

## Obstetric Admissions in the Intensive Care Unit: A Study over a 2 Year Period in a Tertiary Care Centre in North India

Dr. Jayati Nath<sup>1\*</sup>, Dr. Sahil Kalia<sup>2</sup>, Dr. Jashan Thind<sup>3</sup>

<sup>1</sup>Professor, Ob Gyn, MMIMSR, Mullana, Ambala, Haryana, India

<sup>2</sup>Post Graduate Trainee, Surgery, MMIMSR, Mullana, Ambala, Haryana, India

<sup>3</sup>Senior Resident, Ob Gyn, MMIMSR, Mullana, Ambala, Haryana, India

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#### \*Corresponding author

Dr. Jayati Nath

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**Abstract:** Obstetrics patients may require intensive care at any time unpredictably. The most common causes of morbidity and mortality in these patients are anaemia, hemorrhage, hypertension, pre eclampsia, eclampsia, septicemia and their complications. The aim of this study was to evaluate the incidence, occurrence, indications, course of ICU stay, interventions required and the outcome of those obstetric patients admitted in the ICU. It was a hospital based, retrospective study conducted in a tertiary care medical college in Haryana, in North India over a period of 2 years – from January 2015 to January 2017. Out of a total deliveries of 7150, 165 patients required ICU admission and care (2.30 %). Most admissions were in the post partum period – 95(57.57 %), followed by antepartum period – 70 (42.43 %). Most common indications for ICU admission were obstetric hemorrhage – 50 (%), eclampsia - 17(%), pre eclampsia- 8 (%), septicemic shock – 23 (%), HELLP syndrome – 16 (%), DIC- 10 (%), cerebral malaria-10 (%), dengue-7 (%), hepatic encephalopathy-5(%). The most common interventions warranted were artificial ventilation-139 (84.24 %), transfusion of blood & blood products-140 (84.84 %), surgical exploratory laparotomy – 35 (21.21 %) and there were 15 maternal deaths (9.09 %).

**Keywords:** Eclampsia, Death, DIC, Intensive Care Unit, Obstetric hemorrhage, Maternal Mortality, Morbidity, Septicemia, Ventilation.

### Abbreviations

- ARDS – Adult Respiratory Distress Syndrome
- DIC-Disseminated Intravascular Coagulation
- ICU-Intensive Care Unit
- MMR-Maternal Mortality Rate
- PPH-Post Partum Hemorrhage
- HELLP Syndrome-Hemolysis ,Elevated Liver enzymes & Low Platelets syndrome

### INTRODUCTION

Obstetrics is unique as it is absolutely unpredictable. A simple case may turn into an emergency in any moment and a very normal situation can transform into a catastrophic without any warning. Approximately 0.1 – 0.9% of all deliveries may require ICU admission. The overall MMR in ICU ranges from 3.4 – 21% [1-4]. According to WHO “There lies a story behind every maternal death or life threatening complications”. Therefore, a thorough knowledge of the spectrum of the diseases, characteristics, clinical course and outcome of the underlying conditions involving obstetrics patients requiring ICU admissions is a must

and the first and foremost step towards the presents hence, reduction in maternal morbidity and mortality as a whole. This study was undertaken with a aim of evaluating the incidence, indications, underlying conditions, disease process, clinical course, interventions required and fetomaternal outcomes and the obstetrics patients requiring ICU admissions.

### MATERIALS & METHODS

Ours was a hospital based retrospective observational study based on hospital medical records. All the obstetrical patients who were admitted in the ICU of the tertiary care medical college of North India, over the study period of 2 year from Jan 2015- Jan 2017 were included in this study. Thus all the antenatal patients & also patients in the puerperium i.e. 6 weeks after the delivery were included

The data were collected especially, age, parity, socio economic status, urban or rural backgrounds, education levels, Antenatal care , booked or unbooked status, obstetrics status, primary diagnosis, referred from peripheries , interventions required and fetomaternal outcomes

maternal outcomes of all this critically ill obstetric patients were analyzed along with the other important relevant parameters example patients requiring ventilator support, or other major organ supportive therapy example dialysis blood and component transfusions etc. were noted, the data were noted tabulated and statistical analysis was done by using fraction percentage and Chi-square test.

