

RISK FACTORS FOR ECLAMPSIA AMONG PREGNANT WOMEN IN THREE (3) SPECIALIST HOSPITALS IN IMO STATE

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ABSTRACT

A retrospective study was carried out to determine the risk factor for eclampsia and its fetomaternal outcome in pregnant women who presented to 3 specialist hospitals in Imo State within a 4 year period, starting from January 2014, to December, 2017. Data were obtained from the folders by the aid of a well constructed check list, and analyzed using SPSS (statistical package for social Sciences). Level of Significance was set at $P = 0.05$. A total of 3106 deliveries were recorded, out of which 45 cases of eclampsia was noted. 37 of the 45 case files had the complete required information for the study and were used. This gave a prevalence of 1.45. The mean age for eclampsia was noted to be 25.65 years, with ages <20 and >30 years having the highest frequencies. At diagnosis, all the women had; Proteinuria (32 women 786.5% had 3 pluses of protein in urine); High blood pressure (25/67.6% had systolic blood pressure >190 mmHg); and Seizures (30/81.1% experienced 3 seizures prior to delivery). A significant association was noted between the level of education, Hypertension, proteinuria, Seizures, fetomaternal outcome and eclampsia. Although with the use of Chi Square, no significant association was found between age and eclampsia, a high percentage of the women were < 20 years. Eclampsia is both a preventable and controllable disease of pregnancy. Efforts should be geared towards proper awareness, early diagnosis and control of eclampsia and its precursor, pre-eclampsia.

KEYWORDS: Eclampsia, pregnant women.

INTRODUCTION

Eclampsia is one of the most dreaded causes of adverse pregnancy outcome worldwide (Beltrian, Wu, and Laurent, 2014). It constitutes one of the greatest causes of maternal and perinatal morbidity and mortality in the world (Ghulmiyyah and Sibai, 2012). It is estimated that preeclampsia and eclampsia account for about 63,000 maternal deaths annually worldwide. Eclampsia according to Milleris a complication of preeclampsia defined as the onset of convulsions, described as the grandmal type of seizure, first appearing before (antepartum period), during labour (intrapartum period), or, within 48 hours after delivery (post-partum period), and /or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia. Keith and Humphries (2017) opined that late post - partum Seizures of eclampsia may occur as late as 4 weeks after delivery.

Eclampsia by Williams Obstetrics (2014) is the onset of Seizures (convulsions) in a woman with pre-eclampsia, while preeclampsia according to the America College of

Obstetricians and Gynecologists is a disorder of pregnancy in which there is high blood pressure and either large amount of protein in the urine, or other organ dysfunction.

Eclampsia is part of a group of disorders known as Hypertensive diseases of pregnancy. Lo, Mission and Caughey (2013) stated that Hypertensive diseases of pregnancy, also known as maternal hypertensive disorders is a group of diseases that includes.

Pre-eclampsia

Eclampsia

Gestational Hypertension

Chronic Hypertension.

WHO (2011), decreed that about 10% of pregnancies globally are complicated by hypertensive diseases Williams obstetrics (2014) stated that hypertensive disorders of pregnancy is one of the three major causes of death in pregnancy (16%), along with post partum hemorrhage (13%), and puerperal sepsis (2%).

According to the work done by Bell (2010) and Lindheimer for the pre-eclampsia foundation (2012), historically, eclampsia dates as far back as 400BC when Hippocrates described headache accompanied by heaviness and convulsions during pregnancy as bad. The remedies were attempts to bring the body's fluids into balance through altered diets, purging and bloodletting.

With the introduction of mercury manometer for blood pressure measurement by Scipiona Riva-Rocci (1986), pre-eclampsia/Eclampsia were then noted to be hypertensive disorders, forming the bases for the current use of hypertension, proteinuria and convulsions as the major signs of eclampsia. The etiology of eclampsia is unknown, but with advancements in Medical Science and technology, attempts to find out its etiology are in progress, with many theories already developed with regards to this. Duley (2003) opined that the problem of eclampsia is confounded by the continued mystery of its etiology and the unpredictable nature of the disease.

The incidence of eclampsia in the developed countries of North America and Europe are similar and estimated to be about 5-7 cases per 10,000 deliveries. While the incidence of eclampsia in developing nations varies widely, ranging from 1 case per 100 pregnancies to 1 case per 1700 pregnancies (WHO 2004).

