

PATTERN OF ICU PATIENTS REFERRED FROM OBSTETRIC AND GYNAECOLOGY WARDS

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Abstract

Background: Management of critically ill obstetric patients in intensive care unit is a challenge. Pregnancy, delivery and puerperium can be complicated by severe maternal morbidity necessitating Intensive Care Unit (ICU) admission. So the objectives of the present study was to see the patterns of ICU referral from the obstetrics and gynaecology wards. **Materials and methods:** The study was conducted in Department of Obstetrics & Gynecology, of a tertiary Medical College Hospital and some Private Hospitals, Chittagong between January 2011 and December 2016. The antenatal patients (From 28 weeks onwards) and postnatal patients (Up to six weeks) who were referred to ICU were the study population. After collection data were analyzed by SPSS-20. **Results:** A total of 50 records kept in Gyne & Obstetrics ward. The mean age of the subjects was 27.8 ± 5.9 years and the lowest and highest ages were 18 and 40 years respectively. Majority were from rural resident (86%). Over 82% of the patients were poor and 18% middle class. The mean duration of married life of the patients was 6 ± 0.7 years and the minimum and the maximum duration were 1 year and 22 years respectively. The mean age of the last child was 2.8 ± 0.4 years and the lowest and the highest age of last child was 1 and 13 years respectively. Most (80%) of patients had a history of being pregnant 2–4 times and 18% 5–8 times and only 2% was primigravida.

In terms of parity 38% of patients was primipara, 44% had 1–3 live-birth and rest 18% between 4–7 live-birth. The main causes of admission to ICU were Post Partum Haemorrhage (PPH) (42%) hypertensive disorder of pregnancy (40%) coincidental cardiac disease 4%, sepsis 6%, post cardiac arrest 4% and shock with postpartum dilated cardiomyopathy 4%. Respiratory failure and hemodynamic instability were the indication for ICU admission. Two-third (66%) of the patients was admitted in intensive care unit for respiratory failure and 46% for hemodynamic instability. For nine (98%) of 50 patients admitted to the ICU required mechanical ventilation. **Conclusion:** Maternal morbidity and mortality in such cases can be minimized by early assessment and aggressive intervention by a team work involving obstetricians, intensive care specialists and anesthetists.

Key words

ICU patients; SAMM; Pregnancy.

Introduction

Despite much improvement in the field of obstetrics, critical care in obstetrics has received much attention in recent times. Maternal mortality is still very high in most of the developing countries. Care of critically ill patient is a unique challenge in obstetrics. Hemorrhage, anemia, septicemia, toxemia are common cause of mortality and morbidity in these patients. Many of these patients require specialized care which cannot be provided in general wards. An obstetric intensive care unit is a more recent trend which is not available in developing countries.

Intensive care medicine or critical care medicine is a branch of medicine concerned with the provision of life support or organ support system in patient who are critically ill and who usually require intensive monitoring¹. The intensive care unit is a special unit primarily concerned with illness and demands a broad based knowledge to cater for all aspects of patients to achieve good outcome.

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The intensive care unit requires a vast use of up-to-date resources such as advanced monitor, organ support equipment and highly skilled staff. In most developing nations where there are several financial constraints resulting from poor funding of the health care generally and the ICU specifically, there is often a limit to the availability and specialization of this form of care².

Besides allocation of resources, intensive care also demands a tremendous amount of time and effort on behalf of the medical and nursing staff to treat and improve survival of the critically ill patients. It therefore follows that the role of the ICU must be justified wherever it exists.

Each year nearly 5,29,000 women die globally due to pregnancy related causes. For each death, 118 women suffer from life threatening event of "Near miss Mortality" or Severe Acute Maternal Morbidity (SAMM). In a recent world health organization systemic review of maternal morbidity and mortality, transfer to an ICU was taken as an indicator for assessing the prevalence of SAMM worldwide^{3,4}.

Transfer to an ICU is one of the modern innovations to save the life of mothers. ICU facilities were needed in approximately one in three of all the maternal deaths in United Kingdom⁵.

