



Obstetric and gynaecologic admissions in an intensive care unit in a Nigerian tertiary health institution

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Abstract

Rationale: Obstetric and gynaecological patients with critical medical or surgical complications represents unique challenge to the Obstetrician and Gynaecologist and often require multi-disciplinary management in a hospital intensive care unit.

Objectives: To determine the common indications for ICU (intensive care unit) admission, management and outcome.

Methods: This was a retrospective study carried out over a period of 4 years from January, 2015 to December, 2018. All the case notes of obstetrics and gynaecological patients admitted in to the intensive care unit of the Usmanu Danfodiyo University Teaching Hospital, Sokoto were retrieved. from the medical records department and intensive care unit. Relevant information was extracted and the data obtained was analysed using the SPSS software version 20. A p-value of <0.05 was considered statistically significant and the results are expressed in tables and charts.

Findings: Out of 716 ICU admissions, 131 Obstetrics and gynaecological patients accounted for 18.16%. Among them, 83.1% comprised of obstetrics while 18.2% are gynaecological cases.

The main indication for ICU admission is for observation in very high risk patients post-operatively (66.3%). Blood transfusion is the most common intervention offered (54.5%). The most common complication noticed is AKI (11.1%) with mortality rate of 24.7% The mean duration of CU stay is 2.8 ± 3.5 days There is statistically significant association between duration of hospital stay and maternal death at $P= 0.01$.

Conclusion: Obstetric cases remain the most common indication for ICU admission. Hypertensive disorders of pregnancy being the leading cause and acute renal impairment as the most common complication.

Keywords: critical care, intensive care unit, mechanical ventilation, obstetrics, gynaecology

Introduction

Timely intervention by a critical care physician improves the prognosis of critically ill patients. This is because, evidence had shown that there has been a significant fall in mortality in the last six decades in high income countries, but the low-income countries have not shown similar improvement but the low-income countries have not shown similar improvement. This is worse among obstetric patients due to physiological changes of pregnancy^[1]. Obstetric emergencies are a challenge to the obstetrician because of the unique nature of obstetric medicine. The altered physiology of pregnancy, the presence of the fetus, the rapid deterioration of maternal and fetal condition in case of a complication, and the simultaneous management of two lives with different physiologies are a challenge^[2]. Morbidity after gynaecological surgery ranges from approximately 10% to 20%, whereas mortality is extremely rare. Although some tertiary care health institutions have dedicated maternal fetal ICUs, others are left with high dependency units, which is short of the intensive care unit. However, many obstetric units like ours in the developing world do not have such dedicated units but use the general ICU in the care of critically ill obstetric and gynaecology patients. Intensive care in such settings is reduced to high dependency nursing care while in the developed world, there are high-technology facilities with electronic monitoring, mechanical ventilation and other life-support measures and up-to-date drugs.

A previous study in this centre considered obstetric patients managed at the intensive care unit. The present study is aimed at auditing both Obstetrics and Gynaecological cases managed in the recent times

Methods

This was a retrospective study carried out over a period of 4 years from January, 2015 to December, 2018. All the case notes of obstetrics and gynaecological patients admitted at the intensive care unit of the Usmanu Danfodiyo University Teaching Hospital, Sokoto were retrieved from the medical records department and intensive care unit. Relevant information regarding sociodemographic characteristics, obstetrics and medical history. In addition, indication or admission, management in the ICU as well as outcome of management among others was extracted, the data obtained was managed using SPSS (Statistical Package for Social Sciences) software version 20 and a p-value of <0.05 was considered statistically significant. The result was reported in text, tables and charts.

Result

Over the study period, 131 Obstetrics and gynaecological patients were admitted out of a total of 716 ICU admissions, giving an incidence of 18.16%. However, only 77 case notes were retrieved with complete information. Majority of them, 64 (83.1%) comprised of obstetric cases while, the others were gynaecological cases, 14, (18.2%). Out of the 131 cases,

only 77(58.77%) case notes were retrieved and reviewed. Figure 1 demonstrate the proportion of both obstetric and gynaecologic cases. There was no statistically significant

difference between rate of developing complication and mortality between the 2 groups.

