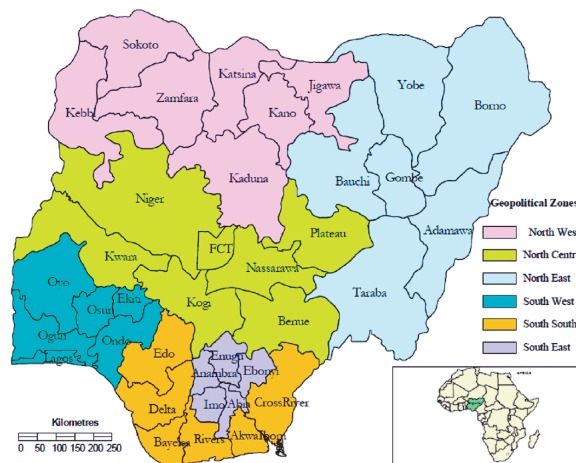

Figure 1: Map of Nigeria showing the geopolitical zones.

Table 1: Socio-demographic and feto-maternal variables.

Variables	Numbers	Percentages
Place of ANC		
Private hospitals	40	48.2
PHC	18	21.7
General hospitals	16	19.3
Mission homes	7	8.4
TBA	2	2.4
Age (years)		
≤ 19	10	12.0
20–24	18	21.7
25–29	26	31.3
30–34	17	20.5
≥ 35	12	14.5
Parity		
0	38	45.8
1–4	38	45.8
≥ 5	7	8.4
Marital status		
Married	67	80.7
Single	16	19.7
Education		
Primary	19	22.8
Secondary	52	62.6
Tertiary	12	14.6
Tribe		
Yoruba	82	98.8
Ibo	1	1.2
Gestational age at delivery		
< 37	30	36.1
≥ 37	19	22.9
Unknown	34	41.0
Birth weights (kg)		
< 2.5	28	33.7
2.5–3.9	32	38.6
≥ 4.0	1	1.2
Unknown	22	26.5
Mean systolic BP on admission (mmHg)	171.5 ± 24.5	Range: 120–250
Mean diastolic BP on admission (mmHg)	111.5 ± 20.0	Range: 66–170
Mean PCV on admission (%)	$33.0 \pm 6.0\%$	Range: 16–44
Mean proteinuria with dip stick	2.2	Range: 1–3
Mean birth weight (kg)	2.5 ± 0.7	Range: 0.6–4.0

ANC: antenatal care, PHC: primary health care, TBA: traditional birth attendant, PCV: packed cell volume.

It was a descriptive cross-sectional retrospective 6 year review of women with eclampsia in a tertiary health facility in Ladoke Akintola University of Technology Teaching Hospital, Osogbo, South West, Nigeria between January 1th, 2005 to December 31th, 2010. Case notes of women who had eclampsia as defined by systolic blood pressure of ≥ 140 mmHg, diastolic blood pressure of 90 mmHg, proteinuria of at least 1 plus and convulsions in patients with no background history of seizure disorder were retrieved [2]. Demographic information, maternal and neonatal complications were obtained. Data was analyzed using SPSS version 14. 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 Fisher's exact test and level of significance was put at less than 5%.

Table 2: Feto-maternal complications.

	Numbers	Percentages
Maternal complication		
Acute renal failure	13	15.7
Postpartum haemorrhage	7	8.4
Cerebrovascular accident	3	3.6
Sepsis	1	1.2
Maternal death	7	8.4
Mode of delivery		
Caesarean section	45	54.2
Vaginal delivery	33	39.7
Vacuum delivery	5	6.1
Fetal outcome		
Neonatal asphyxia	19	22.9
Neonatal death	20	24.1

3 Results

During the review period, a total of 3952 deliveries were recorded and 83 cases of eclampsia were reported, thus accounting for an incidence of 2.1%. Mean age was 26.6 ± 6.0 years (15–38 years), parity 1.3 (0–5). Of the eclamptic women, 51 (71.1%) were treated with magnesium sulphate. Total maternal mortality from all causes was 71 and total live birth was 3585; thus maternal mortality ratio over the period was 1981 per 100,000 live birth. Mortality due to eclampsia was 7 which contributed to 9.9% of total maternal death and case fatality rate was 8.3%.