**RESULTS AND OBSERVATIONS**

The total number of deliveries over the 2 year study period was 7150. Out of these 165 patients required admission into the ICU (2.30%) which accounted for 3.2 % of all ICU admissions. The mean maternal age was 26 ± 5.3 years. The majority of the patients were primipara - 100 (60.60%)

Total admissions in postpartum period were 95 (57.57%) and antenatal admissions were 70 (42.43%). Most patients were from lower socio-economic status (100- 60.60%), uneducated (105-63.63%), rural area (138-83.63%), obstetric indications for ICU admission were present in 125 patients (75.75%), non obstetric indications were present in 40 patients (24.25%).

**Breakup of obstetrics indications**

35 patients required surgical exploratory laparotomy (21.21%) out of which 15 had to undergo peripartum hysterectomy (9.09%) , 5 cases had uterine perforations and has to sacrifice uterus as a life saving measure i.e. total 20 patients required hysterectomy (3.03 %) out of the total 165 patients, 139 required mechanical ventilator support (84.24 %), transfusions of blood and blood products were required in 140 patients (84.84%) there were 15 maternal deaths (9.09%) out of which 10 were due to multi-organ failure (6.06%) and 5 were due to cardio pulmonary failure (3.03%) anesthetic complications were present in 4 patients (2 had ARDS, 1 had septicemia and 1 had transfusion reaction).

Indications for mechanical ventilation: (139/165) - 84.24%

- Acute respiratory failure
- Hemodynamic failure
- Impaired consciousness
- Post-op ventilation (anesthesia complications)
- Head injury (RTA)
- Cerebral malaria
- Hepatic encephalopathy

**ICU interventions required by the patients**

Ventillatory support	139	• (84.24%)
Blood plus blood product transfusion	140	• (84.84%)
Inotrops	90	• (54.54%)
Antihypertensive drugs	- 65	• (39.39%)
Anticonvulsants	45	• (27.27%)
Dialysis-	18	• (10.90%)
Surgical exploration	35	• (21.21%)
• Obstetric hysterectomy	15 + 5	• (12.12%)
• D&C		• 25 (15.15%)

**Causes of maternal deaths.... 15/165**

Primary cause of death	Number (15)	Primary diagnosis	Number (15)
Hypovolaemic shock	6	Obstetric hemorrhage	6
Multi Organ Failure	4	Eclampsia	4
Respiratory failure	3	Septecimic shock	3
Cardiac failure	2	Pulmonary embolism	2

**DISCUSSION**

Obstetric patients are generally young and mortality in these patients is very unfortunate as most of these are avoidable by improvement in heath education, awareness , regular antenatal care and checkup , early referral of high risk cases to secondary and tertiary care centre and early diagnosis of complications [4] and prompt and judicious initiation of the treatment [5-7]. In our study the total admissions in post-partum period was 95 (57.57%) and most were due to Eclampsia and obstetric hemorrhage, while studies from the developed world showed preeclampsia as the commonest

indication, as evidenced by Wheatly E *et al.*, [5], Vasquz DN *et al.*, [6], Kilpatrick SJ *et al.*, [7]. In other studies eg. by Niyaz *et al.*, [8], Ghike *et al.*, [9] and Lataifeh *et al.*, [10] stated hypertensive disorders of pregnancy as most common indications of ICU admissions in obstetric patients. Chawla *et al.*, [11] from India and Keizer *et al.*, [15] from turkey found preeclampsia to be the first and foremost indication for ICU admission. In our study obstetric patients constituted 3.2% of all ICU admissions. Obstetric causes were present in 125 patients (75.75%) and 40 patients were admitted with non- obstetric causes

(24.25%). Ghike *et al.*, [9] found 1.4% of all deliveries required ICU admissions whereas Niyaz *et al.* (8) showed 11.6% which is quite high as compared to our study result.

The maternal mortality rate in our study was 15 out of 165 (9.09%). Lataleif *et al.* have stated 6.9% maternal deaths and Niyaz *et al.*, [8] stated 13% maternal deaths. Other studies showed quite high maternal death rates eg. 19 % by Ghike *et al.*, [10] and 20 % by Faproule *et al.*, [11]. Maternal mortality is significantly higher in developing countries (40%) in contrast to developed countries (0.1-3.4%) as stated by Faproule *et al.*, [12].

