



DESCRIPTIVE STUDY OF OBSTETRIC PATIENT ADMITTED IN ICU AND MATERNAL OUTCOME

Obstetrics & Gynaecology

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ABSTRACT

Background: Pregnancy though physiological and can be associated with major maternal morbidity with potential catastrophic consequences requiring utilization of facilities of Intensive Care Unit (ICU) Reports regarding such admissions are few from developing countries. The present was conducted to study proportion, cause for ICU admission, course in ICU, intervention during ICU period, outcome of obstetric patient admitting in ICU. **Material:** An observational (retrospective) study of obstetric patient admitting in ICU, cases studied during 5-year study period (January 2017 to December 2021) at tertiary care center. A total 32310 confinements conducted in the study period out of which 403 cases of maternal ICU admission were analysed in details. **Results:** Most of mothers (42.97%) were in age group of 20-25 years. Most were from rural area (58.31%). Illiteracy was observed in 2.14% of cases only. Most of the mothers (47.94%) belongs to Lower middle-class family. Out of total cases 80.86% of cases were Un booked, 48.57% cases were primi and grand multiparity was seen in 11.15% of cases. 71.87% mother were referred cases, among them 66.29% were of 3rd trimester. The common referring facility was PHC/RH i.e., 62.02%. **Conclusion:** It can be concluded from this study that obstetric haemorrhage and complications are the most common cause of maternal mortality and morbidity. services at the grass route level helps in early identification, treatment and proper referral of complicated pregnancies.

KEYWORDS

Eclampsia, Intensive care unit, obstetrics, obstetric haemorrhage.

INTRODUCTION

Pregnancy is special physiological condition of women life, but sometimes could have detrimental effect to extent of maternal mortality and morbidity^[1]. Obstetric patient admitting in ICU require special care and attention by multidisciplinary team. The number of obstetric patients admitting to ICU is more in developing countries, compared to developed countries^[2] and often demand is not met. Admission of obstetric patient admitting in ICU is challenging task to intensivist as these patients recover in short period of time, if early intervention is done. Thus, it is utmost importance to keep vigilance so as to ensure maternal safety. In Obstetric patient morbidity defined mainly in terms of course and condition aggravated during pregnancy but not from incidental and accidental causes.

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^[3]. These emergency conditions should be managed in a well-equipped, dedicated obstetric intensive care unit (ICU) for better maternal and foetal outcomes. Hypertensive disorders and obstetric haemorrhage are the two commonest risk factors for ICU admission. The other risk factors are sepsis, cardiac disease, and severe anaemia^[3]. Timely intervention by an acute care physician coupled with young age factor improves the prognosis of critically ill obstetric patients. There has been a significant fall in maternal mortality in the last six decades in high income countries, but the low-income countries have not shown similar improvement^[4].

Measurement of obstetric critical care is a real challenge. Evaluation of obstetric admissions to Intensive Care Unit (ICU) is one of the ways to approach surveillance of critically ill women in pregnancy in a tertiary care facility. Developing countries account for maximum (99%) of global maternal deaths^[5,6]. According to data global maternal mortality 2017 was 211^[7] in India it has declined to 113 according to data 2016-18. With Maharashtra 46, Kerala 43 performing the best and the Assam 215 with maximum maternal mortality^[8]. Despite of some progress in providing improved health care to obstetric patient in last decade, still MMR remains challenge in India.

Admission of pregnant woman to ICU is considered as objective

marker of severe maternal morbidity and useful in identify cause and possible risk factor of obstetric patient admission to ICU of tertiary care center^[9].

By all these measures, we can overcome the cause of ICU admission and complications. Aim of this study was to find prevalence, cause of ICU admission, complications and interventions done in ICU course in view of maternal mortality and morbidity. Hence this study was conducted to find the prevalence pattern of pregnant women admitting in ICU and maternal outcome.

MATERIAL AND METHODS

The material of the study comprised of all obstetric patients admitting in ICU at our tertiary care center between January 2017 to December 2021 of study period. The researcher has adopted a descriptive exploratory research approach to explore causes of obstetric patient ICU admission, course and outcome, cases done at tertiary care center. The population of the study was all the obstetric patient admitting in ICU in the tertiary care center during the study period and PNC patients up to 42 days, post abortion period (up to 7 days). However, as it was retrospective study, we considered all obstetric patient admitted in ICU included in the study. So, this is duration-based sample size – 403

Inclusion Criteria:

Obstetric patient admitting in ICU

- antenatal period
- post-natal period up to 42 days
- post abortion period up to 7 days

Exclusion Criteria:

- Record incomplete patients.
- Patients taken discharge against medical advice (DAMA).

The relevant data collected according to proforma was analysed with respect to patient characteristics, obstetric history, pre-existing medical disorders and the causes that necessitated admission to the ICU.

