

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20230525>

Original Research Article

## Profile of obstetric patients in intensive care unit -a retrospective study

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**Received:** 05 January 2023

**Accepted:** 31 January 2023

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### ABSTRACT

**Background:** Obstetric patients form a particular subgroup of population to intensive care admission. Pregnancy specific problems like pre-eclampsia, postpartum haemorrhage or deterioration of pre-existent conditions can be sudden and life threatening, requiring immediate intensive management and monitoring. The main objective was to determine the pattern and outcome of obstetric admissions to intensive care unit.

**Methods:** It was a retrospective study from June 2020 to June 2022. Obstetric patients admitted to intensive care unit were included in the study. Data were obtained from the patient's case notes and records from the ICU and were entered into a predesigned proforma.

**Results:** Maximum study subjects were between age group 21-25 years of age. Most of them were primigravida and admitted in the postpartum period. The most common indications for admission to ICU were preeclampsia with severe features followed by obstetric haemorrhage. The mortality rate was 18.8% and shock attributing to the main cause.

**Conclusions:** Maternal and child health have become an important measure of human and social development. Early and prompt diagnosis and treatment of high-risk obstetric patients in intensive care unit can prevent and ameliorate serious maternal morbidity.

**Keywords:** Intensive care unit, Maternal mortality, Obstetric critical care

### INTRODUCTION

Although pregnancy and labour are considered physiological processes, the potential for catastrophic complications is constant and may develop within minutes.<sup>1</sup> Very little is known on indications for ICU admission and outcome in young women of reproductive age. Pregnancy specific problems like pre-eclampsia, postpartum haemorrhage or deterioration of pre-existent conditions can be sudden and life threatening, requiring immediate intensive management and monitoring. Most obstetricians are less familiar or lack facilities for this critical management, requiring ICU admission for these patients. Prompt and skilled interventions can rapidly counter most of these life-threatening complications.<sup>2</sup> There is growing evidence that admission of high-risk

patients into the intensive care unit (ICU) is associated with a reduction in maternal mortality.

### METHODS

A retrospective record analysis of all the obstetric admissions to intensive care unit was done. The period of analysis was June 2020 to June 2022 at a tertiary care centre, Sri Devaraj URS academy of higher education and research, Kolar, Karnataka. Our main objective was to determine the pattern and outcome of obstetric admissions to intensive care unit. All obstetric patients admitted to intensive care unit were included. Data about patient demographics, obstetric/medical history, diagnosis on admission, course and treatment and maternal mortality were obtained from the patients' case notes and records

from the ICU and were entered into a predesigned pro forma.

**Statistical analysis**

Data was entered into Microsoft excel data sheet and was analysed using SPSS 22 version software. Categorical data was represented in the form of frequencies and proportions. Chi-square test or Fischer’s exact test (for 2 × 2 tables only) was used as test of significance for qualitative data. Continuous data was represented as mean and standard deviation.

**Graphical representation of data**

MS Excel and MS word was used to obtain various types of graphs.

P value (probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

**Statistical software**

MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyse data.

**RESULTS**

Most subjects were between age group 21-25 years of age. Most of them were primigravida and admitted in the postpartum period (Table 1). Out of 80 subjects mortality was 18.8% (Table 2).

**Table 1: Demographic details of subjects.**

Parameters	Frequency (N=80)	Percentage
<b>Age (in years)</b>		
16-20	17	21.3
21-25	35	43.8
26-30	15	18.8
31-35	10	12.5
36-40	3	3.8
<b>Parity status</b>		
Primigravida	50	62.5
Multigravida	30	37.5
<b>Time of admission to intensive care unit</b>		
Antepartum	24	30.0
Ectopic	4	5.0
Post abortal	7	8.8
Postpartum	45	56.3
<b>Distribution of subjects according to mortality</b>		
Alive	65	81.3
Dead	15	18.8
Total	80	100.0

**Table 2: Distribution of subjects according to mortality.**

	Alive		Dead		P value
	N	%	N	%	
<b>Age group (years)</b>					
16-20	15	88.2	2	11.8	0.602
21-25	27	77.1	8	22.9	
26-30	13	86.7	2	13.3	
31-35	7	70.0	3	30.0	
36-40	3	100.0	0	0	
<b>Parity</b>					
Multipara	24	80.0	6	20.0	1.00
Primipara	41	82.0	9	18.0	
<b>Time of admission to ICU</b>					
Antepartum	23	95.8	1	4.2	0.060
Ectopic	4	100.0	0	0	
Post abortal	6	85.7	1	14.3	
Postpartum	32	71.1	13	28.9	

