Research article

Factors influencing the prevalence of Preeclampsia-eclampsia in booked and unbooked patients: 3 years retrospective study in NDUTH, Okolobiri.

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Abstract:

Background: Inspite of various interventions, approach and some level of improvement on focused antenatal care as to meet The Millennium Development Goals, we are still faced with problems of high perinatal and maternal mortality, especially within low and middle income countries. The aim of the study is to evaluate and understand some of the factors influencing the prevalence and the implications of preeclampsia-eclampsia. Highlights of the management challenges and stressing on the need for better education and the root causes: suggesting ways in reducing negative fetal outcome and maternal complications caused by preeclampsia-eclampsia in our society and the region in general were reviewed.

Result: This retrospective study, includes 95 patients managed for preeclampsia-eclampsia between Janmuary 2011 and December,2013. During the same period a total of 1667 deliveries was recorded. The incidence ratio of PE-EC was 5.69%, 4 patients died due to complications of PE-EC, perinatal mortality was 34 %, all preeclampsia-eclampsia patients recieved $MgSO_4$ (Prithchard regime). Only 26.6% attended antenatal clinic at least once during the pregnancy,69.5% were managed by the TBA and 51.9% had abdominal massage prior to presentation. Anemia was present in 48.4%, only 20 had post secondary education, 85% resides in rural areas, while 62.11% were unemployed and ceasean section rate was 48.4%. **Conclusion**: Maternal mortality and perinatal loss was unaccceptable, majority of those incidences occured among the socio-economically deprived patients and basically unbooked. Therefore, the need for better health care promotion, advocation and provision of compulsory antenatal care services may have great impact. **Copyright © WJMMS, all rights reserved.**

Keywords: Preeclampsia-eclampsia, Perinatal and maternal mortality, Anemia, Booking status, Ceaseran section, Socio-demography, NDUTH**.**

Introduction:

From time inmemorial preeclampsia-eclampsia has been a major challange to obstetrics practice, which is a common complication of pregnancy associated with high maternal and perinatal morbidity and mortality, especially in developing countries [1]. Most recent studies and interventions are geared towards reducing maternal morbidity and mortality with lesser emphasis on the fetal outcome [1,2]. Recently considerable progress has been made in understanding the pathophysiology and the management of the diseases, yet the aetiology and primary pathology remained inconclusive [2,3]. Based on some of the findings from many clinical management trials; the WHO has recommended the use of magnesium sulphate ($MgSO_4$) as a safe and low-cost drug to manage severe pre-eclamptic and eclamptic cases [1,3,4,5]. Moreso, studies have also shown that; MgSO4 significantly lowers the possibility of seizures in women with severe pre-eclampsia or eclampsia, prevents progression from severe pre-eclampsia to eclampsia and generally lowers maternal mortality [5,6,7]. In Nigeria preeclampsia-eclampsia is one of the major cause of maternal morbidity, mortality, similar to other sub-saharan countries. It was reported to have contributed to 46.3% of maternal deaths in Kano State and 43% of maternal deaths in Jigawa State, while this study recorded a total of 4 out of 8 maternal death during the study period associated with preeclampsia-ecclampsia which is 50% [7,8,9,]. Preeclampsia-eclampsia (PE-EC) plays a major role and is among the commonest causes of maternal death among our patients. Others; includes hemorrhage/bleeding, infections and unsafe abortions in developing countries [9,10,11]. It has; been widely aggreed that, still the disease cannot be completely eradicated, while the prevalence of severe pre-eclampsia and eclampsia-related deaths are preventable. Unfortunately, about 99% of these deaths occurs in low and middle income countries [10,12]. It is of great concern, despite the level of improvement in the management and overral outcome of preeclampsia-eclampsia in the developed world, the prevalence of feto- maternnal mortality and morbidity is still very high particularly in this region where this study was carried out and Nigeria in general.