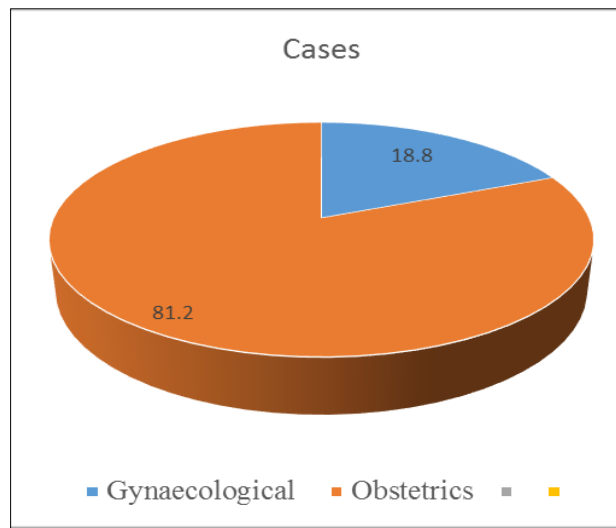


Fig 1: Proportion of cases admitted.

The respondents ages ranged between 15 to 58 years, with a modal age of 21-30 years, 43(41.6%) and mean of 30.35±8.748. They are mostly, 64 (83.1%) of the Hausa/Fulani ethnic group and majority, 45(55.84%) have

at-least secondary education. However, most of them, 67 (87.0%) are not gainfully employed. Details of the sociodemographic characteristics is as shown on table 1 below.

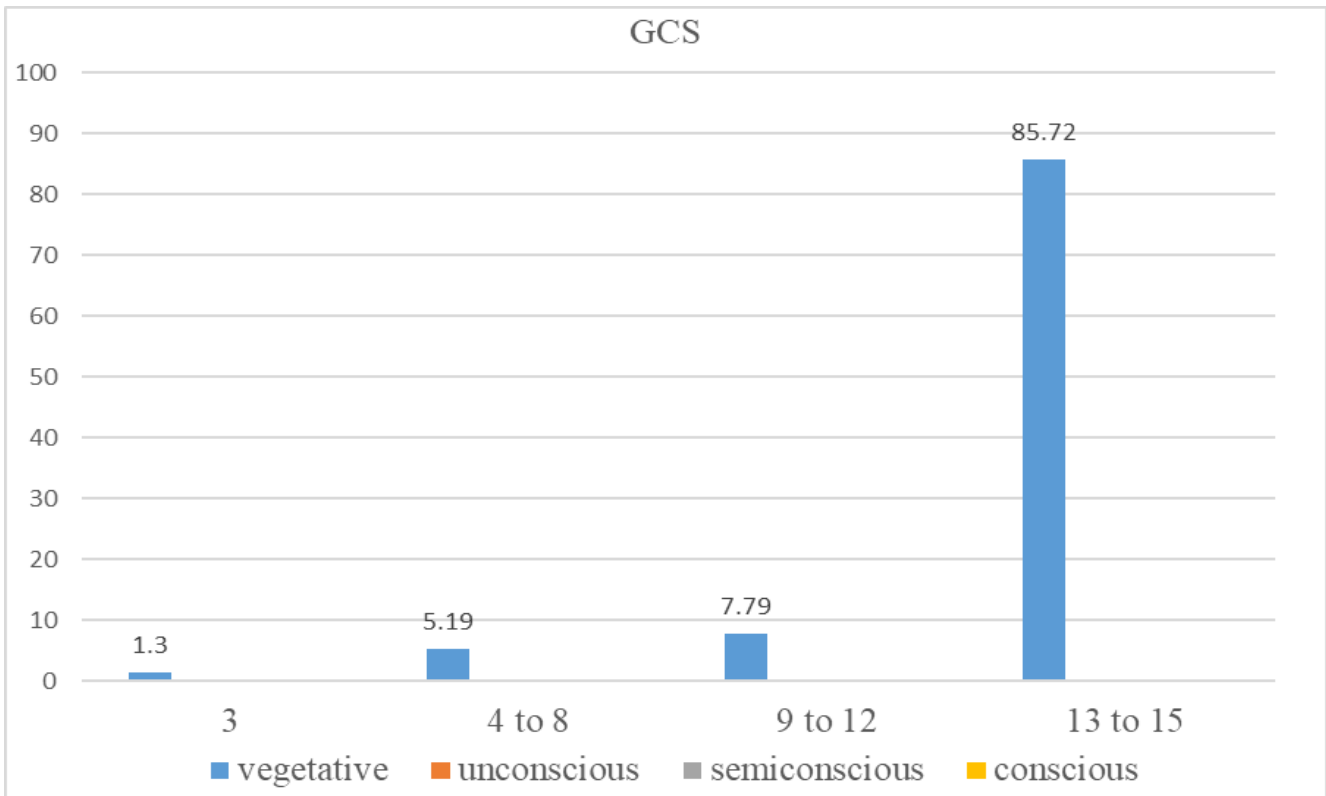
Table 1: Sociodemographic characteristics of the respondents

