

## Review of obstetric admissions in Intensive Care Unit (ICU) At Goa Medical College

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**Abstract:** One year retrospective study of obstetric admissions (antenatal and postnatal up to 6 weeks post delivery) in the year October 2017 to September 2018 at ICU of Goa Medical College. Total number of patients admitted to ICU during this period, total number of deliveries in study period and total obstetric patients admitted to ICU were noted. The data included demographic details, obstetric history, indications for ICU admission, pre existing medical illness and pregnancy complications requiring ICU admissions. The most common obstetric condition for admissions in ICU was preeclampsia (20%) out of 59.45% obstetric conditions while heart disease (14.8%) out of 33.78% of medical disorders affecting pregnancy. The maternal mortality was 8.10% of all the obstetric admissions in ICU. There is an increase in the medical causes of ICU admissions of obstetric patients at tertiary hospitals like Goa Medical College. Better antenatal care and prompt diagnosis of emergent conditions in obstetric patients at the peripheral health centres enable better maternal care and reemphasize the need for obstetric high dependency units.

**Key Words:** obstetric patients, obstetric admissions, ICU, high dependency unit

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### I. Introduction

Pregnancy is a physiological process and for women in reproductive age group, the journey is uneventful most of the times, however complications occur suddenly and may lead to maternal mortality. Though such complications of obstetric admissions form a minority of ICU admissions, mortality among them is high. The developed countries have 0.08%-0.76% deliveries and developing countries have 0.13%-4.6% deliveries requiring ICU care.<sup>1,2</sup>

### II. Material And Methods

This retrospective study was carried out on patients of Department of obstetrics and gynecology at Goa Medical College, Bambolim, Goa from October 2017 to September 2018.

**Study Design:** retrospective observational study

**Study Location:** This was a tertiary care teaching hospital based study done in Department of Obstetrics and Gynecology at Goa Medical College, Bambolim, Goa

**Study Duration:** October 2017 to September 2018

**Sample size:** 75 patients

**Subjects & selection method:** It is a one year retrospective study of obstetric admissions (antenatal and postnatal to 6 weeks post delivery) in the year October 2017 to September 2018 at ICU of Goa Medical College. Total number of patients admitted to ICU during this period, total number of deliveries in study period and total obstetric patients admitted to ICU were noted.

The data included demographic details, obstetric history, indications for ICU admission, pre existing medical illness and pregnancy complications requiring ICU admissions. Goa Medical College and hospital is a medical college-attached hospital. Cases from all over the state and also some places of nearby states are referred to this institute.

The ICU of the hospital is a 21 bedded ICU managed by the anesthetists. 24-h laboratory and blood-bank facilities are available. The ICU does not have dialysis facility for which we have to shift the patient to adjacent nephrology block. Cardiologists, nephrologists, neurologists, and pulmonologists are available as and when required for consultation. In this hospital, all the services for pregnant women and women in puerperium especially ICU admission and investigations are free of cost for natives of the state under DDSSY scheme.

### III. Result

During the study period, there were 6023 obstetric admissions , 1482 ICU admissions and 4024 deliveries. 75 obstetric patients were admitted to the intensive care unit. ICU cases accounted for 1.37% of all obstetric admissions and 1.83 % of all deliveries. 22.67% of the cases in ICU were referred from outside state hospitals.

37.33 % of the cases were in the age group of 26–30 years, followed by 30.66 % of the patients in age group 31–35 years (Table 1). 56% of women were in their first pregnancy followed by 40 % of women who were in their second pregnancy (Table 2). 84% were referral cases from other hospitals within and outside the state of Goa (Table 3).