In Nigeria, the incidence of eclampsia is between 0.3 per 1000 deliveries to 9 per 100 deliveries. Audu and Ekele (2002) are of the Opinion that in some parts of Northern Nigeria, eclampsia alone contributed to almost one-third of maternal deaths. The incidence of eclampsia was found to be 9.42% in Birnin Kudu in Jigawa State (Audu and Ekele 2002) 1.02% in Kano and 7.6 per 1000 deliveries in Abuja. In University of Benin Teaching Hospital the incidence of eclampsia was found to be 1.32% or 1 in 76 deliveries. The mean age of the women was 27.1 +/-5.6 years, occurring significantly in nulliparous and unbooked mothers. A study by Esike, Ukaegbu, Anozie, Eze, et al (2017) in a hospital at Afikpo, Ebonyi State gave a prevalence of 1.12% or 1 per 89 deliveries, with a mean age of 27.5 years.

According to Goldenberg, McClure, Masgurie, Kamath, Jobe (2011), the incidence and case fatality rate of eclampsia in developed countries has been reduced by about 90% due to early detection of pre-eclampsia during antenatal care, good referral system, and increased access to hospital care for pregnant women, especially at risk, and/or pre-eclamptic women.

Generally, the risk factors for eclampsia as opined by Matter and Sibai (2000) and Miller (2013) have been noted to be; teenage pregnancy, age greater than 35 years; multiple gestation; primigravida; family history of pre-eclampsia and eclampsia; previous history of pre-eclampsia and eclampsia; lower socioeconomic class, no or low educational status; chronic hypertension; gestational diabetic mellitus; renal disease etc. Eclampsia

leads to bad obstetric outcome, causing maternal death; still births; lowers birth weight; preterm deliveries; respiratory distress syndrome in neonates.

Complications of eclampsia include: aspiration pneumonia, cerebral hemorrhage, kidney failure, cardiac onset etc.

WHO (2011) recommendation for the prevention and control of pre-eclampsia and eclampsia include; calcium supplementation during pregnancy and also areas with low dietary intake of calcium, low dose acetyl salicylic acid (Aspirin, 75mg) in high risk women, antihypertensive for women with severe hypertension during pregnancy, magnesium sulfate for the prevention of eclampsia in women with severe preeclampsia with viable fetus, delivery if condition is severe and uncontrollable.

This study was conducted in Imo, a state in Nigeria which is noted to be one of the developing countries of the world. Here, deliveries are still taken by poorly trained traditional birth attendant (TBA) and at maternity homes. Imo State has a large population and a high reproductive rate. It is hoped therefore, that the knowledge obtained from this study will increase the awareness on eclampsia, its associated risk factors and ways to avoid its development in pregnancy. It will help sensitize Health workers on the need to look out for this disorder, more especially preeclampsia in every pregnant women they come across during antenatal, and also, to use antenatal visits as a medium to create awareness amongst the populace on hypertension in pregnancy, its dangers and possible prevention and control. The government also can be sensitized on the impacts of eclampsia on the economy and mental health of its populace, the need to implement and improve on existing policies in order to reduce fetomaternal morbidity and mortality, improve maternal health care and access to health facilities, thereby increasing the life expectancy amongst the reproductive age groups.

METHODOLOGY

Study Areas

The study was carried out at 3 hospitals in Imo State, viz; Imo State University Teaching Hospital, Orlu; St Mary's Children and community hospital, Orlu and St. David's Hospital Owerri.

Imo State; known as the Eastern Heart Land is in South East Nigeria, with Owerri as its capital. Its coordinates are 5°29'N 7°2'E/5.483°N, 7.033°E with an estimated population of 4,927,563 (National population commission, 2019).

Majority of its populace are civil servants and traders (especially of Agricultural produce).

Imo State is connected to other States which includes; Rivers, Abia, Anambra and Delta. It is an Ibo speaking

State, with English language spoken for official purposes. It houses a lot of Medical practitioners, but also herbalists and unorthodox care givers.

Population of study

A total of 3106 folders of pregnant women who present to St. David’s Hospital, Imo State University teaching Hospital and St. Mary’s children and community Hospital from January 2014 to Dec., 2017 were retrieved. Out of this, 45 were cases of eclampsia, and only 37 off the 45 case files had the requited information.