Variables	Frequency	Percentage
Age group(years)		
11-20	11	14.3
21-30	32	41.6
31-40	27	35.1
41-50	5	6.5
>= 51	2	2.6
Educational status		
No formal education/Qur'anic	32	41.6
Primary	2	2.6
Secondary	14	18.2
Tertiary	29	37.7
Tribe		
Hausa/Fulani	64	83.1
Igbo	3	3.9
Yoruba	3	3.9
Others	7	9.1
Occupation		
Unemployed	67	87
Business	1	1.3
Civil servants	9	11.7
Religion		
Islam	68	88.3
Christianity	9	11.7
Total	77	100

Majority, 24 (32.8) are of low parity between 1-2 with a mean parity of 2±0.94. Most, 45 (58.4%) of the obstetric patients presented at gestational ages at or beyond 37 weeks with a mean GA of 28.7 ± 16.16. More than half, 42(65.6%) are of them are unbooked while, 22, (34.4%) are booked. Six (7.8%) are hypertensives, 3(3.9%) are sickle cell disease patients and 1(1.3%) Diabetic, Epileptic or asthmatic each. While, 14 (18.2%) had at least one previous caesarean section. There was statistically significant association

between age and maternal outcome at P- value = 0.04. As there was also increased mortality beyond the age of 40 years.

Majority 65 (84.4%) of them had GCS (Glasgow coma scale) of 13 to 15, while the remaining, 12 (15.6%) were scored 12 and below at presentation. There was no statistically significant association between GCS and maternal outcome. Details of their GCS is as shown on figure 2 below.



Key: GCS= Glasgow coma scale.

Fig 2: The respondents' GCS at presentation

Among them, 57 (74%) were delivered, 3 (3.9%) had abortion while, 5(6.5%) had subtotal hysterectomy. Among the respondents, majority (25 (32.5%)) were managed for immediate post-operative observation due to

delayed recovery post operatively, and the least (1.3%) were AKI, OHSS and DKA each. Others are as in the table 2 below.