The records presented in this study and those from other studies done in the country is of great concern as it reflects on the overall attitude towards pregnancy and it`s related implications [13,14]. It also butresses the countinuity of those issues of concern: as they are indicators of the poor state of our socio-economic, cultural development, political will and the health services with the implication that relevant health-related millennium

development goals may not be achieved in the country as envisaged [15]. Maternal complications and poor perinatal outcome are highly associated with non-utilisation of antenatal and delivery care services and poor socioeconomic conditions of the patient, with poorer outcomes in unbooked than booked patients. Various studies had confirmed the positive influence of antenatal care on maternal and perinatal outcomes irrespective of other maternal characteristics, (Ekwempu CC et tal,1988)[16,17,18]. Most of the socio-cultural and economic indeces considered in the study were found not impressive, and as such reflected negatively on the outcome of pregnancies in the region, despite the increasing efforts made by various governments and region in decreasing maternal mortality in the developing world; recently as a key factor, in the Millennium Development Goals (MDGs) [19,20]. The World Health Organization (WHO) reports that hemorrhage/bleeding, infections, unsafe abortions and eclampsia are still common causes of maternal mortality especially in developing countries [1,3,4,10]. As we appreciate the use of magnesium sulphate in our practice just like in many high income countries, as the drug of choice for over 20 years, disbanding the old methods such as the use of diazepam, phenytoin and lytic cocktail, they are as still widely used in some countries. Magnesium sulphate is used as a Gold Standard (Prithchard regime), in our pratice in the department: yet the maternal and perinatal outcome from this study were poor, reasons are primarily due to the socio-economic, cultural and traditional beliefs prevailing in this enviroment, poor health seeking-behaviours, patronage of TBAs, execessive local abdominal massage, home delivery, low antenatal uptake among patients. Some of the challenges and limitations of the use of magnesium sulphate in our department and in many developing countries could be attributed to a number of factors: such as lack of proper information or protocol, or poor dissemination of the protocols (guidelines) on the use of the drug. Others includes; lack of training for health workers on how to administer the drug and the perceived need for monitoring of patients on the drug in intensive care units [7,15], another postulatio is that, because the drug is relatively cheap, there is limited incentive for drug manufacturers to produce the drug on a commercial scale [7]. Considering the poor healthcare seeking behaviour, socio-cultural, traditional, cultural and socio-economic enviroment prevailing in the region; and it's adverse negative effect on the current state of the perinatal and maternal mortality situation in Nigeria. Therefore, the need for a national and global participation in re- addressing the issue with greater emphasis on the rationale for a broad based antenatal surviellance, as many studies have shown a direct relationship between of perinatal and maternal loss, and the unbooked and booked patients.

The resultant effect of these studies on the subject matter, will give room for a proper well coordinated planning and implementive interventions that, may at least bring about the expected reduction in perinatal and maternal morbitity and mortality. This study is aimed at how our socio-cultural, traditional beliefs and practices and other sociodemographic factors influences the prevalence of preeclampsia-eclampsia on feto-maternal outcome and the obstetrical complications among booked and unbooked mothers (i.e. antenatal care attendees and non-attendees) who delivered at the Niger Delta University Teaching Hospital, Okolobiri, Nigeria.

Methods:

This was a retrospective study involving women with severe preeclampsia and eclampsia, managed between 1[st.] January 2011 and [31st.] of December 2013 at the Department of Obstetrics and Gynaecology, Niger Delta University Teaching Hospital, Okolobiri, Nigeria. It is a newly created tertiary institute, located within the rural community in the state. Which covers the rural communities and referrals from other institutions both public and private from the whole state. It is also a teaching unit for specialist obstetricians and gynecologists in training, as well as undergraduate medical students of the Niger Delta University, college of medicine. This was approved by the Hospital Ethics Committee.

Collection of Data

All pregnant women admitted and managed to delivery, including those who presented with severe preeclampsia-eclampsia (PE-EC) in labour during the study period with proper medical records were retrieved from medical archives.

Patients who attended antenatal clinics in our department, those refered from other health institutions and those self refered were enrolled in the study. We also included those women with a known family history that may influence their pregnancy outcomes, such as hypertension, diabetes mellitus, kidney disease etc.

Excluded from the studies were those, who developed preeclampsia-eclampsia, whose pregnancies were terminated before age of fetal viability; in our enviroment pregnancy less than 28 weeks of gestation. Postpartum renal biopsy was not performed to exclude any underlying renal disease. Clinical data included were socio-demographic details (age, marital status, residency, employment status, education), personal and familial history of preeclampsia or eclampsia, systolic and diastolic blood pressure. Pregnancy characteristics (gravidity, parity, gestational age at diagnosis of preeclampsia or eclampsia and at delivery, mode of delivery, antihypertensive treatment), fetal outcome, booking status, history of abdominal massage and Traditional Birth Attendance uptake, Transfusion, Blood pressure on admision and discharge. Laboratory data included is urinary protein level. Duration of hospiatal stay and maternal outcome. Participants followup was done in first two weeks after delivery and one month later. Longer follow period was not possible due to patients attitude and socio-economic reasons, as patients are subjected to travel for these checkups. Finally questioniare designed for the study was made and data were entered using the Epi info 7 version 1.4.0.