Almost half of the referrals were from private health facilities 40 (48.2%) while 2 (2.4%) were from traditional birth attendants. With regards to maternal age, majority of the parturients 44 (63%) were in the 3rd decade of life being between 20–29 years; while only 10 (12.0%) were teenage mothers. In terms of parity, the study population was almost equally distributed between nulliparas 38 (45.8%) and multiparas 38 (45.8%) with grandmultipara accounting for only 7 (8.4%). They were mainly of Yoruba ethnic tribe 82 (98.8%).

When feto-maternal complications were analyzed in Table 1, 30 (36.1%) had preterm deliveries. The incidence of low birth weight was 33.7% (Table 1). Thirteen (15.7%) of the parturients had acute renal failure and there were 7 maternal death (case fatality rate 8.4%). Majority 45 (54.2%) had caesarean deliveries, 19 (22.9%) neonatal asphyxia and 20 (24.1%) perinatal death (Table 2).

After adjusting for postpartum eclampsia, there was no significant difference in the admission to intensive neonatal care unit among the vaginal and caesarean deliveries in women with antepartum and intrapartum eclampsia. However, there was significant better neonatal survival among those who had caesarean deliveries in antepartum eclampsia compared to those who had vaginal deliveries in the same group (91.2% versus 9.1%, Fisher's Exact Test < 0.001) (Table 3). Majority of the eclamptic women had antepartum eclampsia 45 (54.2%) while intrapartum and postpartum eclamptic women were 19 (22.9%) each; see Figure 2.

Table 3: Mode of delivery and pregnancy outcome.

Variable	CS N (%)	SVD N (%)	DF	Test statistics	P-value
SCBU admission					
Antepartum eclampsia					
Yes	13 (38.2)	0 (0.0)			
No	21 (61.8)	6 (100.0)		Fisher's exact	0.152
Intrapartum eclampsia					
Yes	2 (25.0)	3 (27.3)			
No	6 (75.0)	8 (72.7)		Fisher's exact	1.000
State of the baby					
Antepartum eclampsia					
Alive	31 (91.2)	1 (9.1)			
Dead	3 (8.8)	10 (90.9)		Fisher's exact	0.000
Intrapartum eclampsia					
Alive	6 (75.0)	6 (54.5)			
Dead	2 (25.0)	5 (45.5)		Fisher's exact	0.633

CS: caesarean section.
SVD: spontaneous vaginal delivery.
SCBU: special care baby unit.
DF: degree of freedom.
N: number.

Figure 2: Types of eclampsia.

4 Discussion

Eclampsia has remained one of the major causes of maternal morbidity and mortality in sub-Saharan Africa, contributing 9.9% of the maternal death in the study period. The incidence of eclampsia varies from one geographical area of Nigeria to another. Its incidence in the study population was 2.1% which was higher than that reported in the FCT, estimated at 1.3%, whereas Sagamu sharing the same south west geo-political zone as the study location has 1.7% and Benin in the middle eastern part of the country reported 1.3% [5, 6, 12]. The mean age and age range of eclamptic women in our study was similar to the report from Benin and FCT [5, 14]. The proportion of nulliparous women from our study is 45.8% [5] which is lower than the report from the Northern region (60.9%) and Middle Eastern part (52.4%) of the country. The higher proportion of nulliparity observed among women with eclampsia in north and eastern Nigeria is in support of the fact that first deliveries take place mostly at extremes of age, below 20 years and above 35 years. Also the incidence of teenage pregnancies was higher in the regions that had the higher proportions.