Data Collection

A well constructed check list was used as the instrument for data collection to retrieve the required information from the available folders. Firstly, the names and folder number of patients who had eclampsia between, January 2014 to December, 2017 were obtained from the Obstetric department of each of the hospitals. These were then taken to the records department (after due ethical consents from the hospitals) for retrieval of the folders.

Information obtained included; Booking status, age, level of education, occupation, marital status, parity, past Obstetric History, Blood pressure/hypertension. Blood pressure at Diagnosis, number of seizures, protein in Urine, mode of delivery and fetomaternal mortality.

The data obtained were pooled, analyzed by the use of statistical package for social Science (SPSS), version 21, and summarized using table, percentages and means Chi-square was used to determination the associations between the level of education, Age, Hypertension, Seizures, protein in urine Mode of delivery, fetomaternal mortality and eclampsia. A P - value of less than 0.05 was considered to be significant.

RESULTS

Out of the 3106 folders of pregnant women retrieved, 45 were cases of eclampsia, and only 37 of the 45 folders had the required information, therefore, the case retrieval rate was 82.2%

Table 1: Frequency Distribution for the level of Education.

| Level of Education | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|--------------------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| (Basic) | 26 | 18.5 | 7.5 | 70.3 | 6.08 | 1 | 0.014 |
| Tertiary | 11 | 18.5 | -7.5 | 29.7 | | | |
| | 37 | 37 | | 100 | | | |

Table 2: Frequency Distribution for Age.

| Age Group | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|-----------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| 16-20 | 10 | 9.3 | 0.8 | 27 | 0.297 | 3 | 0.974 |
| 21-25 | 8 | 9.3 | -1.3 | 21.6 | | | |
| 26-30 | 9 | 9.3 | -0.3 | 24.3 | | | |
| 31-37 | 10 | 9.3 | 0.8 | 27.0 | | | |
| | 37 | 37 | | 100 | | | |

Table 3: Table showing the mean age.

| One-Sample Statistics | | |
|-----------------------|----|-------|
| | N | Mean |
| Ages | 37 | 25.65 |

Table 4: Frequency Distribution for the blood pressure.

| Blood Pressure (mmHg) | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|-----------------------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| 160-170 | 1 | 9.3 | -8.3 | 2.7 | 38.57 | 3 | 0.000 |
| 171-180 | 3 | 9.3 | -6.3 | 8.1 | | | |
| 181-190 | 8 | 9.3 | -1.3 | 21.6 | | | |
| >190 | 25 | 9.3 | 15.8 | 67.6 | | | |
| | 37 | 37 | | 100 | | | |

Table 5: Frequency distribution, Chi Square and p-Value for occurrence of Seizures.

| Number Of Seizures | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|--------------------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| Two | 3 | 12.3 | 17.7 | 8.1 | 38.0 | 2 | 0.000 |
| Three | 30 | 12.3 | -8.3 | 81.1 | | | |
| Four | 4 | 12.3 | -9.3 | 10.8 | | | |
| | 37 | 37 | | 100 | | | |

Table 6: Frequency Distribution for protein in urine.

| Degree of protein in Urine | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|----------------------------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| ++ | 5 | 18.5 | 13.5 | 13.5 | 19.70 | 1 | 0.000 |
| +++ | 32 | 18.5 | -13.5 | 86.5 | | | |
| | 37 | 37 | | 100 | | | |

++ = present. +++ = present in Abundance

Table 7: Frequency Distribution for Mode of Delivery.

| Mode of Delivery | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|------------------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| CS | 31 | 18.5 | 12.5 | 83.8 | 16.89 | 1 | 0.000 |
| VD | 6 | 18.5 | -12.5 | 16.2 | | | |
| | 37 | 37 | | 100 | | | |

Where CS = Caesarean Section VD = Vaginal delivery.

Table 9: Frequency Distribution for Mortality.

| Death | Observed frequency | Expected frequency | Residual | Percentage Observed | X ² | df | Value |
|--------|--------------------|--------------------|----------|---------------------|----------------|----|-------|
| Baby | 7 | 9.3 | -2.3 | 18.9 | 28.62 | 3 | 0.000 |
| Mother | 5 | 9.3 | -4.3 | 13.5 | | | |
| Both | 2 | 9.3 | -7.3 | 5.4 | | | |
| Nil | 23 | 9.3 | 13.8 | 62.2 | | | |
| | 37 | 37 | | 100 | | | |

