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Original Article

Obstetric Admissions in the Intensive Care Unit of a Tertiary Care Hospital: Steps for Better Outcome

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Abstract:

Background: *Maternal mortality is a crucial issue throughout the world. In Bangladesh, Maternal mortality ratio was 196 (uncertainty range = 159-234) per 100 000 live births. Maternal deaths occurred on the day of delivery is 30% and 6% on one day post-delivery.[1] it is necessary to point out those factors for improvement.*

Objective: *This study was focused to identify those factors, attributed to morbidity and mortality among the pregnant women and women in the postpartum period , who needed ICU admission.*

Methods: *This study is a retrospective observational study from January 2024 to December 2025 (two years) in a tertiary care privet hospital, Dhaka. In the study period, 1697 patients got admitted in the two unit of ICU (7+8=15) 15 beds in a same hospital. Total of 57 patients were enrolled in this study.*

Results: *Mean age of patients was 27.87 ± 7.62 years. Most of the patients got admitted in ICU, during postpartum period {42(73.68%)}. Indications for ICU admission were hypoxemic respiratory failure (77.19%), resp distress (57.89%), pulmonary oedema (38.59%), fluid overload (45.61%), & shock (36.84%). Among the study population, 57.89% received NIV, 40.35% got conventional oxygen, 15.78% were on MV, 10.52% on HFNC, 40.35% required vasopressor support, 10.52% needed dialysis & 29.82% needed transfusion. Diagnoses were divided as obstetric and non-obstetric types. Obstetric diagnoses were pregnancy-induced hypertension (n=20, 35.08%), eclampsia (n=15, 26.31%), postpartum hemorrhage (n=16, 28.07%), HELLP syndrome (n=6, 10.52%), peripartum cardiomyopathy (n=4, 7.01%), intra uterine death with MODS (n=2, 3.50%), ruptured ectopic pregnancy (n=7, 12.28%), and abortion (n= 2, 3.50%). Non-obstetric diagnoses were pulmonary oedema (n=15, 26.31%), AKI (n=10, 17.54%), TRALI (n=10, 17.54%), ARDS (n=4, 7.01%), DIC: 5(8.77%), cerebral venus sinus thrombosis: 2(3.50%), MODS:7(12.28%), Sepsis (n=2, 3.50%), Dengue (n=2, 3.50%), PRES (n=5, 8.77%), congenital methemoglobinemia (n=1, 1.75%), TTP (n=1, 1.75%), and acute pancreatitis (n=2, 3.50%). Non-urban patients were younger than urban patients (25.24 ± 5.57 vs 31.62 ± 5.87, p = 0.031) and higher number of primipara pregnancies among non-urban patients than urban group (23 vs 2, p = 0.013). Non-urban patients' length of hospital stays and ICU stay were longer and had more MODS (15.38%) at admission and mortality rate (12.82%) compared to urban population and APACHE II scoring was higher in non-urban (10.35 ± 3.14, vs 6.43 ± 2.59, p = 0.002). Higher severity of metabolic acidosis and lower P/F ratio and higher serum lactate were observed in non-survivor in compared to survivor group. SOFA score was significantly higher in nonsurvivors compared to survivors (6.5 ± 0.83 vs 2.60 ± 1.07; p < 0.0001). The APACHE II score was also significantly higher in non-survivors compared to survivors' group (15.3 ± 1.09 vs 7.7 ± 0.6; p < 0.0001). The mean hospital stay was significantly longer in nonsurvivors group compared to survivors (9.0 ± 4.9 Vs 5.3 ± 2.4; p < 0.0001).*

Conclusions: *To improve the outcome, attention should be paid to the non-urban early risk assessment, emergency maternal health care and transportation system and increase awareness about obstetric critical care in non-urban area.*

Keywords: *Acute physiology and chronic health evaluation, acute kidney injury, adult respiratory distress syndrome, arterial blood gas, disseminated intravascular coagulation, HELLP, Intensive care unit, invasive mechanical ventilation, Multi-organ dysfunction syndrome, noninvasive ventilation, posterior reversible encephalopathy syndrome, sequential organ failure assessment, transfusion associated lung Injury, thrombotic thrombocytopenic purpura.*