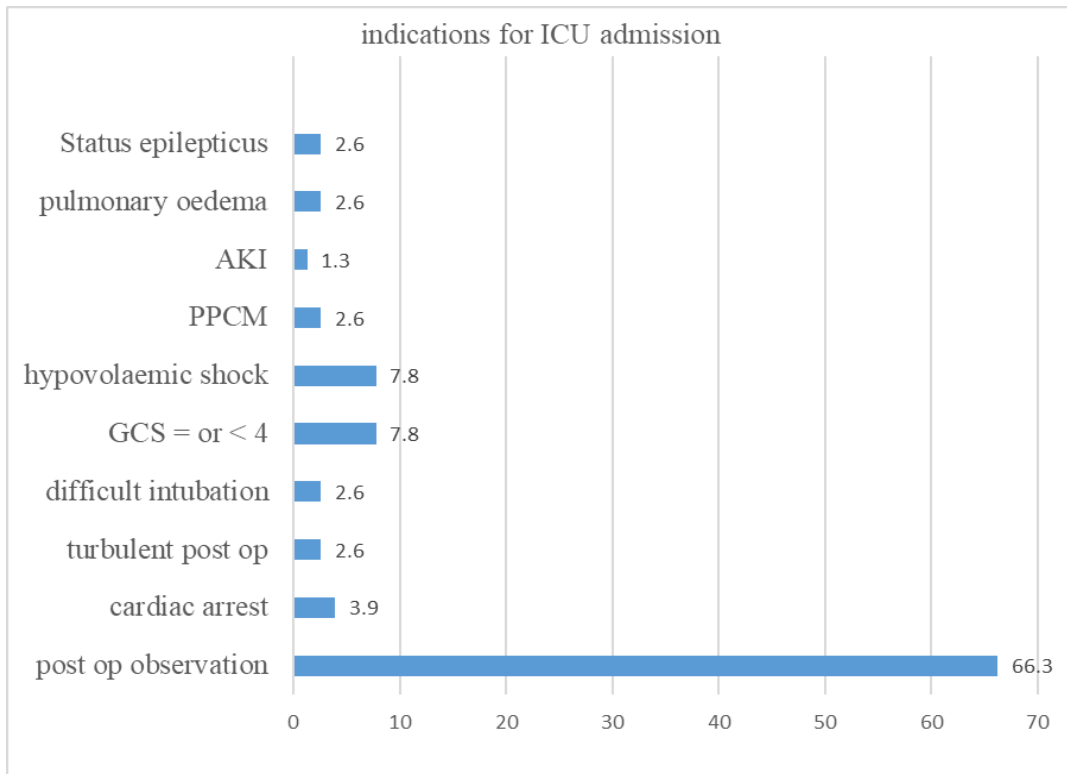
Table 2: Indication for Intensive care unit admission.

Diagnosis	Frequency	Percentage
Pre-eclampsia/eclampsia	22	28.6
Poor recovery post C/S	24	31.2
APH/PPH	15	19.5
PPCM	2	2.6
CSM	1	1.3
SCDx	2	2.6
Advanced Gynaecologic tumors	3	3.9
DKA	1	1.3
DIC	1	1.3
Abortion	3	3.9
Fibroids	3	3.9
Total	77	100

Key: AKI=Acute kidney injury, PPCM = Postpartum cardiomyopathy, VHD: Valvular hearth disease, ICU: Intensive care unit, OHSS: Ovarian hyper-stimulation syndrome, CSM: cerebrospinal meningitis.

Among the obstetric patients, 15(23.1%) had SVD, while others had various operative deliveries. The same applied to the gynaecological cases whose majority were operated upon. The surgeries included; craniotomy, 1(1.3%), Cesarean hysterectomy, 2(2.6%), C/S, 27(35.1%), Subtotal hysterectomy, 16(20.78%), MVA, 2(.6%), tumor excision, 1(1.3%), Salpingectomy, 3(3.9%), Staging laparotomy, 1(1.3%) and Cystectomy, 1(1.3%). There was statistically significant association between, initial diagnosis and risk of

death at P- value= 0.03 as DKA, PPCM, advanced tumors and uterine fibroids were associated with higher death rates. The main indication for ICU admission is for observation in very high risk patients post-operatively, 51(66.3%). And the least, 1(1.3) is AKI and DKA each. Details of the indications for admission are as in figure 3 below. Blood transfusion is the most common intervention offered 42(54.5%) then followed by mechanical ventilation, 8 (10.4%).