Result:

During the 3 years study period a total of 1667 deliveries was recorded of which 95 women were diagnosed and managed for preeclampsia-eclampsia (5.69%), eclampsia alone was 2.16%. Seven (7.37%) of the PE-EC cases were teenagers, forty eight (48.42%) were in the age group of 20-29 years, while the rest forty (42.11%) were in the age group of above 30 years. The average age of the patients was 29.02 ± 10.34 years. Seventy five (78.9%) were married, majority were Ijaw sixty six (69.47%). Only ninteen (20%) had education higher than secondary, sixty three (66.32%) had eigher primary or post primary education, while thirtheen (13.68%), have no formal education. Majority, eighty five (89.5%) were rural dwellers. While only fifteen (15.79%) were pensionably employed, fifty nine (62.11%) were not employed

Table 1: Socio-demographies of the patients.

Age	Frequency	Percent	Cum Percent
15-19	7	7.37%	7.37%
20-29	48	50.53%	57.90%
30-50	40	42.11%	100.00%
marital status			
Divorced	6	6.32%	6.32%
Married	75	78.95%	85.27%
Single	14	14.74%	100.00%
Ethnicity			
Others	13	13.68%	13.68%
Ijaw	60	63.16%	76.84%
Igbo	16	16.84%	93.68%
Yoruba	4	4.21%	97.89%
Hausa	2	2.11%	100.00%
Education			
Higher	19	20.00%	20.00%
No formal	13	13.68%	33.68%
Primary	29	30.53%	64.21%
Secondary	34	35.79%	100.00%
Residence			
Rural	85	89.47%	89.47%
Urban	10	10.53%	100.00%
Occupation			
Applicant	13	13.68%	13.68%

Petty trader	27	28.42%	42.10%
Civil servant/professionals	15	15.79%	57.89%
Housewife	34	35.79%	93.68%
Farmer	6	6.31%	100.00%
Occupation status			
Employed	15	15.79%	15.79%
Self employed	21	22.11%	37.89%
Unemployed	59	62.11%	100.00%

Table 2: Previous obstetrics and family history of the patients.

No of delivery	Frequency	Percent	Cum Percent
No delivery	13	13.68%	13.68%
1	25	26.32%	40.00%
>2	57	60.00%	100.00%
No of abortion			
0	41	43.16%	43.16%
1	20	21.05%	64.21%
2	19	20.00%	84.21%
>3	15	15.79%	100.00%
No of pregnancy			
0	12	12.63%	12.63%
1	21	22.11%	34.74%
2	18	18.95%	53.69%
3	14	14.74%	68.43%
4	17	17.89%	86.32%
>5	13	13.68%	100.00%
Previous Obs/Gyne.history			
No previous htx.	60	63.16%	63.16%
Pre-eclampsia	12	12.63%	75.79%
Cesearean section	13	13.68%	89.47%
Diabetes Mellitus	2	2.11%	91.58%
PPH	8	8.42%	100.00%
Family history			
Hypertension	16	16.84%	16.84%
Preeclampsia	11	6.00%	7.10%
Diabetes Mellitus	5	14.30%	21.40%
Preeclampsia	14	16.70%	38.10%
No family htx.	63	1.20%	39.30%

Fifty seven (60%) had more than two previous deliveries, twelve (12.63%) had previous history of preeclampsia-eclampsia and two (2.11%) had diabetes mellitus, meanwhile thirtytwo (38.10%) had a family history including hypertension, diabetes mellitus, and preeclampsia

Table 3: Socio-cultural,other medical condition of the patients

Booking Status	Frequency	Percent	Cum Percent
Booked	25	26.32%	26.32%
Un-booked	70	73.68%	100.00%
Visit to TBA			
Yes	66	69.47%	69.47%
No	29	30.53%	100.00%
Abdominal massage			
Yes	49	51.58%	59.58%
No	46	48.42%	100.00%
Refered from TBA	41	43.16%	00.00%
Self referal	19	20.00%	00.00%
Malaria			
Yes	20	21.05%	21.05%
No	75	78.95%	100.00%
HIV			
Yes	1	1.05%	1.05%
No	94	98.95%	100.00%

while malaria was diagnosed in fifteen (15.79%, HIV was two (2.11%). Regarding booking status; seventy (73.68%) were unbooked, sixty six (69.47%) have TBAs patronage, of which forty one (43.16%) were referred from TBAs or by self referral, while nineteen (20%) were referred from other health institutions. Forthy nine (51.58%) had abdominal massage prior to admission.