It was reported that before the early nineties, there was a paucity of research work on the need for intensive care management of the critically ill obstetric patient. There has been increased research into this important aspect of maternal care. It is now believed that between 0.1 to 0.9% of pregnant women have complications requiring Intensive Care Unit (ICU) admission⁶.

This is often because of the need for organ support and higher levels of medical care available in the unit. Some authors now advocate for a high dependency care for the continuous care of these patients. Critical care in obstetrics has received much attention in recent times. Despite progress in medical field and improvement in health facilities provided, maternal mortality is still very high in most of the developing countries. Care of critically ill patient is a unique challenge in obstetrics. Hemorrhage, anemia, septicemia, toxemia are common causes of mortality and morbidity in these patients. Many of these patients

require specialized care which cannot be provided in general wards. An obstetric intensive care unit is a more recent trend which is not available in developing countries. Critically ill obstetric patients can now avail of technological advances that provide advanced life support. These are the patients who are at risk of developing multi organ failure.

Improvement of the quality of care among these patients while in the ICU requires well trained staff with thorough knowledge of the medical conditions encountered and the physiological changes that affect pregnancy.

Materials and methods

The study was prospective observational study conducted in the Department of Obstetric & Gynecology, of a tertiary care hospital and some private specialized centers from January 2011–December 2016. All the antenatal (After 28 weeks) and postnatal (Up to six weeks) patients who were admitted in the Department of Obstetric & Gynecology and subsequently transferred to ICU were included. The eligibility criteria of the study population all antenatal patients (After 28 weeks) and postnatal patients (Up to six weeks). Exclusion criteria were near misses and those not requiring ventilation, were managed in a high dependency area or post operative ward and ectopic pregnancy and abortion cases that need ICU admission were excluded in this study though these cases contributed to maternal mortality. A total of 50 patients meeting the above mentioned eligibility criteria were included in the study. A consecutive sampling was done to include the required number of samples. The demographic, menstrual history, obstetrical history, obstetrical causes for admission to ICU, indication for ICU admission and intervention required in ICU were included in the study. After collection data were analyzed by Statistical Package for Social Sciences (SPSS)-20.

Results

The present study was conducted on 50 pregnant women transferred to Intensive Care Unit (ICU) because of conditions that required immediate intensive intervention to save the life of the critically ill obstetric patients. The findings of the study obtained from data analyses are documented below.

Table I : Distribution of patients by age (n = 50)

Age	Frequency	Percentage
< 25	16	32.0
25 – 30	12	24.0
≥30	22	44.0

Mean age = (27.8 ± 5.9) years, Range = (18 – 40) years

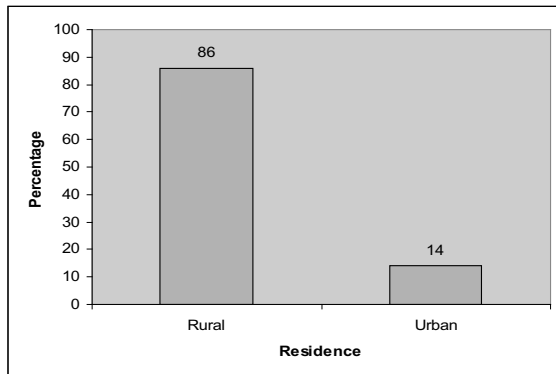


Fig 1 : Distribution of patients by rural and Urban resident

Table II : Distribution of patients by socioeconomic status (n= 0)

Socioeconomic status	Frequency	Percentage
Poor	41	82.0
Middle class	09	18.0

Socio-Economic Status: (SES) : Using scale of Rahman M et al. supported by ICDDR, after partial modification.