**Table 3: Frequency Distribution of intervention, diagnosis and cause of mortality.**

Frequency distribution of intervention	N	%
Mechanical ventilator	16	20
Inotrope support	25	31.25
Arterial line insertion	35	43.75
Echo	28	35
USG abdomen	68	85
Blood and blood products	35	43.75
Antibiotics	73	91.25
Oxygen	72	90
Magnesium sulphate	33	41.25
Non invasive ventilation	2	2.5
<b>Frequency distribution of diagnosis</b>		
Preeclampsia	4	5
Preeclampsia with severe features	29	36.25
PPH	10	12.5
Abruptio placenta	1	1.25
Anemia	5	6.25
Sepsis	5	6.25
Disseminated intravascular coagulation	3	3.75
Cardiac disease	4	5
Exploratory laparotomy	4	5
Epilepsy/ Seizures	5	6.25
Shock	2	2.5
Retained placenta	1	1.25
Abortion	4	5
<b>Causes of mortality</b>		
Shock	8	53.3
Disseminated intravascular coagulation	3	20
Pneumonia	2	13.2
ARDS	1	6.6
Cardiac arrest	1	6.6

The most common indication for intensive care unit admission was hypertensive disorders of pregnancy was 41.5%. The common interventions were as listed in Table 3. The most common cause mortality of was shock accounting to 53.3%.

## DISCUSSION

The number of admissions to ICU in the present study was about 80, over 2826 deliveries in a span of 18 months with 15 deaths. The higher incidence of ICU admissions (2.8%) among obstetric patients in our study was consistent with studies by Harde et al (2.8%),<sup>3</sup> Bhadade et al (2.8%)<sup>4</sup> and Jain et al. (5.4%).<sup>3-5</sup> The pattern reviewed from other previous studies did not show a similarity.<sup>6-9</sup> This may be attributed to the differences in the criteria for ICU admission. The hospital admissions included patients referred to existing facilities due to lack of a dedicated unit for high obstetric dependency in their hospital, due to severity of illness and patients developed a subsequent complication.

Majority of them were primigravida (62.5%), which is comparable with Benjamin and Dasgupta et al. However, in Gupta et al study, more of multigravida admissions. The mean age of the patients was 21-25 years.

Most subjects were admitted during the postpartum period which was similar to baby Sailaja et al. There was a postpartum predominance comparable to other studies.<sup>6,8,10,11</sup>

Postoperative transfer of patients with eclampsia and obstetric haemorrhage irrespective of their haemodynamic status and patients referred from other hospitals following a complication of delivery would suffice this. Although the number of antepartum admissions was less and on par with the above studies, we observed a significant mortality among them.

The most common indication for ICU admission in the present study was preeclampsia with severe features (28.35%) followed by postpartum hemorrhage 12.5% which was comparable with Sailaja et al, Bhadade et al, Jain et al, and Gombar et al studies.<sup>4-6</sup>

This study analysed different predictors of obstetric illness and none of the variables showed association as an independent risk factor for maternal mortality. There is a lack of synchronisation of health care services across the globe and the delay in referral to a tertiary center makes it detrimental.

Our study had a few limitations. Since ours was a tertiary institute with high referral rate, a few of the obstetric patients by the time of admission were in a pretty bad state. And also, this was a single central study, the results do not indicate comprehensive prenatal care is provided in peripheral health centres.

## CONCLUSION

Reducing maternal mortality is a critical health care parameter that calls the involvement of the entire health care system, from primary to tertiary level. Regular antenatal visits can make a significant difference, and careful monitoring and early diagnosis of high-risk cases as well as rapid response to emergencies and prompt referral to higher centres can prevent and thus ameliorate fatal outcome.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Bhavanam N, Munisamiah M, Jayalingegowda P. Profile of obstetric patients in intensive care unit -a retrospective study. *Int J Reprod Contracept Obstet Gynecol* 2023;12:619-22.