

## STUDY OF OBSTETRIC CASES REQUIRING INTENSIVE CARE UNIT MANAGEMENT

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### Abstract

**Background :** Management of critically ill obstetric patients in intensive care unit is a challenge. Pregnancy, delivery and puerperium may be complicated by severe maternal morbidity necessitating Intensive Care Unit (ICU) admission. Management of the critically ill obstetric patient is very complex and requires co-operation of obstetricians with experts of other discipline. **Materials and methods :** This cross sectional observational study is designed on a total of 50 obstetric patients admitted in ICU, the frequency, socio demographic factor, intervention & outcome. Data was collected by researcher herself and analyzed by appropriate statistical procedure (SPSS- 20) then presented and submitted. **Results :** Regarding indication of ICU admission eclampsia was 29(58%) PPH 9(18%) sepsis 5(10%) ruptured uterus 4(8%) and LVF 3(6%) among all patient admitted in ICU 48(98%) got ventilator support during their admission in ICU and 2(4%) were not ventilated. In ICU 23(46%) patients died and 27(54%) were discharged alive. **Conclusion :** Obstetric patients pose a major management challenge to ICU physicians and obstetricians due to altered physiology during pregnancy, consideration of fetal wellbeing, and the unique type of disorders to be dealt with. As it is a helpful and important facility for the management of obstetric emergency. Establishment of obstetric ICU is essential in all tertiary hospital.

### Key words

Intensive care unit; Obstetric patient; Eclampsia; PPH.

### Introduction

Intensive Care Units deals with the most serious injuries and illnesses, most of which are life-threatening and need constant close monitoring and support from special equipment and medication in order to maintain normal bodily functions. They are staffed by highly trained doctors and critical care nurses who specialize in caring for the most severely ill patient.

The Obstetric patient may be afflicted with any surgical or medical condition necessitating ICU admission<sup>1</sup>. According to the World Health Organization (WHO) “there is a story behind every maternal death or life threatening complication, and understanding the lessons to be learnt can help to avoid such outcomes.” Although obstetric patients form a significant proportion of ICU admissions in developing countries, there are only very few studies from these countries<sup>2</sup>.

If we know the admission and referral pattern of ICU cases from gynae and obstetric ward it will further enrich us for future planning regarding set up of ICU and manpower and infrastructure development<sup>3</sup>.

This study Is designed to identify the indications of ICU admissions of critically ill obstetric patient, which will help us to prevent the causes by antenatal measures, so that ICU admission rate can be reduced & also helps in planning regarding ICU set up in all tertiary centers with obstetrics & gynecological facilities.

### Materials and methods

This study was done between July 2014 to December, 2014 in the Department of Gynae and Obstetrics and Intensive care unit of Chittagong Medical College Hospital. This study was a cross sectional observational study and technique was purposive sampling.

Patient who referred to ICU or admitted in ICU due to obstetric causes are taken as study population and a total of 50 patient referred to ICU were taken as sample size, Patient or guardian who are

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unwilling to be included in the study, are excluded. From all eligible subjects after getting consent, clinical history was taken and clinical examination was done to elicit findings related caused of ICU admission and other clinical parameters, Important investigation finding, treatment option and mode of ventilation were also be recorded.

All relevant data were noted in pre tested data sheet, and then all data was checked and edited after collection. Then data were entered into computers statistical analysis of the results being obtained by using windows based computer software devised with SPSS-20. All data was evaluated by using statistical methods and presented in tables and figures. The statistical terms included in this study are mean, standard deviation, percentage. Statistical significance will set at  $p < 0.05$  and confidence interval set at 95% level.

As per rule of ethical committee of Chittagong Medical College Hospital.

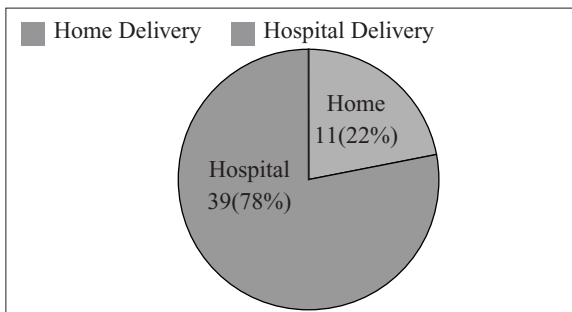
## Results

**Table I :** Age distribution

	Frequency	Percent
<25 years	21	42.0
25-35 years	18	36.0
>35 years	11	22.0
Total	50	100.0

**Table II :** Indication of admission in ICU

	Frequency	Percent
Eclampsia	29	58.0
Ruptured uterus	4	8.0
Sepsis	5	10.0
PPH	9	18.0
LVF	3	6.0
Total	50	100.0



**Fig 1 :** Place of delivery

**Table III :** Mode of treatment in ICU

	Frequency	Percent
Ventilated	48	96.0
Not ventilated	2	4.0
Total	50	100.0

**Table IV :** outcome of admitted patients

	Frequency	Percent
Improved	27	54.0
Died	23	46.0
Total	50	100.0

Regarding age group most of them were < 25 years next to which was at 25-35 years (Table I)

Regarding indication of ICU admission eclampsia was 29(58%), ruptured uterus 4(8%), sepsis 5(10%), PPH 9(18%) and LVF 3(6%) (Table II).

