

To Study Clinical Profile and Outcome of Obstetric Patients Admitted in ICU in Tertiary Care Hospital in Western Rajasthan

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Abstract: **Background:** Obstetric patients requiring intensive care represent a small but high-risk group in whom timely multidisciplinary treatment can prevent maternal death. Data from Western Rajasthan are limited. **Objective:** To describe the clinical profile, indications, interventions, complications, and maternal outcomes of obstetric patients admitted to the intensive care unit (ICU) of a tertiary care hospital. **Methods:** This prospective observational hospital-based study included 100 pregnant or postpartum women admitted to the ICU from November 2025 to April 2026. Demographic and obstetric characteristics, primary diagnosis, timing of admission, ICU interventions, complications, duration of stay, and maternal outcome were recorded. Categorical data were summarized as frequencies and percentages, and continuous variables as mean and standard deviation. **Results:** Mean age was 26.4 ± 4.8 years; 68% of participants were from rural areas, 58% were unbooked, and 42% were primigravida. Postpartum admissions constituted 67%, and cesarean delivery was performed in 54%. Hypertensive disorders were the leading indication for ICU admission (38%), followed by obstetric hemorrhage (24%) and sepsis or septic shock (14%). Among hypertensive disorders, severe preeclampsia accounted for 47.4%, while postpartum hemorrhage constituted 66.7% of hemorrhage-related admissions. Blood transfusion was required in 52%, mechanical ventilation in 42%, vasopressor support in 38%, and dialysis in 8%. Acute kidney injury was the most frequent complication (18%), followed by acute respiratory distress syndrome (12%). Mean ICU stay was 5.8 ± 3.6 days. Overall, 85% were discharged from ICU, 8% were transferred after stabilization, and 7% died. **Conclusion:** Hypertensive disorders, hemorrhage, and sepsis were the major causes of obstetric ICU admission. Early antenatal risk recognition, rapid referral, blood-product availability, and coordinated obstetric-critical care are essential to improve maternal outcomes.

Keywords: Obstetric intensive care; maternal morbidity; hypertensive disorders; obstetric hemorrhage; sepsis; mechanical ventilation; maternal outcome

1. Introduction

Pregnancy and childbirth are usually physiological events; however, some women develop severe complications requiring intensive care. Obstetric critical care is challenging because pregnancy-related physiological changes alter the presentation and management of critical illness, while maternal stabilization and fetal well-being must be considered simultaneously. [1-3]

ICU admission is an important indicator of severe maternal morbidity and maternal near miss. Hypertensive disorders, obstetric hemorrhage, sepsis, cardiac disease, respiratory failure, hepatic dysfunction, and severe anemia are major causes of obstetric critical illness. [4-9] Management may require mechanical ventilation, vasopressors, blood transfusion, dialysis, or emergency surgery. Maternal outcome depends on early diagnosis, timely referral, severity of organ dysfunction, and availability of critical-care facilities. [1,10-12]

The present study evaluated the clinical profile, indications for ICU admission, interventions, complications, duration of stay, and maternal outcomes among critically ill obstetric patients admitted to a tertiary care hospital in Bikaner.

2. Aim and Objectives

The study aimed to evaluate the clinical profile and maternal outcomes of obstetric patients admitted to the ICU at a tertiary care hospital in Western Rajasthan, with particular emphasis on indications for admission, required interventions and organ support, maternal complications, and clinical patterns associated with adverse outcomes.

3. Materials And Methods

A prospective observational hospital-based study was conducted at Sardar Patel Medical College and Associated Group of Hospitals, Bikaner, from November 2025 to April 2026. It included 100 pregnant women or women within 42 days postpartum who required ICU admission for pregnancy-related obstetric, medical, or surgical complications. Non-obstetric admissions and women beyond six weeks postpartum were excluded.

After ethical approval and informed consent, participants were followed from ICU admission until discharge, transfer, or death. Demographic details, obstetric history, antenatal status, referral details, indication for ICU admission, comorbidities, clinical findings, laboratory investigations,

APACHE II and SOFA scores, ICU interventions, complications, and duration of stay were recorded.