Key: AKI: Acute kidney injury, CVA: Cerebrovascular accident, DIC: Disseminated intravascular coagulopathy, RS: Respiratory distress, HELLP syndrome, HK: Hyperkalaemia, MOF: Multiple organ failure,

Fig 3: indications for ICU admission

Majority, 54(70.1%) were managed by Anaesthetists and Obstetrician/Gynaecologist alone, while, others, 23(29.9%) were managed by at least 3 different specialist based on the complications developed. Among them, 9(11.2%) were managed by Nephrologist in addition.

Majority of the respondents 52, (67.5%) did very well while in the ICU. While, the rest, 25 (32.5%) developed some form of complications as shown on figure 4 below.

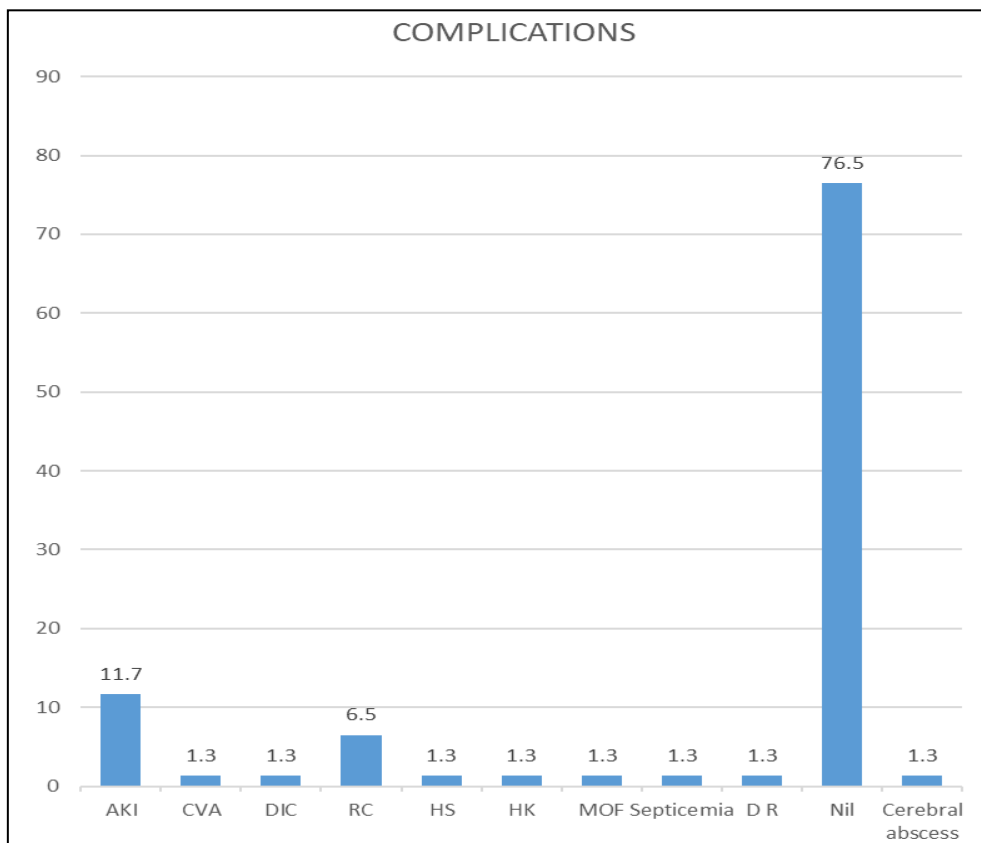


Fig 4: Complications developed.

The following complications are related to higher chances of mortality and they included; AKI, MOF and sepsis as there was a statistically significant association between complications developed and maternal outcome at P-value = 0.02. The total perinatal death was 27 (42.2%) among which the unbooked patients accounted for, 23(56.1%), while the booked mothers were 4(18.2). There was statistically significant association between maternal booking status and fetal outcome at P- value= 0.00 as there was higher mortality among the unbook subjects.