Introduction:

Managing the critically ill obstetric patient at an intensive care unit (ICU) is a unique hurdle throughout the world. Nearly 0.1%–0.9% of obstetric patients require ICU admission following delivery. The overall maternal death rate in the ICU varies from 3.4% to 21%. The unpredictable physiology of obstetric patients leads to high mortality and morbidity.[2] Therefore, in-depth spectrum of knowledge, attributing factors and management of the disease is the steps for reduction of both maternal morbidity and mortality.[2] In addition to the common admitting diagnoses (non-obstetric) to ICU, those patients may present with disorders to pregnancy, including peripartum hemorrhage, pregnancyinduced hypertensive disorders, liver failure, embolic disorders and puerperal infections.[3]

Obstetric critical care in developing countries is new concept and of course different from developed countries. The three main factors affect the outcome included delays seeking health care, reaching an appropriate medical facility and the receiving adequate treatment.[4,5] So an efficient system for improvement of risk stratification of pregnant patients and hence, upgrade the timely transfer to higher center will

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possible in developing country.

Material and methods:

This retrospective observational study was conducted in ICU setup of a tertiary care private hospital from January 2024 to December 2025 (24 months). All the women patients admitted to ICU either during pregnancy or during puerperium were included in this study. Pregnant women admitted for poisoning, road traffic accident, other medico-legal cases were excluded from the study. Data was collected from medical recoded files. All demographic data, presenting symptoms, indication of admission, diagnosis, management and investigation and outcome were documented. Risk stratification done by SOFA scoring and APACHE II. Comparison data were collected from non-urban vs urban group and survival vs non survival group.

Statistical analysis: Data were recorded. Categorical variables are presented as numbers and percentages and continuous variables are presented as mean ± standard deviation and median (range) as appropriate. Normality of data was tested by Kolmogorov–Smirnov test. Nonparametric tests were used if the data were not normally distributed. Unpaired *t*test/Mann–Whitney test was used for quantitative variables as appropriate. Chisquare test/Fisher's exact test were used to compare qualitative variables. Statistical analysis was carried out by SPSS 25. A $P < 0.05$ was considered statistically significant.

Results:

Total 1697 patient got admitted during the two-year of study period. Among them only 57(3.35%) patients were enrolled. The mean age of the study patients was 27.87 ± 7.62 years. Table I included the results of demographic characteristics, mode of delivery whether antepartum and post-partum, and indications of admission in ICU, along with comorbidities and also lifesaving management received.

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Out of 57 patients, 9 patients (15.78%) needed invasive mechanical ventilator (IMV) support. 33((57.89%) required noninvasive ventilation (NIV). Hemodialysis was done among 6 patients (10.52%) and HFNC was used among 6(10.52 %) whereas conventional oxygen was used in 23 (40.35%) patients.

Table I: Patient characteristics and clinical features (N=57)

Characteristics	Data
Age (years)	27.87 ± 7.62
Length of stay (days)	
Hospital	6.84 ± 11.59
ICU	5.50 ± 5.40
History of Mode of delivery	
Normal vaginal delivery	11/42 (26%)
Caesarean section	31/42 (76%)
Un-delivery at discharging of ICU	4(7.01%)
Timing of admission in ICU	
Postpartum	42(73.68%)
Antepartum	4(7.01%)
Ectopic pregnancy	7(12.28%)
Abortion	2(3.50%)
IUD	2(3.50%)
Indications for ICU admission	
Hypoxemic respiratory failure	44(77.19%)
Resp distress	33(57.89%)
Pulmonary oedema	22(38.59%)
Fluid overload	26(45.61%)
Shock -undifferentiated shock	21(36.84%)
Hemorrhagic shock	16(28.07%)
Unconsciousness	15(26.31%)
Convulsion	13(22.80%)
Oliguria	14(24.56%)
Anuria	7(12.28%)
Malignant HTN	9(15.78%)
Gasping breathing	4(7.01%)
Associated comorbidities	
Hypertension	20(35.08%)
Diabetes mellitus	4(7.01%)
Hypothyroidism	7(12.28%)
Obesity	4(7.01%)
Irondeficiency anemia	9(15.78%)
Other management received	
NIV	33(57.89%
conventional oxygen	23 (40.35%)
MV	9(15.78%)
HFNC	6 (10.52%)
Vasopressor	23(40.35%)
Dialysis	6(10.52%)
Transfusion	17 (29.82%)

Note: HFNC: High flow nasal cannula, IUD: intra uterine death.