Data were analyzed using statistical software. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean $\pm$ SD. Appropriate statistical tests were applied, with $p < 0.05$ considered significant.

4. Results

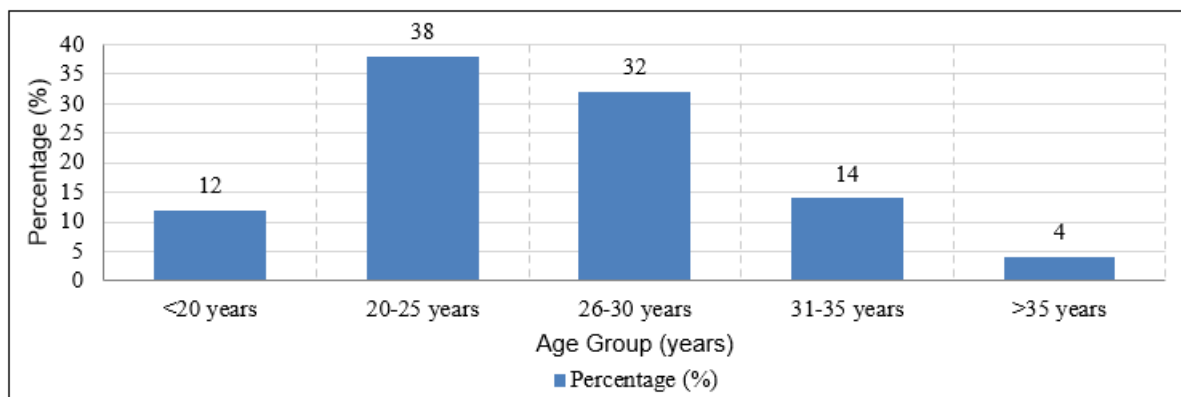
A total of 100 obstetric patients were admitted to the ICU, with a mean age of 26.4 ± 4.8 years; 70% were aged 20–30 years. Most women were rural residents (68%), 84% belonged to middle or lower socioeconomic groups, 42% were primigravida, and 58% were unbooked. Cesarean section was the most common mode of delivery (54%), and 67% of admissions occurred postpartum.

Hypertensive disorders were the leading indication for ICU admission (38%), followed by obstetric hemorrhage (24%), sepsis or septic shock (14%), cardiac disease (8%), respiratory disorders (6%), severe anemia (5%), hepatic disorders (3%), and other causes (2%). Severe preeclampsia was the commonest hypertensive disorder, while postpartum hemorrhage accounted for most hemorrhage-related admissions.

Blood transfusion was required in 52%, mechanical ventilation in 42%, vasopressors in 38%, fresh frozen plasma in 28%, inotropes in 22%, and dialysis in 8%. Acute kidney injury was the most frequent complication (18%), followed by ARDS (12%), DIC (8%), and multi-organ dysfunction (7%). The mean ICU stay was 5.8 ± 3.6 days. Overall, 85% recovered, 8% were transferred after stabilization, and maternal mortality was 7%.

Table 1: Distribution of Cases according to Age

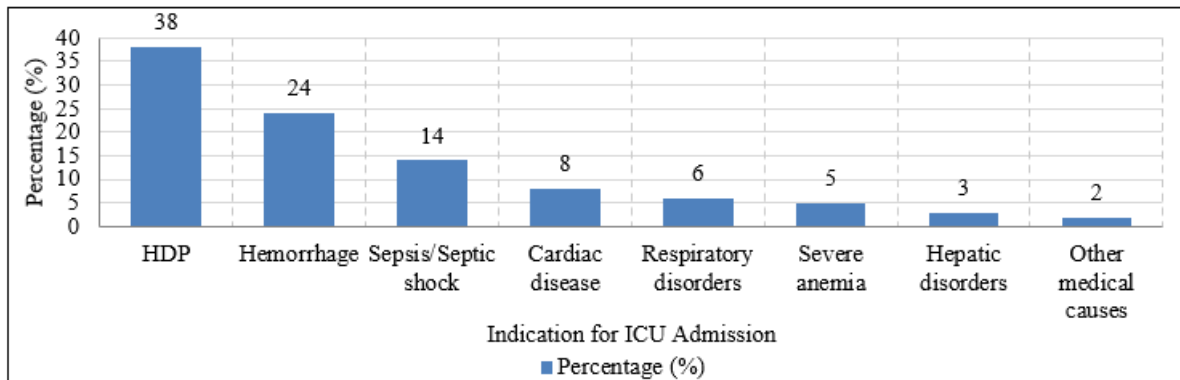
Age Group (years)	Number of Cases (Obstetric ICU Patients n=100)	Percentage (%)
<20 years	12	12%
20-25 years	38	38%
26-30 years	32	32%
31-35 years	14	14%
>35 years	4	4%
Mean Age $\pm$ SD	26.4 ± 4.8 years	