Among them, 58(75.3%) were discharged while, 19 (24.7%) died. Majority, 29, (37.7%) were discharged from ICU within the first 24 hours of admission. The mean duration of stay in ICU was 2.8 ± 3.5 days with a minimum of 0.2 days and maximum of 20 days. There was statistically significant association between duration of hospital stay and maternal outcome at P= 0.001 as there was increased risk of death as duration increases above the first 24 hours and more than half may likely die at 5 days or more.

Discussion

In this study, the incidence of ICU admission is 18. 6% among whom 83% are obstetric patients. This is higher than 0.7 to 13.5% [5], 0.26, 0.8% [7], 2.09% [8], 5.2% [9], 7.3% [9], 9.2% [10] and 0.3% [11] and much lower than 72. 9% reported from India. The high incidence in this study could be explained by the fact that significant number of case notes could not be traced or have incomplete information there-by affecting the denominator.

The study had shown that, more than 80% of the patients admitted over the period were obstetric cases and this is not surprising since the proportion of obstetric patients greatly outweigh that of gynaecological consultations. This is in conformity with other studies [1, 3]. Most of them are within the ages of 21-30 years but of low parity. There is no significant association between parity and outcome just as reported by other studies [8]. However, there is statistically significant association between maternal age and outcome as the highest mortality was among those beyond 40 years. About 66% of them obstetric cases were not booked and these agree with previous studies where less than half of them were booked [1, 8]. It is however, contrary to 80% of booked cases reported from India [8]. The high proportion of unbooked patients from this study is because it was carried out at a teaching hospital which is a referral centre with better facilities and expertise to manage high risk patients.

The most common indication for admission is for post-operative observation among high risk women including both obstetrics and gynaecological patients. This is similar to what was reported from Australia, [12] followed by hypertensive disorders of pregnancy then obstetric haemorrhages. This is contrary to other studies where either hypertensive disorders of pregnancy or obstetric haemorrhages were the main indications. [1, 3, 12, 8, 12, 13] While. Respiratory failure was reported from Turkey [6].

Most of them were managed by team of anaesthetist and obstetrician/gynaecologist. While the remaining were managed by 3 or more specialists as they had attendant complications. Blood transfusion is the most common intervention offered, 54.5% as a result of anaemia that occurred in up-to 31% of the patients with obstetric haemorrhages as majority of them are obstetric cases. then followed by mechanical ventilation. Blood transfusion is also common with the study by Saif. [1] This is contrary to

62.% of mechanical ventilation reported from Maiduguri [9]. Majority of the respondents 67.5% did very well while in the ICU with about 32.5% developing some complications with the most common noticed as Acute kidney injury secondary to acute blood loss and hypertensive disorders of pregnancy among cases. This is contrary to acute respiratory syndrome reported by Samuel [3]. The mortality accounted for 24.7% with total perinatal death of 42.2% among which the unbooked population account for up to 56.1% of the subjects. There is no statistically association in terms of development of complication and mortality among the booked and the unbooked as well as the obstetric and gynaecological cases. However, there is association between maternal mortality and fetal death as the perinatal death accounted for more than half by the unbooked patients. This is as a result of lack of prenatal care that resulted to high rate of high risk pregnancies such hypertensive disorders of pregnancies and obstetric haemorrhages that are still prevailing in our society. The finding above between obstetrics and gynaecological cases is contrary to the study that reported increase mortality among obstetrics compared to gynaecological cases [3].

The mean duration of ICU stay is 2.8 ± 3.5 days and this is related to diagnosis, indication and complication developed as well as associated increase mortality as it goes beyond 24 hours. This is obvious because those with very serious diagnosis require highly technical and extensive intervention that may require prolonged stay due to delayed recovery.