DISCUSSIONS

The finding of this study reveals that there is significant association between; the level of education of a woman and eclampsia, Hypertension and eclampsia, Seizures and eclampsia, protein in urine and eclampsia, thereby making the above variables important risk factors in the development of eclampsia. However, Chi Square found no significant association between age and eclampsia. Although this is the case, a high percentage of the women were aged <20 and >30 years. With regards to Age as a risk factor, Esike, Ukaegbu, Anozie, Eze, Aluka and Twomey (2017), made similar observations to this study as they found the mean age to be 27.5 years, they also found a significant percentage (11%) to be aged 19 years or below A study on the risk factors and adverse outcome of pre-eclampsia by Su, Zhang and Wang (2017) in China found the educational level of a woman to be a significant risk factor. Another related study by Opitasari and Anclayasari (2014) on parity, educational level and risk for (pre-) eclampsia found that women with low educational level had 86% greater risk for (Pre-) eclampsia. Their findings are commensurate with the findings in this study which revealed a significant association between the level of Education and

eclampsia.

This study found hypertension to be a very significant risk factor as all the patients had different levels of High blood pressure on presentation. This is similar to the study done by Kooffreh, Ekoh and Ekpondom (2014) on the prevalence of pre-eclampsia among pregnant women in the University of Calabar teaching Hospital were all the patients had high blood pressure. In a related Study by Agida, Adeka and Jibril (2010) at the University of Abuja teaching Hospital, only one out of 44 patients was found to be normotensive. In this study the 37 patients had both Seizures and protein in urine prior to delivery. 81.1% had 3 Seizures, 10.8% had 4 Seizures and 8.1% had 2 Seizures, thereby giving a significant association between Seizures and the development of eclampsia.

Similarly in a study by Agida, Adeka and Jibril (2010), all the patients were noted to have had seizures. However in contrast to this study, not all the patients in their study had protein in urine. Out of the 46 patients they studied, 22(47.85%) had +++ (three pluses) of proteinuria, 6 (13.1%) had 2 pluses (++) , 4 (8.7%) had one plus (+), 1(22%) had traces of proteinuria, 3 (6.5%) had nil

proteinuria, and the rest of the 10 were not stated.

This study also revealed a high rate of caesarean section (31/83.8%) as a mode of delivery for eclamptic patients. Similarly, in a study by Okeudo, Ojiyi, Ezem and Dike (2012) at the Imo State University Teaching Hospital, Orlu, 86.7% of the pre-eclamptic patients delivered through caesarean section. In contrast Esike, et al (2017) obtain a low rate of caesarean section (44.9%) in their study. In contrast also, the studies, done in Birnin Kudu by Tukur, Umar and Rabi'u (2007) and in Murtala Mohammadu Specialist hospital, Kano by Yakassai and Graya (2011) also gave a low caesarean section rate of 51.7% & 65.8% respectively.

With regards to fetomaternal outcome, 5 (13.5%) of the mothers died, 7 (18.95) of fetal death were recorded, 2 (5.4%) of both mothers and their babies died. These gave a case fatality of 18.91% for mothers and 24.3% for babies, while 23 (62.2%) survived the disease. Eclampsia as reported by Duley (1992) remains one of the leading causes of maternal and prenatal morbidity and mortality in the developing world. In a study by Pal, et al (2011) in Bangladesh, eclampsia contributed 27.85% of all the maternal deaths, and perinatal mortality, was 30.33%. These figures are high when compared to this study and studies from other parts of Nigeria.

In conclusion, the maternal mortality of 18.9% obtained due to eclampsia is very high in comparison to the 1% mortality required to achieve the millennium Development Goal, MDG. The lower values obtained in other centres may be due to availability of competent staff and health resources in such areas, with higher levels of awareness on health and related issues, good referral system from primary, to secondary, and to tertiary health care. This study revealed the importance of age and level of education in the development of eclampsia and the need for further studies. It reveals the need for routine blood pressure and urinalysis checks, especially on each antenatal visits, identification of high risk patients and their early referral to tertiary centres.

RECOMMENDATION

In order to reduce the risks posed by eclampsia, proper awareness campaigns should be done, spearheaded by the Medical team, with support from the Government. Early booking for antenatal, avoidance of teenage marriage and pregnancy, female empowerment and education can never be over emphasized in order to change the knowledge, attitude and practice of women with regards to their health. The development and implementation of evidence based health policies, with regular updates and improvement of the policies should be embarked on by the Government.

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