During ICU stay Obstetric status at the time of ICU noted as whether not in labor, in labor, delivered, incomplete abortion, ruptured ectopic, aborted. Maternal risk factors which are responsible for endangered

life of mother such as Age >35 yr., BMI >30, GDM, HDP (HELLP, Eclampsia), Prev. Surgeries (LSCS, hysterotomy, Myomectomy), sepsis, heart disease, Placenta previa, Anemia, hepatic disorders are noted. Fetal risk factors which are responsible for maternal ICU admission, multiple gestation, polyhydramnios, mal presentation, macrosomia, IUFD are noted.

Labor related and post-partum risk factors causing maternal ICU admission such as prolonged PROM, prolonged labor, obstructed labor, instrumental delivery, VBAC, ruptured uterus, uterine inversion, sepsis, post-partum hemorrhage (atonic traumatic, retained products) are noted. During ICU course intervention done, mainly classified as medical and obstetric interventions. Medical interventions include medical treatment and observation, inotropic supports, blood and blood product transfusion, dialysis, central line catheterization, and mechanical ventilator support.

After detailed evaluation in ICU and further treatment, intervention done such as vaginal delivery, EM.LSCS, exploratory laparotomy, obstetric hysterectomy, vaginal delivery+ exploratory laparotomy, exploratory laparotomy+ hysterectomy, vaginal delivery + hysterectomy, curettage. With all these intervention and management, total ICU stay duration noted.

After the ICU management and several interventions total maternal outcome described in terms of referred to higher center, near miss and discharged from ward, maternal mortality.

Statistical analysis Categorical and continuous variables are expressed as number (percentage) and mean±standard deviation respectively. Chi square was applied to compare categorical variables and student's t test was used to compare parametric continuous variables. The data was analyzed using SPSS software version 21 and a p value of <0.005 was considered significant.

RESULTS

An observational (retrospective) study of obstetric patient admitting in ICU, cases studied during 5-year study period (January 2017 to December 2021) at tertiary care center. A total 32310 confinements conducted in the study period out of which 403 cases of maternal ICU admission were analysed in details.

Table No.1: Distribution According To Icu Admission Proportion

S.N.	Magnitude	No.
1	TOTAL DELIVERIES	32310
2	NO. OF ICU ADMISSIONS	403
3	PROPORTION	1.25%

The maternal ICU admission observed in the present study indicates the frequency occurrence of near miss and mortality in this population. Since this is a tertiary referral Centre which receives critical patients from all surrounding districts

Most of mothers (42.97%) were in age group of 20-25 years. Most were from rural area (58.31%). Illiteracy was observed in 2.14% of cases only. Most of the mothers (47.94%) belongs to Lower middle-class family.

Out of total cases 80.86% of cases were Un booked, 48.57% cases were primi and grand multiparity was seen in 11.15% of cases. 71.87% mother were referred cases, among them 66.29% were of 3rd trimester. The common referring facility was PHC/RH i.e., 62.02%.

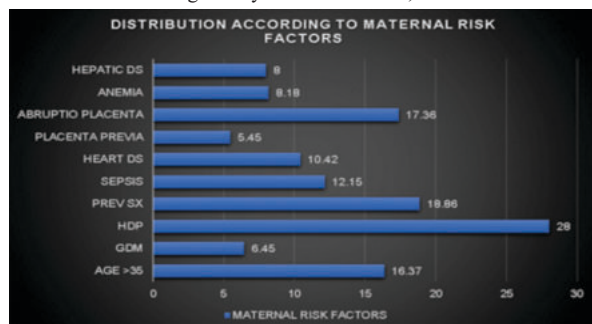


Chart No.1: Bar Chart Showing Distribution According To Maternal Risk Factors

In present study, most of cases 31.26% were in labour on admission. Regarding cause of maternal ICU admission in most cases were identified as Obstetric hemorrhage (44.98%) and hypertensive disorders of pregnancy (28%). In most cases emergency LSCS (39.95%) were performed.

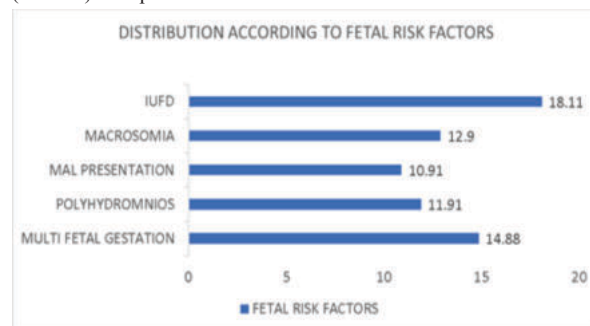


Chart No.02: Bar Chart Showing Distribution According To Fetal Risk Factors

In present study out of total cases, 43.14% cases stayed in ICU for 2-5 days. 69.14% cases required blood transfusion.

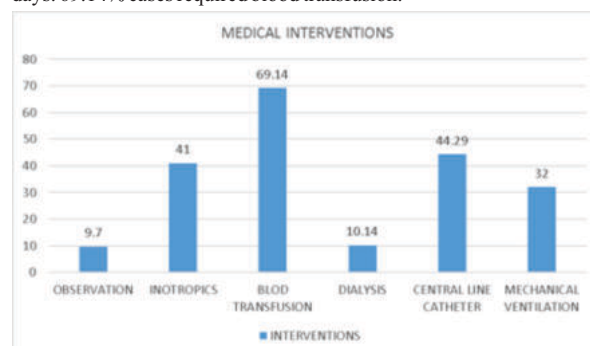


Chart No. 03: Bar Chart Showing Distribution According To Medical Interventions

In present study 77.41% patients recovered from ICU (NEAR MISS) and were shifted towards, and discharged. Only few, 2 patients (0.49%) referred to higher center for further management. Maternal mortality counts for 89 cases, 22% of ICU admission cases.