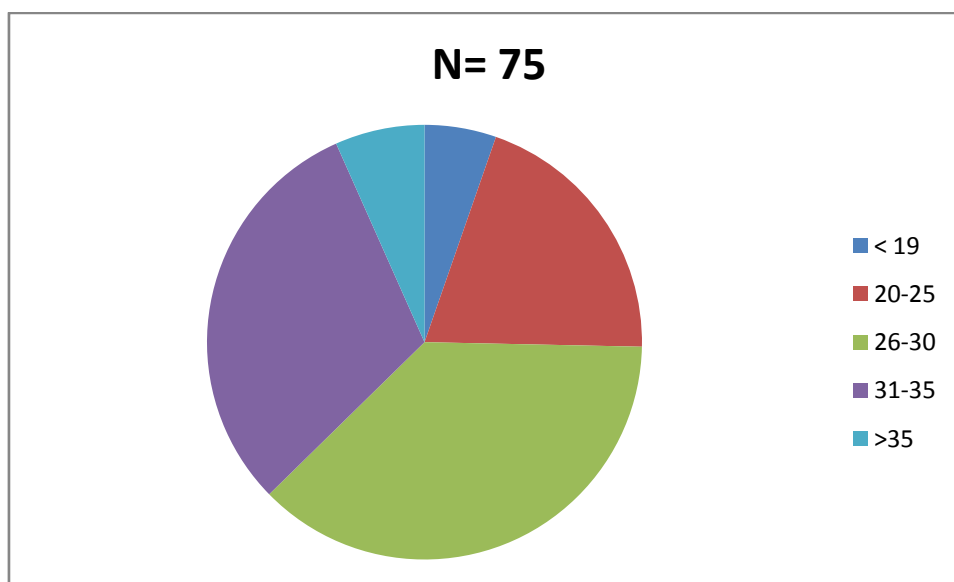
Gestational age on admission to the hospital was calculated predominantly based on the date of last menstrual period. Majority of the women were of 29–40 weeks of gestation accounting for 76 % of cases. 9.45 % of women were admitted to our hospital in puerperium (Table 4). Majority of cases were referrals from south Goa hospitals 50.67% followed by North Goa 20.67%. (Table 5) . 50.27% were admitted for 2- 4 days and 30.7% were for up to 7 days in ICU(Table 6). The different conditions diagnosed on admission to the hospital ranged from common conditions like preeclampsia to IC bleed and embolism. As shown in Table 7, eclampsia (37.33%) was the commonest condition requiring ICU admission followed by obstetric hemorrhagic shock (14.6 %). The other major conditions were abruption placentae (12 %), heart disease (13%), and placenta praevia (9 %). Our hospital does not have an HDU so the cases were admitted in ICU. The other comorbidities associated with admissions are hypertension (40%) and 14% had heart disease (Table 8).

The commonest surgical procedure performed was the cesarean section (62.6 %) followed by instrumental vaginal deliveries (17.3 %) (Table 9). The commonest therapy given (Table 10) was the higher antibiotics (93 %) followed by ventilator support (63%) followed by packed cell transfusion(58%), and followed by blood product transfusion(50 %). The number of maternal deaths was 7 which accounts for 9.3 % of obstetric patients admitted in ICU (Table 11). There were 646 deliveries among ICU patients. 45 % were live births, and all were neonatal intensive care admissions (Table 12).

### IV. Tables

#### 1) Age Distribution

<u>AGE IN YEARS</u>	<u>N= 75</u>	<u>PERCENTAGE</u>
< 19	4	5.33
20-25	15	20
<b>26-30</b>	<b>28</b>	<b>37.33</b>
31-35	23	30.66
>35	5	6.67



2) **Obstetric Index**

OBSTETRIC INDEX	N = 75	PERCENTAGE
<b>PRIMIGRAVIDA</b>	<b>42</b>	<b>56%</b>
MULTIGRAVIDA	30	40%
POSTABORTAL	3	4%

3) **Booking status**

BOOKING STATUS	N=75	PERCENTAGE
BOOKED	10	13.34
<b>REFERRED</b>	<b>63</b>	<b>84</b>
UNBOOKED	2	2.67

4) **Gestational Age**

WEEKS	N= 75	PERCENTAGE
< 12	5	6.67
13-28	6	8
<b>29-40</b>	<b>57</b>	<b>76</b>
>40	nil	nil
PUEPERIUM	7	9.34