The common underlying obstetric etiology for ICU admission were hypertensive diseases of pregnancy: 20 (35.08%) followed by obstetric hemorrhage:16 (28.07%) (Table II). The common nonobstetric diagnosis for admission was pulmonary oedema :15 (26.31%), followed by AKI: 10 (17.54%) and TRALI:10 (17.54%).

Table II: Diagnosis in ICU

Variables	**No. of patients (n)** percentage **(%)**
Diagnosis in ICU	
Obstetric	
Pregnancy-induced hypertension	20 (35.08%)
Eclampsia	15(26.31%)
Postpartum hemorrhage	16 (28.07%)
HELLP syndrome	6 (10.52%)
Peripartum cardiomyopathy	4 (7.01%)
Intra uterine death with MODS	2(3.50%)
Ruptured ectopic pregnancy	7(12.28%)
Abortion	2(3.50%)
Non-Obstetric	
Pulmonary oedema	15 (26.31%)
AKI	10(17.54%)
TRALI	10(17.54%)
Sepsis	2(3.50%)
Dengue	2(3.50%)
ARDS	4(7.01%)
PRESS	5(8.77%)
Congenital Methemoglobinemia	1(1.75%)
TTP	1(1.75%)
Acute pancreatitis	2(3.50%)
DIC	5(8.77%)
Cerebral Venus sinus thrombosis	2(3.50%)
MODS	7(12.28%)

HELLP: hemolysis, elevated liver enzymes, and low platelet count; MODS: multiorgan dysfunction syndrome, ARDS: acute respiratory distress syndrome, AKI: Acute kidney Injury, TTP: thrombotic thrombocytopenic purpura, PRES: posterior reversible encephalopathy syndrome, TRALI: Transfusion related acute lung Injury.

As Bangladesh is a developing country, many patients from county side come to capital city with life threatening condition for upgraded management. Comparison was shown in Table III between nonurban and urban group. Non-urban patients were 66.66%(n=38) and urban were 31.57%(n=18).

Table III: Comparison between nonurban and urban group

Variables	**Mean ± standard deviation or No. (%)**		***P* value**
	Non-urban (n =39)	**Urban** (n = 18)	
Age (years)	25.24 ±5.57	31.62 ± 5.87	*P* = 0.031
Length of stay (days)			
Hospital	15.43 ± 1.22	13.20 ± 1.68	*P* = 0.331
ICU	5.867 ± 0.57	4.386 0±.80	*P* = 0.199
APACH II	10.35 ± 3.14	6.43 ± 2.59	*P* = 0.002
Prenatal care			
Standard	6/39 (15.38%)	14/18 (77.77)	*P* = 0.004
Absent	13 (33.33%)	1 (5.55%)	*P* = 0.194
Primipara	23 (58.97%)	2 (11.11%)	*P* = 0.013
Transfer from external hospital	30 (76.92%)	2 (11.11%)	*P* = 0.004
Caesarean section	20 (51.28%)	11 (61.11%)	*P* = 0.044
Blood transfusion	27 (69.23%)	8 (44.44%)	*P* = 0.010
MODS	6 (15.38%)	1(5.55%)	*P* = 0.026
ICU mortality	5 (12.82%)	1 (5.55%)	*P* = 0.176

Comparison of variables between survivors and non-survivors is shown in Table IV.