Graph 1: Distribution of Cases according to Age

Table 2: Distribution of cases according to Indications for ICU Admission

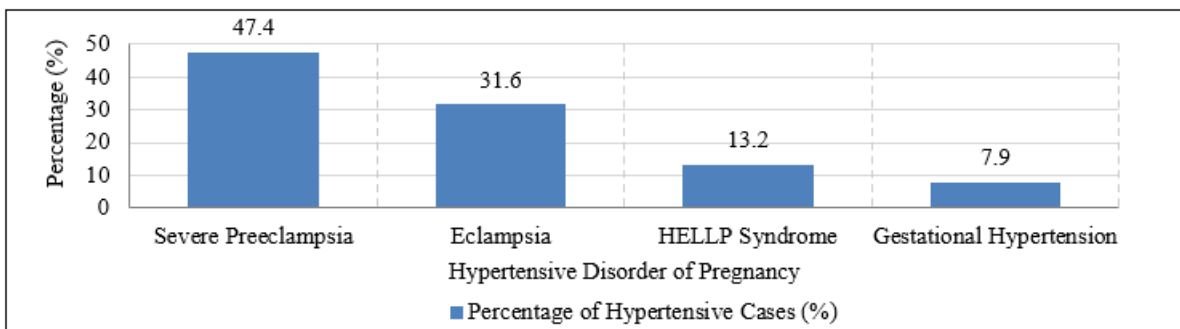
Indication for ICU Admission	Number of cases (n=100)	Percentage (%)
Hypertensive disorders of pregnancy (PIH, Preeclampsia, Eclampsia)	38	38%
Hemorrhage (Antepartum/Postpartum)	24	24%
Sepsis / Septic shock	14	14%
Cardiac disease	8	8%
Respiratory disorders	6	6%
Anemia (Severe)	5	5%
Hepatic disorders	3	3%
Other medical causes	2	2%



Graph 2: Distribution of cases according to Indications for ICU Admission

Table 3: Distribution of Cases according to Hypertensive Disorders of pregnancy Requiring ICU Admission

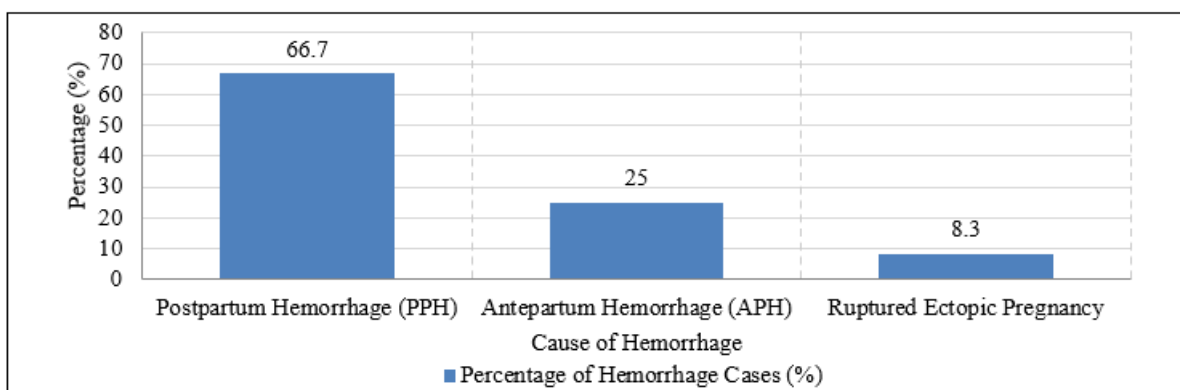
Hypertensive Disorder of Pregnancy (HDP)	Number of cases (n=38)	Percentage of Hypertensive Cases (%)
Severe Preeclampsia	18	47.4%
Eclampsia	12	31.6%
HELLP Syndrome	5	13.2%
Gestational Hypertension	3	7.9%
Total	38	100%