This is in conformity with 2.8 days reported from Iran [13], and 3.2 reported from southern Nigeria [3] It is however, contrary to 7 days [7] 1.3 day reported by another author, [14] 6.6 days [15], 1.6 days [16]

Conclusion

Obstetric cases remain the most common indication for ICU admission. Hypertensive disorders of pregnancy being the leading cause and acute renal impairment is the most common complication. Encountered.

References.

1. Saif KM, Tahmina S, Maitree P. A prospective study of clinical profile and outcome of critically ill obstetric patients in ICU at a tertiary level hospital in India: Anaesth Pain & Intensive Care,2013;17(3):243-247
2. Ashakiran TR, Malini KV. Study of Obstetric Admissions to the Intensive Care Unit of a Tertiary Care Hospital: J Obstet Gynaecol India,2016;66(1):12-17.
3. Adelaiye SM, Anzaku Ajen S, Onwuhafua PI. Obstetric and Gynaecological Admissions In an Intensive Care Unit of a Nigerian Teaching Hospital: A5-Year Review: Trop J Obstet Gynaecol, 2016, 33(1), April
4. Fawole AA, Bolaji BO, Oyedepo OO, Adeniran AS. Critically ill obstetric admission into a tertiary hospital's intensive care unit. Unit. J Med Investg Pract,2015;10:16-9.
5. Wendy Pollock, Louiss R, Dennis C. Pregnant and postpartum patients' admissions to the intensive unit: a systemic review. Int care med, 2010;36:1465-74.
6. Ozcelik M, Turban S, Bermede O, Yilmaz AA, Unal N, Bayer MK. Outcomes of antepartum and postpartum admission to the intensive care care unit of a tertiary University Hospital: an 8- year review.Turk J

- Anaesthesiolog Renin,2012:45:303-9.
7. Chike S, Asegaonkar P. Why obstetric patients are admitted to intensive care unit? A retrospective study. *J South Asia Feder Obst Gynae*,2012:4(2):90-92.
 8. Pattnaik T, Samael S, Behuria S. *Int J Reprod Contracept Obstet Gynecol*,2015:4(6):1914-1917.
 9. Abubakar AS, Bako B, El-nafaty AU, Mulima B, Muhammed A, Dibal JY. Obstetrics admissions to intensive care unit at the Nigerian teaching Hospital: a four year review. *Journal of Scientific research and studies*,2014:1(5):81-86.
 10. Uche EO, Ezomike UO, Chukwu JC, Ituen MA. Intensive care unit admission in federal medical centre Umuahia, South east Nigeria. *Nij J Med*,2012:21(1):70-3.
 11. Chawla SS, Nakra CM, Mohan BS, Nambiar BC, Agarwal CA, Marwaha CA. Why do obstetric patients go to ICU? a 3- year study. *Med J Armed forces India*,2013:69:134-37.
 12. Adeniran AS, Bolaji BO, Fawole AA, Oyedepo OO. Predictors of maternal mortality among critically ill obstetric patients. *Malawi Med J*,2015:27(1):16-19.
 13. Farzi F, Roshan ZA, Nabi RN, Biazar G, Yazdipaz S. Evaluation of admission, indication, clinical characteristics and outcome of Obstetric patients admitted to intensive care unit of a teaching topical centre: a 5 year review. *Anesth Pain Med*,2017:7(3):e3636.
 14. Sodhi K, Bansal V, Shrivastava A, Kumar M, Bansal N. Predictors of mortality in critically ill Obstetric patients in a tertiary care intensive centre unit: a prospective 18 months' study. *J Obst anest and critic care*.
 15. Soni T, Tiwari P. Predictors of maternal outcome in women on mechanical ventilation in an obstetric intensive care unit: an observational study. *Int J Reprod Contracept Obstet Gynaeol*,2019:8(2):721-28.
 16. Gupta S, Naithani U, Dosgi V, Bhargava V, Vijay BS. Obstet crit care: a prospective analysis of clinical characteristics, predictability and fetomaternal outcome in a new dedicated obstetric intensive care unit. *Ind J Anaesth*,2011, 55-63.