Table IV: Comparison of parameters between non-survivors and survivors

Variable	**Survivors (n=51)**	**Nonsurvivors (n=6)**	***P*value**
Age (years)	27.41±5.6	26.3±4.5	0.38
pH	7.23±0.123	7.10±.069	<.005
PaO2/Fio2	223.1±93	131.7±70.3	<.003
PCO2	35.5±9.5	55±8.7	.008
Bicarbonate	20.7±8.7	10.6±5.5	.004
Lactate	1.3(1.0-2.2)	2.7(1.1-4.0)	.003
APACHE II score	7.7±0.6	15.3±1.09	<0.0001
SOFA score	2.6±1.7	6.5±0.83	<0.0001
No. of days of hospital stay	5.3±2.4	9.0±4.9	<0.0001
No. of days of ICU stay	4.1±2.5	5.9±2.4	0.13

APACHE II score: Acute physiology and chronic health evaluation score; SOFA score: Sequential organ failure assessment score; ICU: intensive care unit

Discussion

The retrospective study was conducted among the obstetric patients (during pregnancy and postpartum) whom required

ICU admission during the study period. Critically ill obstetric patients accounted for a small proportion (3.35%) of all ICU admissions. The mean age of study population was 27.87 ± 7.62 and observations are similar to that reported in other studies.[5,6,7] In this study most of the patients were in post-partum period among them history of mode of delivery was caesarean section in 76% of cases and normal vaginal delivery was 26% of cases. In this study 68.42 % of patients were from non-urban area.[8] This leads to higher percentage of under-privileged women in this population.

In this study standard antenatal checkup patients were more (77.77%) in urban area whereas rural patients were only 15.38% of cases. The findings were similar to that reported in other studies.[9,10] Women from a rural area and low socioeconomic status, who are lack of antenatal care, have more complications resulting in increased need of ICU care.

In the present study 43.85% (n=25) were primigravida and 56.14 % (n=32) were multigravida. Patient came from country side, where 23 (58.97%) of patients were primigravida. The findings of the present study were different from another study[11] where 78% were primigravida patients and 21.1% were multigravida patients.

Indications for ICU admission were hypoxemic respiratory failure (77.19%), resp distress (57.89%), pulmonary oedema (38.59%), fluid overload (45.61%), shock (36.84%), hemorrhagic shock (28.07%), unconsciousness (26.31%), convulsion (22.80%), oliguria (24.56%), anuria (12.28%), malignant HTN (15.78%), gasping breathing 4(7.01%). HTN (35.08%) was the commonest comorbidity and similar finding in another[12] study where hypertension as the most common comorbidity (31%) followed by hypothyroidism (30%) and diabetes mellitus (23%) of patients.

Among the obstetric diagnosis of admission, pregnancy induced hypertension (35.08%) and eclampsia (26.31%), obstetric hemorrhage (28.07%) was the two most common obstetric diagnosis in this study. Another study[13] demonstrated similarity where hypertensive disorders of pregnancy as the most common indication of ICU admission (30.7%) followed by obstetric hemorrhage (23.1%). Other obstetric diagnoses in this study were ruptured ectopic pregnancy 7(12.28%), HELLP syndrome 6 (10.52%), peripartum cardiomyopathy 4 (7.01%), intra uterine death with MODS 2(3.50%), abortion 2(3.50%).

Regarding ectopic pregnancy patients were not aware of their pregnancy. They presented as a care of class III or IV hemorrhagic obscure shock or severe metabolic acidosis with anemia with vague abdominal pain and all survived without death because of available point of care USG and prompt obstetric intervention. All patients were from urban group. Another study showed total 16 ectopic pregnancy patients and 7 died probably due to MODS and they came from non-urban facility.[14]

In this study, pulmonary oedema 15 (26.31%) then followed by AKI 10(17.54%), TRALI 10(17.54%), but the findings differed from another study.[7] Other common diagnosis were MODS (12.28%), PRESS (8.77%), DIC (8.77%), ARDS (7.01%), sepsis (3.50%), dengue (3.50%), acute pancreatitis[15] (3.50%), cerebral venus sinus thrombosis (3.50%), congenital Methemoglobinemia (1.75%), TTP[16] (1.75%).

In this study, cardiac disorder was the frequent non-obstetric causes of ICU admission, in contrast with the findings of other studies where sepsis was reported to be the predominant non-obstetric reason for ICU admission.[8,17,18] In Belgium, however, pre-existing and acquired cardiopathies were the most common cause for ICU admission and malignant hypertensive disorders and hemorrhage.[19] Maternal cardiac load increases significantly with increasing gestational age, especially in late pregnancy and the perinatal period, potentially leading to acute left heart failure, cardiogenic shock.