Graph 3: Distribution of Cases according to Hypertensive Disorders of pregnancy Requiring ICU Admission

Table 4: Cases according to Specific Causes of Hemorrhage Requiring ICU Admission

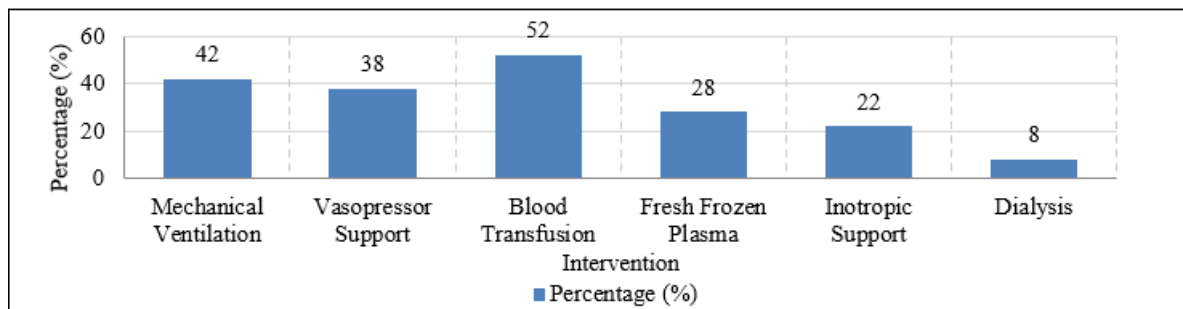
Cause of Hemorrhage	Number of cases (n=24)	Percentage of Hemorrhage Cases (%)
Postpartum Hemorrhage (PPH)	16	66.7%
Antepartum Hemorrhage (APH)	6	25.0%
Ruptured Ectopic Pregnancy	2	8.3%



Graph 4: Cases according to Specific Causes of Hemorrhage Requiring ICU Admission

Table 5: Cases according to Interventions Required During ICU Stay

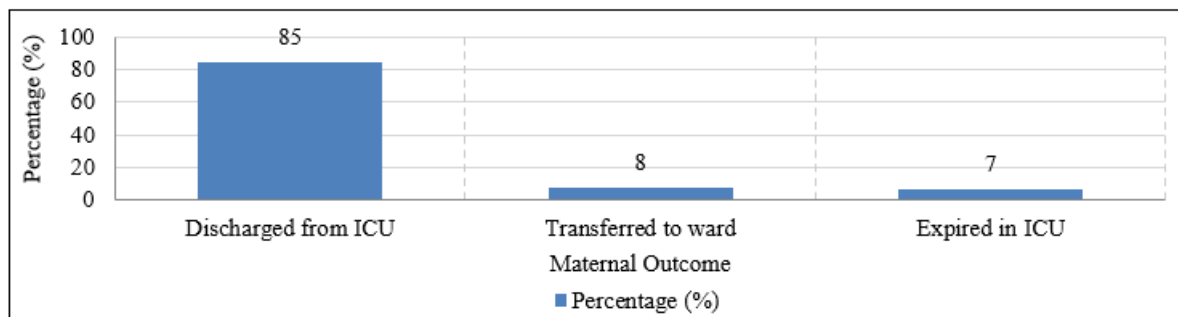
Intervention	Number of cases (n=100)	Percentage (%)
Mechanical Ventilation	42	42%
Vasopressor Support	38	38%
Blood Transfusion	52	52%
Fresh Frozen Plasma	28	28%
Inotropic Support	22	22%
Dialysis	8	8%



