

## Original Article

# A 5-year review of maternal mortality associated with eclampsia in a tertiary institution in northern Nigeria

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### Abstract

**Objective:** To determine the incidence of maternal mortality associated with eclampsia and to determine how socio-demographic and clinical characteristics of the women influence the deaths.

**Methodology:** Records of 52 eclampsia-related mortalities from January 2003 to December 2007 were reviewed, retrospectively. Their social demography, mode and place of delivery, time of eclampsia, and fetal outcome were extracted for analysis.

**Results:** Eclampsia accounted for 52 (46.4%) of the 112 total maternal deaths recorded within the 5-year period, with case fatality of 22.33%. Age group <20, 20-29 and above 30 all had similar case fatality rate of 22.1%, 23.8% and 26.7%, respectively. Those who were experiencing their first deliveries have the worst deaths recording 42.5% of the case fatality in that category. As expected, unbooked had higher case fatality of 24.0% compared to 15% among booked cases, while those with no formal education also had more death (22.3% case fatality) as compared to 3.3% among those who had some form of formal education. Antepartum eclampsia was the cause in 50% of the death, 11(21.2%) of the pregnancies were not delivered before their death, while 18 (34.6%) were stillbirth.

**Conclusion:** Eclampsia still remains the major cause of maternal mortality in this region resulting from unsupervised pregnancies and deliveries. There is need to educate and encourage the general public for antenatal care and hospital delivery.

**Keywords:** Eclampsia, maternal mortality, northern Nigeria

### Résumé

**objectif:** pour déterminer l'incidence de la mortalité maternelle associés à éclampsie et pour déterminer comment caractéristiques sociodémographiques et cliniques de l'influence de femmes le décès.

**méthodologie:** dossiers de de 52 éclampsie mortalité connexe de janvier 2003 - décembre 2007 ont été examinées rétrospectivement. Leur démographie sociale, la mode et le lieu de livraison, temps de éclampsie et le résultat du foetus ont été extraits pour analyse.

**résultats:** éclampsie ont représenté 52(46.4%) de décès maternels total 112 enregistrés dans les cinq ans période, en cas de décès de 22.33%. groupe d'âge < 20, all 20-29 et au-dessus de 30 avait même taux de létalité de 22.1%, de 23,8 % et de 26,7 % respectivement. Ceux qui éprouaient leurs premières livraisons ont les pires décès enregistrement 42,5 % de l'affaire accidents mortels dans cette catégorie. Comme prévu unbooked avait supérieur cas de décès de 24,0 % comparativement à 15 % parmi les cas un avertissement, alors que celles sans aucune l'éducation formelle a également eu plusieurs décès (22,3 % cas mortel) par rapport à 3,3 % Parmi ceux qui avaient une forme de l'éducation formelle. Antepartum éclampsie a été la cause de 50 % de la mort, 11(21.2%) de la grossesse n'étaient pas livrés avant leur mort, alors que 18 (34,6 %) ont été mortinaissance.

**conclusion:** éclampsie demeure toujours la principale cause de mortalité maternelle dans cette région résultant

sans surveillance grossesses et les livraisons. Il est nécessaire éduquer et encourager le general public de prestation de soins et des hôpitaux prénatals.

**Mots clés:** éclampsie, la mortalité maternelle, Nord du Nigeria

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## Introduction

Eclampsia remains a complication of pregnancy and a leading contributor to maternal and perinatal morbidity and mortality.<sup>[1,2]</sup> Worldwide<sup>[3]</sup> it accounts for 50,000 maternal deaths annually. In spite of the several global and regional interventions and initiatives from governments and other concerned agencies, maternal mortality continues to rise in sub-Saharan Africa with eclampsia as a major cause.<sup>[4,5]</sup> Over the last decade it remained the leading cause of maternal and perinatal mortality in Nigeria,<sup>[6-8]</sup> This picture could even be worse especially in the north-eastern part of Nigeria with so far, the worst case fatality rate of 11.6% (11,600/100,000) as reported in Gombe.<sup>[9]</sup> This study was undertaken to determine the incidence of eclampsia-related death in the study population, the socio-demographic characteristic of the women and pregnancy outcome.

## Materials and Methods

This is a retrospective study of maternal deaths from eclampsia recorded in Federal Medical Centre Nguru over a 5-year period, from January 1, 2003 to December 31, 2007. Out of the 112 total maternal deaths recorded over the study period, records of 52 patients who suffered from eclampsia-related deaths were retrieved from the medical records library, and information pertaining to their age, parity level of education and booking status was obtained. Information on the mode of delivery, time of eclampsia, fit controlled and gestational age at delivery, place of delivery, and fetal outcome were also obtained from the records for analysis using SPSS version 11. The Chi-square test was used for test of significance.

## Results

During the period under review, a total of 3931 deliveries were recorded, 224 cases had eclampsia, giving a prevalence rate of 5.7% of the total deliveries. Diazepam is the sole anticonvulsant used for all the cases. Total deaths from eclampsia were 52 out of the 112 maternal death over the same period accounting for 46.4% of the total maternal death and a case fatality rate of 22.3% (22,300/100,000) and eclampsia-related maternal mortality ratio (MMR)

of 1322/100,000 deliveries. As shown in Table 1, age group <20, 20-29, and above 30 all had similar case fatality rate of 22.1%, 23.8%, and 26.7%, respectively. Those who were experiencing their first deliveries have the worst deaths recording 42.5% of the case fatality in that category. As expected, unbooked had higher case fatality of 24.0% compared to 15% among booked cases, while those with no formal education also had more death (22.3% case fatality) as compared to 3.3% among those who had some form of formal education.