Dengue is common in our country and among the two dengue patients, one patient admitted with IUD with gasping breath and moribund condition with MODS. A retrospective cohort study from eastern Sudan reported a high mortality rate of 21.7%.[20] Another study by Machado et al., reported that the fatality rate was three times higher in pregnant women affected with severe dengue.[21]

In this study most of the patients presented with hypoxemia, hence breathing and ventilation support were provided in the form of NIV: 33(57.89%, conventional oxygen :23 (40.35%), MV: 9(15.78%), HFNC: 6 (10.52%). The findings are similar to the number of patients who received mechanical ventilation (26%) in another study.[22] The findings in the present study were different from a study,[6] where 70% of patients received mechanical ventilation, and out of them, 47% had survived. Another study from Bangladesh has similarity that 52 (49.50%) of patients received MV.[23] Availability of variety of oxygen delivery systems and noninvasive and invasive MV support system is essential and has a great impact on maternal outcome.

Current study showed that vasopressor used in 40.35% of patients, dialysis 10.52%of patients, transfusion received 29.82% of patients. Another study from govt teaching hospital, Dhaka showed that 31(11.2%) of patient required dialysis and 21 patients were survived.[14]

In this study urban patients were 31.57% and non-urban were 68.42%. Another study from Bangladesh reported similar results[24] where urban was 30.65% and rural was 69.35%. Interestingly this study showed non-urban patients were younger, hospital and ICU stay were longer than urban patients and they had fewer antenatal checkup and admitted in urban ICU from non-urban external hospital as transferred case. There is absence of ICU & emergency facilities in non-urban area in Bangladesh. So, during transfer of long hours, patient's condition worsens to find out hospitals with ICU support. Non-urban patients' length of hospital stays and ICU stay were longer and they had more MODS (15.38%) and mortality rate (12.82%) compared to urban population and APACHE II scoring was higher in non-urban: 10.35 ± 3.14, urban: 6.43 ± 2.59, $P = 0.002$.

Maternal outcomes are expected to be adversely affected by a delay due to (a) a time-lag in seeking care, (b) the ability to

access services ,or (c) the time required to receive appropriate care once the medical facility has been reached.[25,26] The first such factor may explain our finding that non-urban patients were younger than urban patients (25.24 ± *5*.57 vs 31.62 ± 5.87 $P = 0.031$) , and there were more primipara pregnancies among non-urban patients (58.97%) vs (11.11%), $P = 0.013$. Secondly, cause of delay is related to accessibility barriers, such as healthcare cost, distance and transport.[27] In addition, delay might explain why a higher percentage of non-urban patients had been referred from other less-specialized centers in this study.[28]

ICU Mortality rate among the obstetric patients was (6 out of 57) 10.52%. In the present study, the mean length of ICU stay and hospital stay for survivors and nonsurvivors was similar to that reported in other studies[5,13,29]

Comparison between survival and non-survival group had significant low pH and low bicarbonate along with low P/F ratio and significant high lactate. P value was <. 003.The mean APACHE II and SOFA scores in this study was similar to other studies.[7,10] Higher mean APACHE II and SOFA scores in the non-survivor than survivor groups were similar to that reported in other studies.[7,29,30,31] The mortality in our study was 10.52% and was not similar to the figures reported in other studies.[5,9,32,33] Explanation is that in this study patient received NIV, HFNC besides MV and protocolizes transfusion for obstetric patients. Moreover, MEWSs are a promising tool for reducing maternal morbidity and mortality. In order to improve health outcomes, MEWSs should identify patients at risk of deterioration at a time when timely attention and transfer to critical care prevent progression to severe morbidity.[34] Development of a national maternity early warning score is needed in our country.

Limitations:

Size of the sample in this study being small and it being a singlecenter retrospective study.

Conclusions

We contemplated that prompt trained dynamic team engagement is turning point in the service of postpartum hemorrhages, hypertensive disorders and cardiac events. In this study, health disparities are obvious between patients from non-urban areas. Patients from non-urban area were in more severe state and advanced state of illness upon admission, were frequently transferred from other hospitals, received less prenatal care, received more interventions, had more complications and their maternal mortality was higher. To help mitigate these disparities, we suggest that greater focus on obstetric critical care and resources be invested in obstetric healthcare in non-urban areas.