Graph 5: Cases according to Interventions Required During ICU Stay

Table 6: Cases according to Maternal Outcomes in ICU

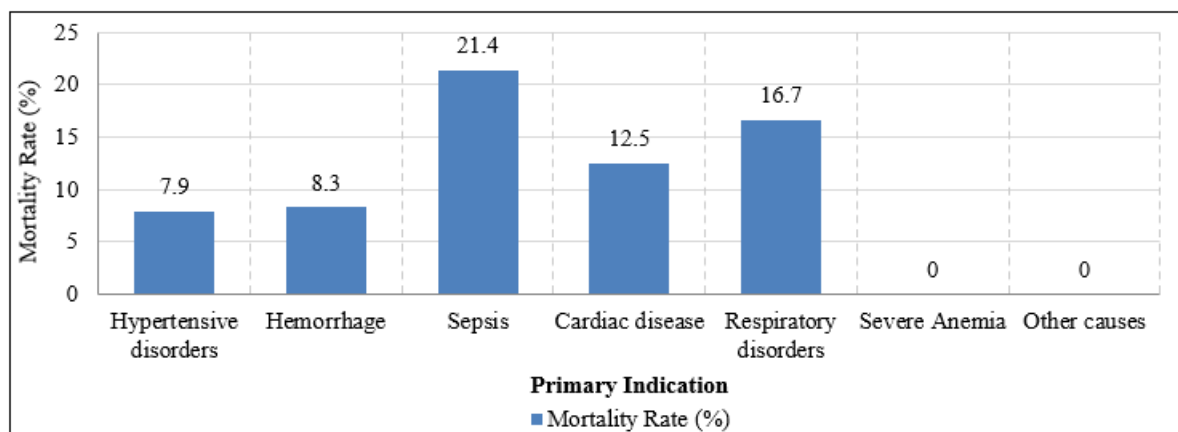
Maternal Outcome	Number of cases (n=100)	Percentage (%)
Discharged from ICU	85	85%
Transferred to other ward after stabilization	8	8%
Expired in ICU	7	7%



Graph 6: Cases according to Maternal Outcomes in ICU

Table 7: Comparison of Outcomes by Primary Indication

Primary Indication	Total Cases (n=100)	Recovered/ Discharged	Expired	Mortality Rate (%)	p value
Hypertensive disorders	38	35	3	7.9%	0.0001
Hemorrhage (Antepartum and Post partum)	24	22	2	8.3%	0.001
Sepsis	14	11	3	21.4%	0.148
Cardiac disease	8	7	1	12.5%	0.180
Respiratory disorders	6	5	1	16.7%	0.393
Severe Anemia	5	5	0	0%	0.175
Other causes	5	5	0	0%	0.175



Graph 7: Comparison of Outcomes by Primary Indication

5. Discussion

The present study showed that most obstetric ICU admissions involved young women from rural and socioeconomically disadvantaged backgrounds. The mean age was 26.4 years, comparable with previous studies.[17,19] Rural residence in 68% of cases also agreed with earlier reports, indicating the

possible role of delayed referral and limited antenatal access.[16,19] Hypertensive disorders were the leading indication for ICU admission (38%), followed by obstetric hemorrhage (24%) and sepsis (14%), consistent with other studies.[10,14,17] Blood transfusion was required in 52%, mechanical ventilation in 42%, and vasopressor support in 38%. The relatively high need for ventilation may reflect

delayed presentation and advanced organ dysfunction. Maternal mortality was 7%, comparable with Lataifeh et al.[14] Acute kidney injury, ARDS, DIC, and MODS were major complications. Improved antenatal surveillance, timely referral, emergency transport, blood-product availability, and coordinated obstetric critical care may reduce maternal morbidity and mortality.

6. Conclusion

Obstetric ICU admissions were mainly associated with hypertensive disorders, hemorrhage, and sepsis. Blood transfusion, ventilation, and vasopressor support were frequently required. Maternal mortality was 7%. Early diagnosis, timely referral, better antenatal care, and adequate obstetric critical-care facilities are essential to improve maternal outcomes.

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