5. 1 Monthly income (TK)	Score	5. 2 Types of house	Score
< 3,000	01	Thatched	01
3,000 - 5,000	02	Tin	02
5,000 - 10,000	03	Brick built	03
> 10,000	04		
5. 3 Assets	Score	Type of Latrine	Score
None	00	Unsanitary	00
Simple belonging	01	Sanitary	01
Cultivable land: < 5 Bighas	02		
5 - 10 Bighas	03		
> 10 Bighas	04		
SES: - Score			
a) Lower class - 2-4		b) Upper Middle - 8-9	
c) Lower Middle - 5-7		d) Upper class - 10-11	

Table III : Distribution of patients by obstetrical history (n = 50)

Obstetrical history	Frequency (%)	Mean ± SD (years)	Range (years)
Distribution of married life		6 ± 0.7	1 – 22
Age of last child		2.8 ± 0.4	1 – 13
Gravida			
Primigravida	1 (2.0)		
2 – 4	40(80.0)		
5 – 8	9(18.0)		
Para			
Nullipara	19(38.0)		
1 – 3	22(44.0)		
4 – 7	9(18.0)		

Table IV : Obstetrical causes for admission to ICU of patients (n = 50)

Causes	Frequency	Percentage
Uncontrolled bleeding		
Placenta causes	06	12.0
Cervical laceration	02	4.0
Rupture uterus	13	26.0
Hypertension of pregnancy		
Preeclampsia	09	18.0
Eclampsia	11	22.0
Coincidental cardiac disease	2	4.0
Sepsis	03	6.0
Usual events		
Post cardiac arrest	02	4.0
DCM with HF	02	4.0

Table V : Distribution of patients by indication for ICU admission (n = 50)

Indications	Frequency	Percentage
Respiratory failure (PPH, Rupture uterus, Eclamsia)	33	66.0
Hemodynamic instability Sepsis, DCM, HF (Heart Failure)	23	46.0

Table VI : Distribution of patients by intervention required in ICU (n = 50)

Intervention required in ICU	Frequency	Percentage
Mechanical ventilation	49	98.0
Vaso-active infusion	49	98.0
Blood transfusion	30	60.0
MgSO ₄	01	2.0

Table I shows that nearly one-third (32%) patients was below 25 years of age, 24% between 25 – 30 years and rest 44% 30 years or above. The mean age of the subjects was 27.8 ± 5.9 years and the lowest and highest ages were 18 and 40 years respectively.

Distribution of patients by residence reveals that majority (86%) was rural resident and 14% urban resident (Fig 1).

Table II shows the socioeconomic status of the patients. Forty one (82%) of 50 patients were poor and 9(18%) middle class.

Table III demonstrates that the mean duration of married life of the patients was 6 ± 0.7 years and the minimum and maximum duration were 1 year and 22 years respectively. The mean age of the last child was 2.8 ± 0.4 years and the lowest and highest age of last child was 1 and 13 years respectively. Most (80%) of patients had a history of being pregnant 2–4 times and 18% 5–8 times. Only 2% was primigravida. In term parity 38% of patients was primipara, 44% had 1–3 live-birth and between 4–7 live-birth.

Table IV demonstrates that the main causes of admission to ICU was haemorrhage (42%) hypertensive disorders of pregnancy (40%) coincidental cardiac disease 4%, and sepsis 6% and post cardiac arrest 4%, post partum DCM (Dilated Cardio Myopathy) with heart failure 4%.

Table V shows the indication for ICU admission of the patients. Two-third (66%) of the patients was admitted in intensive care unit for respiratory failure and 46% for hemodynamic instability.

Forty nine (98%) of 50 patients admitted to the ICU required mechanical ventilation. Majority (98%) of patients also required vaso-active infusion, 60% transfusions of blood and 2% MgSO₄ therapy.

Discussion

In the present study, mean age of the subjects was 27.8 ± 5.9 years and the lowest and highest ages were 18 and 40 years respectively. Irene reported that the mean maternal age was 26.9 ± 8.0 years, the youngest being 19 and the eldest 42 years old which bears consistency with the finding of our study. The reason of similarity in age group in other studies might be that most of the pregnancy occurs in the 3rd decade of women's life.