**Table 4**: Complication during and after delivery of patient with PE-E

Complication during the pregnancy	Frequency	Percent	Cum Percent
Yes	75	82.40%	82.40%
No	20	21.05%	100.00%
Complication during pregnancy			
anemia	60	63.16%	00.00%
Bleeding disoder	7	7.37%	00.00%
Convulsion	10	10.53%	00.00%
Fever	15	15.79%	00.00%
Malaria	8	8.42%	00.00%
Headache/vomiting	6	6.32%	00.00%

| Complication during /after labor			
anemia	41	43.16%	00.00%
			00.00%
PPH	33	34.74%	
Fever/sepsis	44	46.32%	00.00%
Malaria	15	15.79%	00.00%
Eclampsia	20	21.05%	00.00%
Abruptio placentae	3	3.16%	00.00%
Cause of Mortality			
Coma + cardiovasulary arrest	1	1.05%	1.05%
Cardiovascular arrest	1	1.05%	2.10%
Eclampsia+coma	1	1.05%	3.15%
Pulmonary odema	1	1.05%	4.20%

Aneamia was diagnosed in sixty (63.16%), eclampsia was ten (10.53%). Postpartum complications includes: anaemia, forty one (43.16%), thirty three (34.74%) had PPH, forty four (46.32%) had fever/sepsis. Maternal mortality occured in four (4.21%/95) cases

Graph 1:

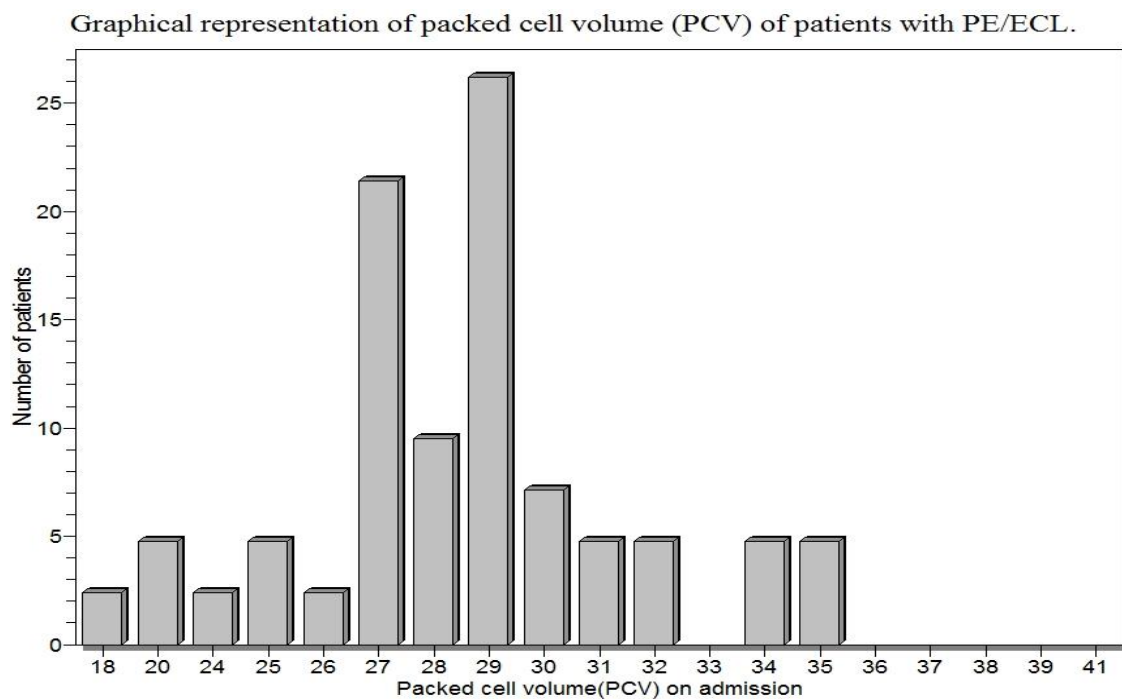Patients blood pressure on admission graphically represented
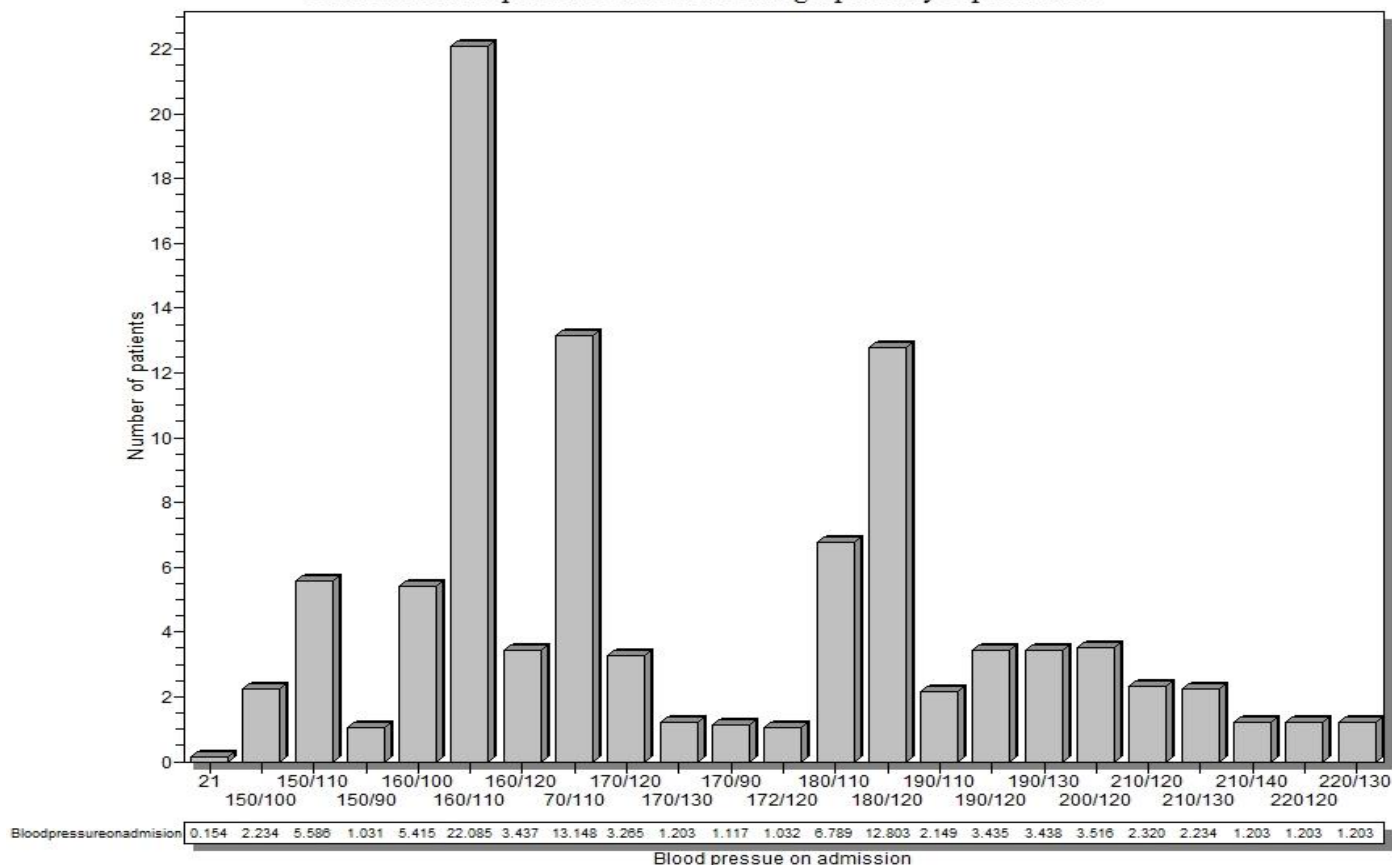
Graph 2
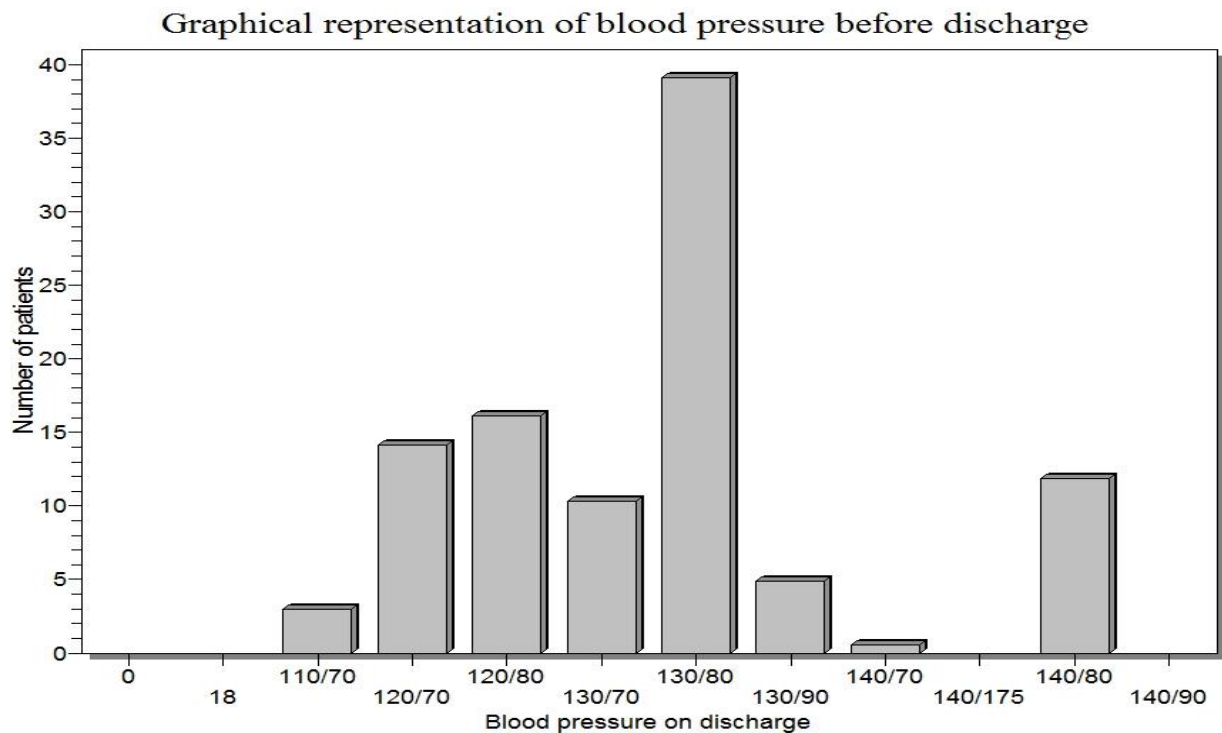
Grapic 2: shows the pattern of post-partum blood pressure changes, were all became normal among the surviving patients before patients before discharged.