Among 50 women home delivery was 11(22%) and hospital delivery was 39(78%) (Fig 1).

Among all patient admitted in ICU 48(96%) got ventilator support during their admission in ICU and 2(4%) were not ventilated (Table III).

Among 50 admitted patient in ICU 23(46%) patient died and 27(54%) were discharged alive (Table IV).

## Discussion

The health care system of Bangladesh aims to protect/improve maternal and child health, by means of antenatal, intranatal, and postnatal services that are readily available at very low costs. Whilst the MMR is decreasing over the past 10 years, the above-mentioned services have contributed to the decreasing and now very low maternal mortality rates.

Despite advances in obstetric care, the admission rate to the ICU is increased in our country. Whereas such ICU utilization rates for obstetric cases are not so high compared with other countries abroad<sup>3</sup>. The rates were also higher than those reported by Leung et al (Admission 0.13%, utilisation 0.65%)<sup>4</sup>.

One of the reasons for the rise in ICU admission rate was increase number of complicated patient refer to tertiary center. The number of surgical

admissions was also much lower than a decade earlier. Changing attitudes of obstetricians and anaesthetists also contributed to the increase in ICU admission rate. Given the fact that our patients were most commonly delivered by elective caesarean section for placenta praevia, A proper pre-operative management plan with a multidisciplinary approach involving anaesthetist, intensive care physician, and obstetricians, should have been available before the operation, which included booking of the ICU bed.

With the increasing trend of placenta praevia, it was expected that more and more patients would be admitted to the ICU electively for monitoring rather than any active intervention. The shorter duration of ICU stays, compared with those detailed earlier by Tang et al is probably consistent with this trend towards elective admissions<sup>3</sup>.

The mean age of our patients at delivery was higher than that in the patient series described by Tang et al and Leung et al<sup>3,4</sup>. Indeed, patients of advanced maternal age were more likely to be admitted to the ICU when compared with our background population. Increasing maternal age implies more likely to have co-existing diseases complicating pregnancy.

During our data analysis, twin pregnancy was more likely in our ICU patients compared with the background population. Twin pregnancy is known to confer a higher risk of gestational diabetes, hypertension, premature delivery, operative deliveries, and postpartum complications (Including PPH)<sup>5,6</sup>. Our findings also supported the need of a specialized twin pregnancy clinic to look after this high-risk group.

The current series had more patients with pre-eclampsia or eclampsia admitted to the ICU than those reported by Tang et al<sup>3</sup>. Intensive care is indicated in patients with severe hypertension, or moderate hypertension with symptoms of impending eclampsia or any suggestion of organ dysfunction.

Placenta praevia and abruption placenta are being the commonest causes of PPH in our ICU patients. . Postpartum haemorrhage was one of the common indications for ICU admission, which was also noted in Tang et al's series<sup>3</sup>. Admission due to blood loss due to different causes of our patients was apparently higher than that reported by Tang et al<sup>3</sup>.

In our series, the mean duration of ICU stay was 4.14 days, who were alive had 4.34 days. ICU stay was similar to 4.1 days reported in Tang et al's study<sup>3</sup>. The change in attitude and approach to management of critical obstetric patients by both obstetricians and anaesthetists, made ICU admission a more elective occurrence than before. As a result, patients admitted to the ICU need fewer invasive interventions. These observations highlight the need for obstetric high dependency units for patients requiring more intensive care, but not to the extent of ICU support.

When compared with the findings reported by Leung et al, over the decades there was no significant increase in perinatal mortality, nor was there an increased rate of fetal loss when compared with our background population<sup>4</sup>. Nevertheless, maternal mortality had not decreased. In our series, there were 46% maternal deaths. In Tang et al's series the maternal mortality was 5 per 100 000, and in the UK it was reported to be 14 and 11 per 100 000 in 2003-2005 and 2006-2008, respectively<sup>3,7</sup>.

In our study, long-term outcome was not determined. Leung et al found that women admitted to the ICU had lower mean scores for quality of life than normal<sup>4</sup>. The relationship of low scores to the obstetric illnesses was unclear and might be resolved by long-term patient follow-up.

#### **Contribution of authors**

FH - Conception, design acquisition of data drafting and final approval.

RB - Analysis, interpretation of data, critical revision of content and final approval.

MJR - Acquisition of data, interpretation of data, critical revision and final approval.

KS - Analysis, drafting and final approval.

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**Limitations**

1. Single centre study
2. Small sample size
3. Short study period.

**Recommendations**

1. Multicenter large scale study with a bigger sample is essential to find the national scenario
2. Establishment of ICU setup in all tertiary centers with all obstetric and gynecological facilities.

**Conclusions**

The critically ill obstetric patient presents a unique clinical challenge to the intensives because of maternal physiological adaptations to pregnancy, pregnancy specific conditions which may require critical care management & also the presence of fetus, whose well being is linked to the mother. Successful maternal & neonatal outcomes for patient admitted in ICU are largely depends on a multidisciplinary approach to management requiring input from critical care personals, obstetricians, anesthetists neonatologists.

**Disclosure**

All the authors declared no competing interest.

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