



ROLE OF OBSTETRIC HIGH DEPENDENCY UNIT AND INTENSIVE CARE UNIT IN REDUCING MATERNAL MORTALITY IN A TERTIARY CARE HOSPITAL

Gynaecology

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KEYWORDS

INTRODUCTION:

Maternal mortality rate is an index of health care in the community and state. The maternal mortality rate in India is 113 per 100000 live births in 2018-2019¹. Purpose of the study was to analyse obstetric admissions in Intensive Care Unit (ICU) and High Dependency Unit (HDU) and to identify the risk factors responsible for intensive care admissions. Maternal mortality in Rajasthan is 186 per one lakh².

Though pregnancy and labour are considered a physiological process the potential for catastrophic complication is consistent and may develop in a minute. Global prevalence of Severe Acute Maternal Morbidity (SAMM), defined as severe life threatening obstetric complication necessitating urgent medical intervention in order to prevent likely death of mother, varies from 0.015 to 8.23%.³ HDU provides onsite critical care facilities which reduces need to transfer patients to general medical/surgical ICU⁴.

Level of critical care, depends on the number of organs requiring support and the type of support required and it is determined by intensive care society's (ICS) level of care document⁵.

By 2010 AD MMR was 210/100000 live births and perinatal mortality was 50/1000 live births. More studies are required on this patient group so as to create appropriate and better health-care facilities for each and every woman with complications related to childbearing. An obstetric ICU staffed by maternal-fetal medicine specialists and anaesthesiologists can provide the same level of care for critically ill obstetric patients as that provided by medical intensive care. The benefits of an obstetric ICU are found to be Intensive observation and organization allows prevention or early recognition and treatment of complication and continuity of care is provided before and after delivery.

In some developing countries 1 in 11 pregnant women may die of pregnancy related complications compared to 1 in 5000-10000 in some developed countries⁶. 72% of maternal deaths are due to direct causes of obstetric complications such as haemorrhage, hypertension, sepsis, and unsafe abortions.

India's Maternal Mortality Ratio has declined from 130 (2014-16) to 113 (2016-2018)¹.

Nowadays obstetric emergencies are a challenge to the obstetricians and should be managed in HDU and a well-equipped dedicated obstetric ICU.

MATERIALS AND METHODS:

It is a retrospective hospital based observational study of obstetric cases admitted to HDU and ICU over a period of 4 years from January 2016 to December 2019. All the pregnant and post-partum patients admitted to HDU and ICU of J.K. Lone Hospital, Kota, Rajasthan.

Our hospital is a tertiary care centre, hence most of the complicated obstetric cases from the surrounding peripheries, even adjacent state of Madhya Pradesh are referred to us. The department has facilities for antenatal, postnatal and gynaecological care.

We have 8 bedded ICU and 5 bedded HDU. We have 24 hours blood bank and laboratory facilities, the services in our hospital are free of cost and covered under JSSY.

The admissions were identified from the HDU and ICU register, and the case records of the patients were studied in detail.

The parameters noted were the age, parity, diagnosis on admission, associated medical and surgical conditions, reasons for HDU and ICU admission, any surgical procedure performed, antenatal or postnatal status, details of treatment given like ventilator support, blood and blood components transfused, ionotropic support and dialysis.

INCLUSION CRITERIA:-

1. All pregnant women irrespective of the duration, site of pregnancy and booking status.
2. All women within 6 week of postpartum and post abortal period.
3. All obstetric patients with pre-existing medical disorders requiring admission in ICU and HDU.

EXCLUSION CRITERIA:-

1. All non-obstetric patients.

Definitions:

- Antenatal care was defined as at least three hospital visits.
- Delay was defined as time lost between onset of symptoms to administration of treatment. The first delay was taken as delay in seeking care due to late recognition of problem, fear of hospital or cost that will be incurred. The second delay was taken as delay in reaching the care facility due to transportation problems. The third delay was taken as delay in obtaining care at facility due to poor facilities, under staffing and bed unavailability.
- Critical care in obstetrics- A critically ill obstetric patient was defined as one who develops acute and potentially unstable life threatening complications during pregnancy, labour, puerperium for which she needs intensive care and/or life supporting system
- Obstetric intermediate care unit / HDU- These are units within delivery suites. It incorporates the guidelines for intermediate intensive care which is provided by foetal and maternal medicine specialist.
- Obstetric ICU- These are full care ICU's operated by obstetric and anaesthetic personnel.
- Patients with obstetric emergencies may be divided into three categories

1. A low risk monitoring group.
2. Patients requiring intensive conventional therapy (HDU).
3. Patients requiring ICU therapy.

Patient in first group require frequent monitoring of their vital signs, neurological evaluation, ECG or pulse oximetry. Intensive conventional therapy is required primarily for prevention of complications. Specific ICU therapy includes haemodynamic monitoring, mechanical ventilation and titrated vasoactive drug (for septic shock and Acute Respiratory Distress Syndrome (ARDS)).