We observed that, (86%) of the patients were rural resident and 14% urban resident. Bibi and her associates[6] observes 73% of the residents to come from rural and 27% from urban area. Majority came from rural areas because of delay in taking decision, less availability of transport and geographical barriers, they fail to take emergency obstetric care timely and the conditions get much worse when they need to be transferred to ICU. It was also observed in other studies^{7,8}.

In our study, the mean duration of married life of the patients was 6 ± 0.7 years and the minimum and the maximum duration were 1 year and 22 years respectively. The mean age of the last child was 2.8 ± 0.4 years and the lowest and the highest age of last child was 1 and 13 years respectively. Eighty percent of patients had 2 – 4 times experience of pregnancy and 18% 5 – 8 times. Only 2% was primigravida. In terms of parity 38% of patients was primipara, 44% had 1 – 3 live-birth and rest 18% between 4 – 7 live-birth. A study reported reported that 87% of patients had parity 1 – 4 and rest 13% more than 4⁹. Stones showed mean duration of married life of the patients to be 7 ± 0.1 years and the mean age of the last child to be 3.2 ± 1.6 years. As eighty percent of our patients were multigravidae, they are more prone to emergency obstetric problems like rupture uterus and PPH.

The present study demonstrated that the prime causes of admission to ICU were haemorrhage (42%) hypertensive disorder of pregnancy (40%). Haemorrhage was mainly caused by rupture uterus (26%) followed by placental causes (12%) and cervical laceration (4%). Of the hypertensive disorders preeclampsia and eclampsia were almost equal (18% and 22% respectively). Very few patients were admitted due to coincidental cardiac disease 4%, sepsis 6% and post cardiac arrest 8%. In another study obstetric haemorrhage

was the 3rd common cause of the illness responsible for ICU transfer bearing similarity with the findings of the present study. In that study most of the women were multiparous and developed post partum haemorrhage due to uterine atony. A study reported that 16.9% of patients was admitted due to placental causes, 6% due to cervical laceration, 1.2% due to rupture uterus, 1.5% preeclampsia, 4.8% HELLP syndrome, 3.6% cardiac disease, 1.2% sepsis and another 1.5% post cardiac arrest indicating that the causes were quite different from that found in the preset study¹⁰.

We observed that two-third (66%) of the patients admitted in intensive care unit for respiratory failure and 46% for hemodynamic instability. In a study it was observed that 35% of patients admitted in ICU was for respiratory failure and hemorrhagic shock¹⁰. Majority (98%) of patients admitted to the ICU required mechanical ventilation and vaso-active infusion, 60% for transfusion of blood and 2% to receive MgSO₄ therapy. This is contrary to Bibi who found that 53% admission in ICU required mechanical ventilation, 33% vaso-active infusion, 40% blood transfusion and 33% to MgSO₄ therapy. In our study delayed presentation might be a causes of mechanical ventilation⁶.

In our study 82% of the patients admitted in ICU died. Bibi conducted a study in Pakistan reported that obstetrics haemorrhage was the main cause of morbidity and mortality⁶.

Most of the women who died of their conditions in ICU had preventable causes provided they received emergency obstetric care timely. Thus the study findings suggest that a separate ICU with well-equipped technology and specially trained staff adjacent to the obstetric ward could handle most if ICU admitted cases properly thereby further worsening of the cases and mortality.

Conclusion

The two most common causes for admitting obstetric patients to ICU were rupture uterus and hypertensive disease of pregnancy like preeclampsia and eclampsia. Very few patients were found to be admitted coincidental cardiac disease, sepsis and post cardiac arrest. Respiratory failure and hemodynamic instability were the indications for ICU admission. Mechanical ventilation, vaso-active infusion and blood

transfusion were the commonest intervention required. Maternal morbidity and mortality in such causes can be minimized by assessment and aggressive intervention by a team work involving obstetricians, intensive care specialists and anaesthetists.

We have some limitations like study sample was small, single center and absence of long term followup of the study patients.

Disclosure

All the authors declared no competing interest.

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