Graph 3:

Graphic 3. shows the distribution of patients PCV level on admission, where more than ¾ of the patients were anemic on admission.

Table 5: Other obstetrics indices of the patients

Gestational age(week) on admission	Frequency	Percent	Cum Percent
29-32	9	9.47%	9.47%
33-36	30	31.58%	41.05%
37-42	56	58.95%	100.00%
Baby alive			
Yes	60	63.16%	63.16%
No	35	36.84%	100.00%
Apgar score of live babies (N=60)			
Still births	35	36.84%	00.00%
1-3	9	15.00%	15.00%
4-6	20	33.33%	48.33%
7-10	31	51.67%	100.00%
Birth weight(Kg)			
<1000	7	7.37%	7.37%
1100-2000	16	16.84%	24.21%
2000-2500	9	9.47%	33.68%
2600-3500	49	51.58%	85.26%
>3500	14	14.73%	100.00%
Proteinuria			
No	1	1.05%	1.05%
1+	26	27.37	28.42%
2 +	38	40.00%	68.42%
3+	30	31.58%	100.00%
Mode of delivery			
CS	45	47.37%	47.37%
SVD	50	52.63%	100.00%

Perinatal loss was thirty five (36.84%), of which twenty nine (82.86%/ n= 35) stillbirth comes from the unbooked group, with only six (17.14%/ n=35) from the booked group. Twenty nine, 48.58% (n=60)) of the live birth babies, had a low Apgar score of between 1-6 in one minute. Gestational week on admission and delivery; thirty nine (41.05%) were preterm delivery between 29-36 weeks of gestation, while fifty six (58.95%) were at term gestation.Proteinuria of 3+ was recorded in twenty nine (30.53% of the cases, 2+ was thirty eight (40.00%), 1+ was twenty six (27.37%), while one (1.05%) have no proteinuria. Mode of delivery ceaseran section was fourty six (48.42%), while the mean hospitalisation was 6.8± 3.5 days.