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References:

1. Maternal mortality in Bangladesh: Who, when, why, and where? A national survey-based analysis. Link to Document: jogh.13.07002
2. Leung NY, Lau AC, Chan KK, Yan WW. Clinical characteristics and outcomes of obstetric patients admitted to the intensive care unit: A 10year retrospective review. Hong Kong Med J 2010;16:1825.
3. Soubra SH, Guntupalli KK. Critical illness in pregnancy: An overview. Crit Care Med 2005;33 Suppl 10:S24855.
4. Miglani U, Pathak AP, Laul P, Sarangi S, Gandhi S, Miglani S, *et al*. A study of clinical profile and fetomaternal outcome of obstetric patients admitted to intensive care unit: A prospective hospitalbased study. Indian J Crit Care Med 2020;24:10716.
5. Joseph CM, Bhatia G, Abraham V, Dhar T. Obstetric admissions to tertiary level intensive care unit – Prevalence, clinical characteristics and outcomes. Indian J Anaesth 2018;62:9404.
6. Gupta S, Naithani U, Doshi V, Bhargava V, Vijay BS. Obstetric critical care: A prospective analysis of clinical characteristics, predictability and fetomaternal outcome in a new dedicated obstetric intensive care unit. Indian J Anaesth 2011;55:14653.
7. Sodhi K, Bansal V, Shrivastava A, Kumar M, Bansal N. Predictors of mortality in critically ill obstetric patients in a tertiary care intensive care unit: A prospective 18 months study. J Obstet Anaesth Crit Care 2018;8:738.
8. Cartin-Ceba R, Gajic O, Iyer VN, Vlahakis NE. Fetal outcomes of critically ill pregnant women admitted to the intensive care unit for nonobstetric causes. Critical Care Medicine. 2008; 36: 2746- 2751.
9. Srivastava H, Singh S, Srivatsava S, Goel N. Contributory factors for obstetric ICU admission: A prospective crosssectional study. J Clin Diagn Res 2019;13:QC147.
10. Ashraf N, Mishra SK, Kundra P, Veena P, Soundaraghavan S, Habeebullah S. Obstetric patients requiring intensive care: A one year retrospective study in a tertiary care institute in India. Anesthesiol Res Pract 2014;2014:789450.
11. Patel S, Jain S, Babu GC, Kumar MB. Socioeconomic status on pregnancy outcomes in Indian Int J Community Med Public Health 2021;8:4026.
12. Prakash GT, Das AK, Habeebullah S, Bhat V, Shamanna SB. Maternal and neonatal outcome in mothers with gestational diabetes mellitus. Indian J Endocrinol Metab 2017;21:8548.
13. Devabhaktuni P, Samavedam S, Thota GV, Pusala SV, Velaga K, Bommakanti L, *et al*. Clinical profile and outcome of obstetric ICU patients. APACHE II, SOFA, SAPS II and MPM scoring systems for prediction of prognosis. Open J Obstet Gynecol 2013;3:4150.
14. Sarker SK, Habibullah M, Tanvir SM, Uddin MK, Salim M, Rahman AKMF Maternal Outcome of Admitted Obstetric Patient in Intensive Care Unit of Dhaka Medical College Hospital, Bangladesh. *J Dhaka Med Coll. 2023; 32(2) : 124-130*
15. Sharma, Arun; Gurjar, Mohan; Azim, Afzal; Baronia, Arvind K. Acute pancreatitis in early postpartum period. A case report.*Journal of Obstetric Anaesthesia and Critical Care* 3(2):p 111-113, Jul–Dec 2013. | *DOI:* 10.4103/2249-4472.123312
16. Farhana Huq Tushi, Md Motiul Islam, Tarikul Hamid, Mohammad Rabiul Halim,Peri-partum Thrombotic Thrombocytopenic Purpura - A 29 years old Pregnant Lady presented with Convulsion and Thrombocytopenia Bangladesh Crit Care J March 2024; 12 (1): 68-71
17. Leung NY, Lau AC, Chan KK, Yan WW. Clinical characteristics and outcomes of obstetric patients admitted to the Intensive Care Unit: a 10-year retrospective review. Hong Kong Medical Journal. 2010; 16: 18-25.