5) **nativity**

ADDRESS	N = 75	PERCENTAGE
NORTH GOA	20	26.67
<b>SOUTH GOA</b>	<b>38</b>	<b>50.67</b>
MAHARASHTRA	12	16
KARNATAKA	5	6.67
OTHERS	NIL	NIL

6) **duration of ICU stay**

DURATION OF STAY	N = 75	PERCENTAGE
<= 6 HOURS	2	2.67
7 HOURS TO 2 DAYS	6	8
<b>&gt;2 DAYS TO 4 DAYS</b>	<b>38</b>	<b>50.67</b>
>4 DAYS TO 7 DAYS	24	32
>7 DAYS TO 10 DAYS	3	4
> 10 DAYS	2	2.67

7) Indication for ICU care

INDICATION	N =75	PERCENTAGE
<b>ECLAMPSIA</b>	<b>28</b>	<b>37.33</b>
ABRUPTIO PLACENTA	9	12
SHOCK	11	14.67
PLACENTA PREVIA	6	8
HEART DISEASE	10	13.34
RUPTURE UTERUS	2	2.67
PPH	3	4
EMBOLISM	1	1.34
IC BLEED	1	1.34
AKI	2	2.64
ARDS	2	2.64

8) associated surgical/ medical co morbidities

CO MORBIDITIES	N=75	PERCENTAGE
ANEMIA	9	12
HEART DISEASE	14	18.6
<b>HYPERTENSION</b>	<b>30</b>	<b>40</b>
OTHERS	22	29.3

9) Surgical Procedures

PROCEDURE	N=75	PERCENTAGE
<b>LSCS</b>	<b>47</b>	<b>62.6</b>
OBSTETRIC HYSTERECTOMY	6	8
INSTRUMENTAL VAGINAL DELIVERY	13	17.3
EVACUATION	5	6.67
LAPROTOMY	4	5.34

10) Treatment in ICU

TREATMENT	N=75	PERCENTAGE
BLOOD TRANSFUSION	44	58
IONOTROPES	27	36
VENTILATORY SUPPORT	52	69
DIALYSIS	11	15
BLOOD COMPONENTS	38	50
<b>ANTIBIOTIC (HIGHER)</b>	<b>70</b>	<b>93</b>
ANTIHYPERTENSIVES (>1)	42	56

11) maternal outcomes

OUTCOMES	N 75	PERCENTAGE
EXPIRED	7	9.3
TRANSFERRED TO WARD	8	10.6
<b>DISCHARGED</b>	<b>60</b>	<b>80</b>

12) Neonatal outcomes

	LIVE BIRTH	STILLBIRTH	ECTOPIC
2017	8	6	3
<b>2018</b>	<b>45</b>	<b>9</b>	<b>4</b>

V. Discussion

Obstetrics is a different branch of medicine dealing with two lives and managing complications. There is a very low threshold for pregnant patients to admissions in ICU.

STUDY <sup>3,4,5</sup>	OBSTETRIC CASES IN ICU	DELIVERIES REQUIRING ICU	ICU ADMISSIONS OF OBSTETRIC CASES
RATHOD ET AL <sup>3</sup>	1.19%	1.24%	1.19%
SHAHEENA ET AL <sup>4</sup>	80.37%	0.9%	-
GHIKE ET AL <sup>5</sup>	0.77%	1.04%	2.21%
<b>THIS STUDY</b>	<b>4.37%</b>	<b>1.83%</b>	<b>1.34%</b>

Comparing our study to various other studies conducted on obstetric admissions, the results show some similarities in the range of age distribution especially because most women are part of the reproductive age group, however there is a steady rise of women over the age of 40 years due to ART and associated complications in pregnancy needing ICU care.