Table 6: Management options for patients

Transfusion	Frequency	Percent	Cum Percent
Yes	47	49.47%	49.47%
No	48	50.53%	100.00%
Antibiotics			
Yes	87	91.58%	91.58%
No	8	8.42%	100.00%
Prithcard reg.			
Yes	91	95.79%	95.79%
No	4	4.21%	100.00%
Hydralazine			
Yes	93	97.89%	97.89%
No	2	2.11%	100.00%
Aldomet(Methyl dopa)			
Yes	77	81.10%	81.10%
No	18	18.95%	100.00%
Ansiolytic(Diazepam)			
Yes	20	21.10%	21.10%
No	75	78.90%	100.00%

Hydralazine was the main antihypertensive drug used in ninety three (97.89%), Aldomet was included in seventy seven cases (81.10%). Magnesium sulphate was administered using the Prithchard regimen in ninety one patients (95.79%) at least once, while only twenty (21.05%) were given Diazepam. Antibiotics therapy was administered in eighty seven (91.58%) patients.

Discussion:

Preeclampsia-eclampsia has remained a significant socio-economic, cultural and public health burden in the developing countries, though lesser threat to the developed countries [21]. It stands as one of the leading causes of maternal and perinatal mortality and morbidity in the developing world [22,23,24]. Studies have shown that; annually pre-eclampsia-eclampsia are responsible directly or indirectly for approximately 50,000 maternal deaths globally [1,24,25]. Though foreseable with good patient controll, and antenatal care; significant incidence of eclamptic convulsions occur unexpectedly[26,27]. Evidently, the severity and damage of PE-EC is even more felt in the developing countries such as Nigeria, where most patients present late, when all possible preventable interventions   naybe   of   less   value. Apperently, the sample size of this current study was not high, due to the location, population, duration and other factors beyound the hospital control. The incidence of pre-eclampsia-eclampsia was 56.9 per 1000 deliveries, which is very glaring. In contrast to what was reported by Tukur J et tal, 17 per 1000 deliveries in Sagamu, Nigeria and 7.8 per 1000 deliveries also reported in the National Hospital Abuja, a tertiary hospital in the metropolitan area of the Federal Capital Territory. Some of the factors may be attributed to the socio-economic, educational and other infrastructural inbalance prevailing between the urban and the rural areas of the country [7,28,29]. Other smaller cities in the south also reported higher figures, though still better than what was reported 24.5% reported in Aba [30,31]. We found out that, the incidence of eclampsia alone was 2.16% of all deliveries in this study. Which is quite higher than similar studies done in other parts of the country; 1.2% reported by Tukur A J et tal, in Kano , Nigeria, 1.32% reported by Onuh SO et tal, in Benin, Nigeria and 0.82% by Okafor U V et tal in Abuja, Nigeria [7,31,32].

Meanwhile, the other studies were conducted in a socio-economically higher placed populace in the Nigerian society, even then, they are still higher when compared to figures found in developed countries such as UK where the incidence is about 0.49 per 1000 deliveries [33,34,35].