WHO has published a systematic review where it is stated as PPH is the leading cause of maternal mortality in Africa and Asia [14] PPH accounts for almost one – fourth of all M.M.R worldwide as a whole [15], being the single most biggest killer of mothers all over the world . It is postulated that as many as 72% of all maternal deaths can be prevented through effective antenatal care. But all said and done, since approximately 15% of all pregnancies developed life threatening complication and most obstetrics emergencies are unpredictable and sudden, therefore only improved antenatal care will not prevent all the maternal deaths. Thus it's a collaboration of improved and regular antenatal care, early diagnosis of high risk patients, prompt referral to well equipped secondary and tertiary care centres and judicious management strategies by the team effort of obstetricians, intensivists, anesthetist and critical care given is imperative to achieve the goal of a healthy mother and a healthy baby out of every pregnancy.

## CONCLUSION

Hemorrhage (obstetric), hypertensive disorders of pregnancy and septicemia along with their respective complications remain the three main indications for the ICU admissions, among the obstetric patient population. The outcome of obstetric ICU patients is generally good as these are young and otherwise healthy people. Low socio-economic status, lack of education and health awareness along with poor antenatal care accounts for a considerable effect on the obstetric complications and outcome. It is to be emphasized time and again that early detection and prompt referral to well equipped tertiary care centers with ICU facility to provide optimum care of circulation , ventilation and blood pressure could drastically minimize the prevalence of

multiple organ failure and morbidity and mortality in critically ill obstetric patients.

## REFERENCES

1. Gupta, M., Jain, G., & Shukla, S. (2016). Evaluation of obstetric admissions to intensive care unit of a tertiary care center at Govt. medical college in Haldwani, India. *Liver, 1*, 2-63.
2. Ramchandra, P. B. (2013). Evaluation of obstetric admissions to ICU: *Indian Journal Critical Care Med*; 17: 34-37.
3. Kilpatrick, S. J., & Matthay, M. A. (1992). Obstetric patients requiring critical care: a five-year review. *Chest, 101*(5), 1407-1412.
4. Mabie, W. C. (2016). Critically ill obstetric patients, *Int J Obstet Anesthesia, 5*: 221-224.
5. Vasquez, D. V. (2015). A five year review of ICU admissions of critically ill obstetric patients, *hest, 101*: 718-723.
6. Niyaz, A. (2014). One year study of obstetric patients in ICU; *Anesthesiology Research and Review*; (1), 789450: 209-214.
7. Ghike S. (2012). Why obstetric patients require ICU admission? *Journal South Asian Feder Obst Gyne, 4*(2): 90-92.
8. Lalatifeh, A. (2012). Indications and outcome for obstetric patients admission to ICU . *Journal of Obstet Gynec, 30*(8): 378-383.
9. Faproule, A. F. (2011). Obstetric admission into ICU in a teaching hospital- *NJOG, 6*(2): 33-36.
10. Pollock, A. S. (2013). A systematic review of ICU patients; *Med Journal Armed Forces Ind*; 69(2):134-137.
11. Chawla, S. (2011). Why do obstetric patients go to ICU? *Intensive Care Med*; 36 (9): 1546-1554.
12. Keizer, J. A. D. (2016). Obstetric intensive care admissions; *Eur Journal Obstet Gynec Reprod Biology, 128*: 152-156.
13. Khan, K. S., Wojdyla, D., Say, L., Gülmezoglu, A. M., & Van Look, P. F. (2006). WHO analysis of causes of maternal death: a systematic review. *The lancet, 367*(9516), 1066-1074.
14. WHO. (2007). Maternal mortality in 2015: estimates developed by WHO, UNICEF, UNDP & World Bank, Tech Rep. World; Geneva, Switzerland.
15. Bhadade, R., de'Souza, R., More, A., & Harde, M. (2012). Maternal outcomes in critically ill obstetrics patients: A unique challenge. *Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine, 16*(1), 8.