18. Rios FG, Risso-Vázquez A, Alvarez J, Vinzio M, Falbo P, Rondinelli N, *et al*. Clinical characteristics and outcomes of obstetric patients admitted to the intensive care unit. International Journal of Gynecology & Obstetrics. 2012; 119: 136-140.

19. De Greve M, Van Mieghem T, Van Den Berghe G, Hanssens M. Obstetric admissions to the intensive care unit in a tertiary hospital. Gynecologic and Obstetric Investigation. 2016; 81: 315-320.

20. Ishag Adam , Ammar M Jumaa , Hagir M Elbashir , Mubarak S Karsany ·Maternal and perinatal outcomes of dengue in PortSudan, Eastern SudanVirol J . 2010 Jul 13;7:153. doi: 10.1186/1743-422X-7-153

21. Machado CR, Machado ES, Rohloff RD, et al. Is pregnancy associated with severe dengue? A review of data from the Rio de Janeiro surveillance information system. PLoS Negl Trop Dis 2013;7:e2217. DOI: 10.1371/journal.pntd.0002217

22. Panda SR, Jain M, Jain S. Clinical profile of obstetric patients getting admitted to ICU in a tertiary care center having HDU facility: A retrospective analysis. J Obstet Gynaecol India 2018;68:47781.

23. Easnem Khanum, Gulshan Ara, Md. Ashraful Islam. Management of Critically Ill Obstetric Patients Admitted in Intensive Care Unit of Enam Medical College Hospital, Savar, Dhaka Journal of Enam Medical College Vol 12 No 1 January 2022

24. Tanjila Karim1, Fahmida Shirin, Jannatul Ferdous.Obstetric Intensive Care Unit (ICU) Admission Evaluation: Experiences in a Tertiary Care Hospital . Int J Med Res Prof.2018 Sept; 4(5); 185-88.

25. Zeeman GG. Obstetric critical care: a blueprint for improved outcomes. Critical Care Medicine. 2006; 34: S208- S214.

26. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. Social Science and Medicine. 1994; 38: 1091-1110.

27. Vasquez DN, Das Neves AV, Vidal L, Moseinco M, Lapadula J, Zakalik G, *et al*. Characteristics, outcomes, and predictability of critically ill obstetric patients: a multicenter prospective cohort study. Critical Care Medicine. 2015; 43: 1887-1897.

28. Karnad DR, Lapsia V, Krishnan A, Salvi VS. Prognostic factors in obstetric patients admitted to an Indian intensive care unit. Critical Care Medicine. 2004; 32: 1294-1299.

29. Khan MS, Tahmina S, Pandey M. 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;17:2437.

30. Sailaja KB, Mk R. Critically Ill obstetric admissions to an intensive care unit: A prospective analysis from a tertiary care university hospital in South India. Indian J Crit Care Med 2019;23:7882.

31. Min Zhang1, Zhan-Hong Tang1, Han-Chun Wen1, Ying-Lin Wu1, Xing-Xin Gao2*;* Clinical characteristics and outcomes of obstetric patients requiring ICU admission: a 5-year retrospective review Clin. Exp. Obstet. Gynecol. 2021 vol. 48(1), 117-121©2021 The Authors. Published by IMR Press

32. Rathod AT, Malini KV. Study of obstetric admissions to the intensive care unit of a tertiary care hospital. J Obstet Gynaecol India 2016;66 Suppl 1:127.

33. Mohan A, Bollineni S. Predicting mortality in critically ill obstetric patients requiring intensive care unit admission in India. Indian J Med Sci 2007;61:1757.

34. Stephen Gerry , Jonathan Bedford , Oliver C Redfern, Hannah Rutter, Mae Chester-Jones , Marian Knight , Tony Kelly · Peter J Watkinson Development of a national maternity early warning score: centile based score development and Delphi informed escalation pathways BMJ Med. 2024 May 15;3(1):e000748. doi: 10.1136/bmjmed-2023-000748