Whereas: the incidence of pre-eclampsia-eclampsia was much higher as compared to similar studies; the case fatality rate of 4.21% was better than, 28.3% obtained from the National hospital. The result obtained from this centre butresses the urgent attention given, and also comfirms the effectiveness of the routine use of magnesium sulphate and hydralazine as first line of intervention adopted in the department [36,37,38]. However the Case fatality rate of 4.21% from this study is much higher than the maximum recommended 1 % by the United Nations, as this is one of the United Nation's process indicators that show the quality of service as regards saving women's lives in that facility. The highest age group incidence of 48.42% were in the age group of 20-29 years, similar to the 25-29 years found in Aba and much less than 31-35 years found in the National hospital [7,38]. However, greater than the highest age group of 15-19 years found in Shagamu [13]. The average age of the patients was 29.02±10.34 years. Majority of the patients were married, 78.9% and the Ijaws were of the majority 69.47%, which was in line with where the study was carried out. The study also showed a significantly low patient antenatal uptake among those that suffered preeclampsia-eclampsia, as majority of the patients were unbooked 73.68%, similar to other studies done in the country [11,14,28]. Unfortunately all the mortality cases were recorded in this group. Invariabily all these patients visited and patronized the Traditional Birth Attendance outlets (TBA) prior to admission and were referred verbally from the TBA or by self referal, while 51.6% of the patients had abdominal massage before admission. The incidence of perinatal mortality in this study was thirty five (36.84%), of which twenty nine (82.86%/ n= 35) stillbirths comes from the unbooked group, which was much higher than, other studies done in the country, and 21.7% reported by Tukur et tal[7]. Data on early neonatal mortality was a strong setback during this study as it is very difficult to follow-up these patients, due to structural handicaps facing the public health sector. Majority of the patients were rural dwellers 89.5%, with low educational background 66.3%, predominately dominated by house wives, farmers and petty traders; who belong to the low income earning group of the society. However only 15.79% were pensionably employed, all these socio-economic factors influences patients' decisions as regards antenatal uptake. Other various constraints have also contributed to the late arrival of the unbooked emergencies. Those issues includes; socio- cultural, financial, transportation, telecommunication barriers, most importantly, illiteracy, the role of certain trado-orthodox medical practitioners. Activities of rapidly growing evangelistic protestant churches, and most importantly, illiteracy have to a great extent affected the health care system negatively [13,15]. Contrary to other studies, the high parity in this study did not influence or reduce the incidence of PE-EC as, 60% of the patients, do have more than two previous deliveries.

Meanwhile the role of previous medical hiostory and family history of hypertension, preeclampsia showed some relative negative influence. with, 12.63% had previous history of preeclampsia-eclampsia and diabetes mellitus, whereas,38.10% had a family history of hypertension, diabetes mellitus, and preeclampsia. Among those with PE-EC 63.16% were admitted with aneamia, and transfusioon was initiated in 49.47%. In contrast to other studies the mode of delivery between spontanoeus vaginal delivery and ceaserean section was closely similar in this study. Different levels of delays were encountered in our practice, mainly due to the economic and socio-traditional factors, fear of medical cost and fear of surgical interventions (Ceaserean section) and have subsequently increased the onset of different complications [13,27]. Some of the common cmplications encountered includes post delivery/operative anemia 43.16%, Postpartum haemorrhage was 34.74%, others are fever/sepsis accounting for, 46.32%, malaria was concidentally discovered in 15.79%, HIV was present in 2.11%.Finally 58.95% of the patients were at term gestation when admitted, and were subsequently delivered. Majoriy of the preeclampsia-eclampsia occurred in antepartum and intra.partum period only, 3.16% had postpartum episode. This is similar to findings from other studies in this country [13,28,39,40], but different from reports from the developed countries where postpartum eclampsia tends to be more common. Reasons: may be attributed to the improvement in prenatal care, earlier detection of pre-eclampsia and prophylactic use of magnesium sulphate [2,41]. The average hopspital stay was 6.8±3 days. Majority of the patients presented with blood pressure of 160/110-220/140 mmHg, whereas proteinuria of 3+ was recorded in 30.53% of the cases, 2+ in 40.00% of the cases, 1+ in 27.37% of the cases, while 1.05% have no proteinuria. Maternal mortality occured in four cases and the causes of death, where associated with cardiorespiratory arrest, pulmonary odema and sepsis. while, blood transfusion was performed in forty seven (49.47%).

Finally; the study may be prone to errors because it was retrospective, with highly dependability on the accuracy of patients records, generated with some degree of inaccuracy due to observer bias in some of the figures: such

as the Apgar score, blood pressure recordings and the correct use of the magnesium sulphate according to the laid down protocols.

This maybe as a result of patients paying for health services and for the provision of these medications and as such may not be readily available when needed. Despite these obstacles, this study has shown to a large extent, the the negative role played by patients inability to welcome modern health care services, rather still continue to embrace the old methods, with the adverse outcome of a high perinatal and maternal loss and morbidity.

Conclusion: There was significantly strong relationship between preeclampsia-eclampsia and anemia, socioeconomic status and patient health care seeking behaviours (unbooked patients), with the severity and incidence of preeclampsia-eclampsia among the studied population. Even though; the incidence of maternal mortality was not very high, the perinatal loss was extremly unacceptable, therefore the need for better health care promotion, advocation of compulsory antenatal care services, provision of neceassary support in the health care system, may reflect positively.

Conflict of interest: There was no conflict of interest

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