Patients in HDU may require ICU admission later (step up) or at the same time patients in ICU who had improvement in their condition may be shifted to HDU (step down).

DATA ANALYSIS:

Categorical variables were expressed as proportions. Chi square test was applied to compare categorical variables. The data was analysed

using SPSS software version 21 and a p value of <0.005 was considered significant.

RESULTS:

During the last two year period there were 32,423 obstetric admission in jan,2018 – dec,2019 in J.K Lon hospital. 22,515 mothers delivered. Of total admissions 1.1% required admission in ICU and 3.8% required admission in HDU. A total of 357 patients were admitted in ICU and 1247 in HDU.

Table:1- Age distribution and ANC Booking status of patients.

Age	Number of patients in ICU	%	Number of patients in HDU	%
20-25	189	53.13%	698	56%
26-30	89	25%	362	29%
31-35	56	15.62%	124	10%
>35	23	6.25%	63	5%
TOTAL	357	100%	1247	100%
Booking status				
UNBOOKED	324	90.62%	1060	85%
BOOKED	33	9.38%	187	15%

Table:2- Pregnancy status at the time of admission in ICU

Status	No of patients in ICU	%	No of patients in HDU	%
Antepartum	56	15.6%	723	58%
Postpartum	245	68.8%	399	32%
Postabortal	56	15.6%	125	10%
	357	100	1247	100%

Figure-1

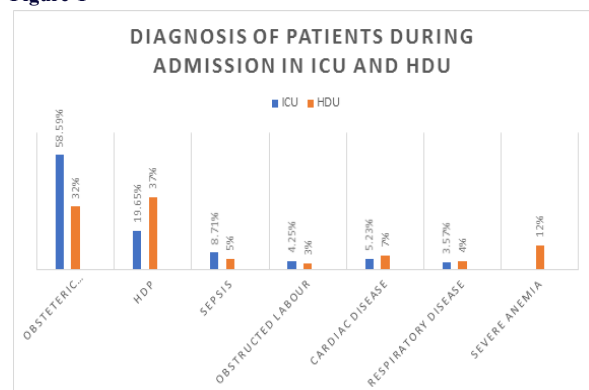


Table:3-mode Of Intervention In Icu And Hdu

INTERVENTIONS	FREQUENCY (N) IN ICU	%	FREQUENCY (N) IN HDU	%	
Mechanical ventilation	survivor	77	21.56%	-	-
	Non-survivor	46	12.88%	-	-
TOTAL Ventilation	123	34.4%	-	-	-
Inotropes	257	71.9%	-	-	-
Blood and blood products	303	85%	1097	88%	-
Antihypertensive	67	18.75%	461	37%	-
Anticonvulsant	57	15.6%	250	20%	-
LSCS		21.9%		30%	-
Dialysis	22	6.2%	-	-	-
Peripartum hysterectomy	57	15.6%	-	-	-
Dilation and curettage	33	9.38%	162	13%	-
Uterine packing and balloon tamponade	22	6.2%	62	5%	-
Laprotomy*	89	25%	62	5%	-

*Include ruptured Ectopic, selective devascularization and uterine compression suture.

FIGURE-2

Distribution of cases according to duration of stay in ICU and HDU

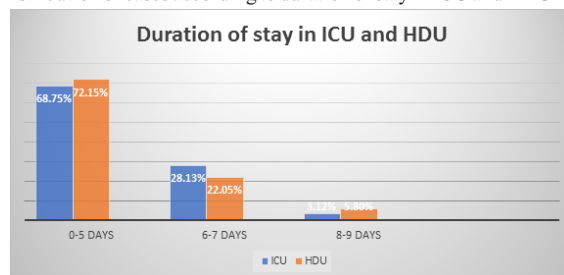


Table:4- Outcome of obstetric patients.

	ICU	%	HDU	%
Shift to ward	150	42.02%	1095	87.80%
Shift to HDU	105	29.4%	-	-
Shift to ICU	-	-	65	5.21%
Shift to Medical ICU (MBS hospital)	32	8.96%	62	4.96%
LAMA	07	1.96%	25	2.03%
Death	63	17.66%	-	-

Table:5- Performance of obstetric HDU/ICU and pregnancy outcome.

Causes of maternal death	Combined ICU+HDU critical patients (Jan 2016-Dec 2017)	Maternal death in (Jan 2016-Dec 2017)	2018-19 NO of patients ICU	2018-19 NO of patients in HDU	Maternal death in 2018-19
APH	232	7	85	152	3
PPH	394	19	104	223	20
Ectopic pregnancy	45	4	10	24	1
HDP	445	16	70	462	15
Septicemia +hepatic failure+DIC	126	13	31	62	10
Obstructed labour +ruptured uterus	53	3	15	37	1
Heart disease	85	4	19	87	3
Aspiration	12	1	5	-	1
Swine flu+respiratory disease	22	1	8	50	2
Stroke+transfusion reaction+Ebolism	28	9	-	-	4
Severe anaemia	64	5	10	150	3
TOTAL	1506	82 (5.44%)	357	1247	63(3.93%)

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