	RATHOD ET AL	GHIKE ET AL	PATNAIK ET AL
AGE	20-25 YEARS (56.20%)	18-32 YEARS	20-30YEARS (79.6%)
OBSTERIC INDEX	PRIMI (38.43%)	-	MULTI (48.1%)
GESTATION	29-34WEEKS (13.49%)	36-42 WEEKS (42-55%)	-

The study showed an increased number of ICU admissions among primigravida and those in the 3<sup>rd</sup> trimester. The likely explanation could be the poor diagnosis of pre existing conditions or first time pregnancy associated morbidities noted in patients with no prior history of any disease. Hence, there is a need for education in peripheral hospitals for the nurses and junior doctors to identify at-risk cases and for timely referral not only in labor but in antenatal period.

Postpartum complications were more especially postpartum hemorrhage, patients requiring cesarean section were shifted to the ICU after cesarean, some patients with risk factors were already in active labor and were shifted to the ICU after delivery, cases were referred from outside after delivery, and some patients developed complications during cesarean section. Postoperative admissions were not out of complications related to surgical skills but because of the antenatal morbidity for which cesarean was done.

For example, conditions like placental abruption, obstructed labor, HELLP syndrome, severe preeclampsia, and eclampsia that require operative delivery, as such, are more prone for postpartum hemorrhage and disseminated intravascular coagulation. The severe preeclampsia patients are more prone for pulmonary edema after cesarean section. Operative delivery in the presence of medical or obstetric complication can be a potential risk factor for ICU admission.

The most common cause for admissions of obstetric cases in ICU was eclampsia and the requirement of antibiotics required for the same. The patients remained for 2-4 days maximum after LSCS as the most common operative intervention in the ICU and mostly were discharged after they were improved from their co morbidities and complications indicative of the timely intervention and management. Often it was noticed that the anaesthesiologist preferred keeping the eclamptic patients in the ICU for monitoring for 48 hours after the surgery (mostly LSCS) to ensure that patient was stable post operatively.

In comparison to the other studies<sup>3,4,5,6</sup> where obstetric hemorrhage was the leading reason of the admissions in them and most deaths occurred due to hemorrhagic shock, while in our study it was mostly VAP and MODS post a prolonged stay at the ICU.

STUDY	DURATION OF ICU STAY	INDICATION OF ICU ADMIT	RX IN ICU	MED COMORBIDITY	SX PROCEDURE	CAUSE OF DEATH
RATHOD ET AL	2 DAYS (46.2%)	OBS HMGE (44.05%)	BLOOD (51.37%)	ANEMIA (14.37%)	LSCS (37.1%)	HMGIC SHOCK (26.8%)
SHAHENA ET AL	-	OBS HMGE (37.6%)	BLOOD (45.2%)	HEART DS (6.1%)	-	HMGIC SHOCK (5.11%)
GHIKE ET AL	-	OBS HMGE (28.4%)	-	ANEMIA & HEART DS (19.25%)	-	DENGUE MALARIA (31.9%)
PATNAIK T ET AL	-	OBS HMGE (29%)	VENTILATOR (72.2%)	SEPSIS (11.11%)	-	HMGIC SHOCK (55.5%)

The study conducted by Pollock W *et al*<sup>7</sup> reviewed available literature with regard to obstetric admissions in ICU and it showed that a majority of studies highlight ICU admission with scarce data on the outcome, follow-up and multidisciplinary management. Thus, it is necessary to carry out studies wherein the outcome of this group of patients is studied in detail.

## VI. Conclusion

Obstetric morbidity and mortality continues to be an important predictor of the healthcare system in a country, and a continuous vigilance is required to assess the drawbacks and rectify them at the earliest. There is a need to train obstetricians in obstetric medicine and critical care to do justice to these critically ill pregnant women. To prevent such deaths personnel at primary health care and antenatal care providers should be trained regularly in health care management and identify pre existing or manageable obstetric conditions. Timely referrals of such cases to tertiary centers for further management can be life saving. The installation of High dependency units (HDU) in obstetric departments can reduce the load off the ICU and enable obstetricians to manage the patients accordingly and even conduct deliveries and monitor labor of patients requiring intensive monitoring. As pregnancy related hypertension and obstetric hemorrhage are the major causes of ICU admissions, the HDU can be used as an option for more efficient monitoring and management intrapartum and postpartum.

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