The quality of care a woman receives in prenatal care has a significant impact on the outcome of the pregnancy. All the women in our study were not booked in our health facility which is a tertiary teaching hospital but this is not necessarily to be interpreted as a negative development. Within the Nigerian health system, teaching hospitals are tertiary referral centers while primary health centers serve a gate-keeping function. The policy of the ministry of health regarding antenatal care encourages women to receive such care in public or private primary and secondary health facilities while tertiary centers, such as ours, are expected to act as referral facilities for high risk patients. This may explain the observation that a large proportion of patients in this study
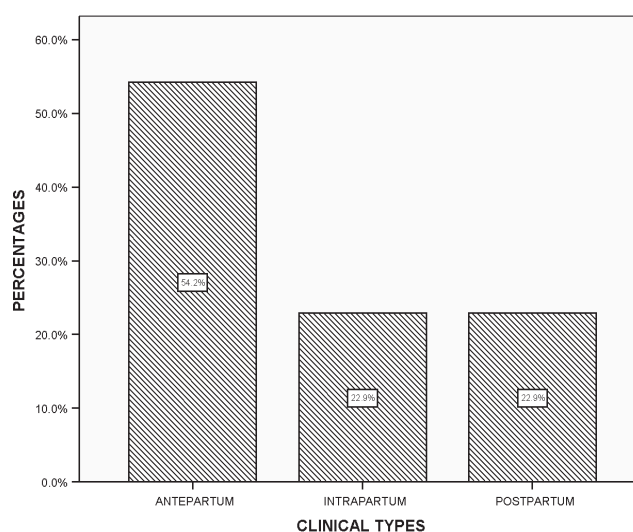
were initially booked in private health facilities (48.2%) and primary health facilities (21.7%) and then referred to our center. Another explanation for this finding which has implications for pregnancy outcome may be the financial burden of antenatal care. The antenatal fees charged in a primary health facility are often much lower than fees charged in tertiary facilities.

The additional finding that more than half (54.2%) had antepartum eclampsia is in support of reports from other centres in the country [4, 5, 6, 8, 10, 11, 12]. This implies that prompt and proper management of the situation early on in the pregnancy or expedited referral to a tertiary center may have improved feto-maternal outcome in the study population. Significant proportion (71.1%) of the cases studied had magnesium sulphate with case fatality rate of 8.3% which was similar to 8.5% reported in the FCT having similar treatment modality [5]. However, this is unacceptably higher than the maximum recommended 1% by United Nations [16]. A decade before this current study, the case fatality for eclampsia was significantly higher with 10.7% reported in Middle Eastern part and 22.3% in the Northern part of the country. This can be attributed to the fact that diazepam was the only anticonvulsant available [14] for management of eclampsia [9]. The improvement observed in our study underscores the better outcome associated with the administration of magnesium sulphate. However, a lot more needs to be done to reduce high fatality rate in our environment. The mean systolic blood pressure was 171 mmHg ($\pm$24.1) while the diastolic blood pressure was 111.5 mmHg ($\pm$20.1). This observed poor blood pressure control with mean significant proteinuria of 2.2 pluses of dip stick might have contributed significantly to high case fatality rate recorded in this study. The commonest maternal morbidity recorded was acute renal failure which

corroborates the report from FCT [5] but in contrast to report from Benin where the commonest complication was cerebrovascular disease. This could be due to fact that diazepam alone was used in management of eclampsia in the Benin centre which is not as effective magnesium sulphate in controlling recurrent convulsions [14]. The perinatal mortality rate of 24.1% reported in this study though higher than that reported in FCT 17.4% [5] is much lower than those of the Northern parts 34.6% and 31.7% where among other factors, unavailability of magnesium sulphate could be a contributor to poorer neonatal outcome [9, 15]. This further stresses the benefit of magnesium sulphate for better neonatal outcome.

Majority of the patients 54.2% had caesarean section supporting findings from other studies [5, 12, 13]. Adjusting for postpartum eclampsia, neonatal survival was significantly associated with caesarean deliveries compared to vaginal deliveries among women with antepartum eclampsia thus making caesarean delivery a better option of mode of delivery in these women presenting with antepartum eclampsia.

This study demonstrated no difference in neonatal outcome among women with intrapartum eclampsia, a larger study might be necessary to show any difference.

5 Conclusion

Sub-Saharan Africa accounts for more than 90% of maternal deaths worldwide today and eclampsia is still a major preventable health challenge contributing significantly to this statistic. This study has weighted the impact of eclampsia on MMR and made suggestions for reducing mortality associated with childbirth especially in light of the deadline for meeting the Millenium Development Goals in 2015. The observation that most cases were referred from public and private primary health facilities where the quality of care is not optimal raises the need for regulatory authorities to partner with private health practitioners in improving the quality of antenatal care. It is equally important to strengthen the referral system in all these health care facilities to expedite prompt referral especially in cases with life-threatening conditions like eclampsia. This study has also documented improvements in maternal and neonatal outcome achieved with the use of magnesium sulphate rather than diazepam. A precedent of synergistic public-private partnership has been set with availability of anti-retroviral drugs for the treatment of HIV. It is therefore imperative that governments in developing countries collaborate with pharmaceutical companies in encouraging local production of magnesium sulphate which can then be made available at affordable cost.

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