Table 2 illustrates the type of eclampsia and delivery outcome. About 50% of the victims had ante-partum eclampsia, while intrapartum and postpartum eclampsia were found among 34.6% and 15.4%, respectively. Surprisingly, 80.5% of the eclamptics delivered within the hospital environment, and 19.5% were cases of postpartum eclampsia and whose deliveries were conducted at home. Of those whose deliveries that were conducted in the hospital preterm and term deliveries were proportionally similar, but in majority the gestational age were estimated based on the fundal height at the time of presentation rather than by date or with the use of ultrasound scan. Spontaneous vaginal delivery, assisted vaginal delivery, and caesarean section were the modes of delivery of the pregnancies in 17 (32.6%), 15 (28.8%), and 9 (17.3%), respectively. Fit controlled was achieved in 47 (90.4%) of the cases,

**Table 1: Socio-demographic characteristics**

Age group	Cases of eclampsia	Number of death	Case fatality (%)
<20	104	23	22.1
20-29	105	25	23.8
30-39	15	4	26.7
Total	224	52	
Parity			
1st delivery	80	34	42.5
2-4	111	13	11.7
Above 5	33	5	15
Total	224	52	
Literacy level			
Yes	30	1	3.3
No	194	51	22.3
Total	224	52	
Prenatal care			
Yes	20	3	15
No	204	49	24.0
Total	224	52	

**Table 2: Time of eclampsia and delivery outcome**

Time of eclampsia	Number of death	%
Ante-partum	26	50
Intrapartum	18	34.6
Postpartum	8	15.4
Place of delivery		
Home	8	19.5
Hospital	33	80.5
Mode of delivery		
Spontaneous	17	32.6
Assisted vaginal delivery	15	28.8
Caesarean delivery	9	17.3
Not delivered	11	21.2

  

Time of eclampsia						
Fetal outcome	Ante-partum	%	Intra-partum	%	Post-partum	%
Alive	12	(46.2)	7	(38.9)	4	(50)
In utero	9	(34.6)	2	(11.1)	-	-
Stillbirth	5	(19.2)	9	(50)	4	(50)

with diazepam as the anticonvulsant. Recurrence of fit was observed in three of the cases before their eventual death. Eleven of the mothers died undelivered giving a maternal mortality ratio of 279.8/100,000 deliveries, while the remaining 41 patients: 23 were live births, while 18 were stillbirths.

The relationship between fetal outcome and time of eclampsia is also shown in same Table 2; in those who experienced ante-partum eclampsia, 12 of the neonates were delivered alive, accounting for 46.2% of the live births, while intrapartum and post-partum 7 and 4 live births were found. Only 19.2 of stillbirths occurred in the ante-partum group compared to 50% in each of the intrapartum and postpartum eclamptics.

## Discussion

During the 5-year study period, out of the 224 cases of eclampsia, 52 maternal deaths were recorded, giving case fatality rate of 22.3% which is significantly higher than reported in India (7.8%)<sup>[10]</sup> and other parts of Nigeria [Benin (10.7%),<sup>[11]</sup> Gombe (11.6%),<sup>[9]</sup> Ukpoma (15.4%)<sup>[6]</sup> and Jos (16.9%)<sup>[12]</sup>]. The eclampsia-related maternal mortality ratio of 1322/100000 deliveries found was however lower than reported in Uyo (6800/100000).<sup>[13]</sup> There was no much significant difference in case fatality among the reported groups <20, 20-29, and above 30 years with 22.1%, 23.8%, and 26.7%, respectively.

Two-third of the death were of those experiencing their first deliveries which is not unexpected because the reported incidences of eclampsia is much higher in this group of patients.<sup>[9,12,14-16]</sup> Almost all the mothers not had any formal education that is not surprising, as there is apathy toward western

education, particularly for girls' and children education with subsequent early marriage. The poor/lack antenatal supervision in majority, who were only rushed to the hospital at terminal stages of the emergency, may account for more deaths. This was similar to findings in the Niger Delta region of Nigeria.<sup>[6]</sup>

Because of the peculiarity of these patients (unbooked and illiterates in majority), gestational age was either estimated in months or extrapolated from the fundal height measurement at the time of examination, this often lead to problem of decision making at mode of delivery when fetal survival is to be considered. Maternal death is higher among those who experienced antepartum eclampsia compared to those who had intrapartum or post-partum eclampsia. This could be partly explained by the relatively longer duration or possibly repeated episodes of convulsion from the onset of the first fit that often increased the risk of mortality. The observed maternal mortality ratio in this study of 279.8/100,000 deliveries was much higher than reported from Kaduna Nigeria of 141/100,000.<sup>[17]</sup> However, there is no much significant difference between live births and stillbirths, but the stillbirth rate of 34.6% is similar to findings in Jos of 31.7%.<sup>[12,16,18]</sup>

Compared to those with other forms of eclampsia, neonatal outcome is relatively better among those with antepartum eclampsia; this might not be unconnected with the earlier recourse to caesarean section that might tend to minimize further risks to both the mother and the fetus from repeated convulsions and its consequences.

## Conclusion

Eclampsia no doubt contributes significantly to maternal mortality in Nigeria, more so in our geopolitical zone. Effort should be made by all concern to improve facilities and social infrastructures that will directly or otherwise minimize the occurrence of eclampsia. Skilled and prompt attendant of patient in emergency situations will help to curtail mortalities from preventable morbidities.

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