Table No.02: Maternal Outcome

S.N.	Maternal Outcome	Frequency	Percentage
1	REFERRED TO HIGHER CENTER	2	0.49
2	NEAR MISS and discharged from ward	312	77.41
4	DEATH	89	22
	TOTAL	403	100

Major causes of maternal mortality were hypertensive disorders of pregnancy and complications and followed by obstetric hemorrhage. Multi organ dysfunction (MODS) being most common non obstetric cause of maternal mortality.

Table No.03: Distribution According To Cause Of Death.

S.N.	Cause of Death	Frequency	Percentage
1	Medical	ARDS	5
		CCF	7
		Hepatic encephalopathy	1
		ARF	1
		MODS	12
		PPH	21
2	Obstetric	HDP	25
		Severe anemia	7
		Sepsis	10
		TOTAL	89
			100

DISCUSSION

Globally, there has been a paradigm shift in the maternal care strategy

since the 1990's. In India also there has been a policy change with promotion of institutional births, births by skilled birth attendants and provision of Emergency Obstetric Care. The Janani Suraksha Yojana (JSY) a cash incentive scheme has been initiated to promote institutional deliveries. A recent study on impact of JSY has shown an increase in institutional deliveries among the vulnerable and high-risk cases such as pre-eclampsia, eclampsia, hemorrhage etc., whereas there was no decline in the number of maternal deaths. These are the potentially life-threatening cases that need to be identified and managed to prevent maternal mortality. Measurement of obstetric critical care is a real challenge. Evaluation of obstetric admissions to Intensive Care Unit (ICU) is one of the ways to approach surveillance of critically ill women in pregnancy in a tertiary care facility. Developing countries account for maximum (99%) of global maternal deaths^[5,6]. According to data global maternal mortality 2017 was 211^[7], in India it has declined to 113 according to data 2016-18. With Maharashtra 46, Kerala 43 performing the best and the Assam 215 with maximum maternal mortality^[8]. Despite of some progress in providing improved health care to obstetric patient in last decade, still MMR remains challenge in India

By reviewing maternal ICU admission cases we can learn about the processes and their deficiencies that are in place for the care of pregnant women. This would result in identifying the pattern of severe maternal morbidity and mortality, strengths and weakness in the referral system and the clinical interventions available and the ways in which improvements can be made.

In the present study, out of total obstetric admissions to hospital, 1.25 % were admitted to ICU. Some reports from previous studies show an ICU admission rate that ranges from 0.1 to 1.7%^[10,11], while other studies show an admission rate of 3.3%^[12]. In the present study maternal ICU admission is comparable to the study done by Soumya Ranjan Panda et.al^[1]. found that the 1.84%, Baby Sailaja K et.al^[2] found that 1.8%.

In the study most common risk factor causing of maternal ICU admission observed was obstetric hemorrhage (Placenta previa, ruptured ectopic, PPH, Ruptured uterus) 181 (44.98%) followed by hypertensive disorders of pregnancy (Eclampsia/severe preeclampsia, HELLP syndrome) 113 (28%). The findings are comparable with other studies.^[13,14]

In this study 364 cases (90.3%) surgical line intervention was needed, 39 cases (9.7%) were required ICU monitoring, among 174 cases (43.14%) stayed in ICU for 2-5 days. The findings are comparable with other studies M Krishna Kumar et.al^[15] with median ICU length of stay was 5 days and other study done by B. Rao Bahadur et.al^[16] The mean length of ICU stay was 4.1±2.7 days.

In present study 312 (77.41%) patients recovered from ICU (NEAR MISS) and were shifted towards, and discharged, only few 2 patients (0.49%) referred to higher centre for further management. Maternal mortality counts for 89 cases, 22% of ICU admission cases. The findings are comparable with other studies.^[17,18]

In our study major causes of maternal mortality are hypertensive disorders of pregnancy and complications and followed by obstetric haemorrhage. Multi organ dysfunction (MODS) being most common non obstetric cause of maternal mortality is comparable to study done by Soumya Ranjan Panda et al^[1].

CONCLUSION

It can be concluded from this study that obstetric haemorrhage and complications are the most common cause of maternal mortality and morbidity. services at the grass route level helps in early identification, treatment and proper referral of complicated pregnancies. Proper awareness to the primary health care professionals about the complication among the antenatal mothers, their referral and further evaluation of the disorder may improve clinical outcome. A multidisciplinary team approach is appropriate in obstetric critical care settings. Awareness should be created among the population regarding the importance of adequate antenatal care, detection of danger signs of various obstetric complications and need for contacting medical facilities in case of emergency situations.

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