

**A 3 YEAR STUDY OF CARDIAC DISEASE IN PREGNANT WOMEN IN A TERTIARY CARE SET UP**Shashikala H. Gowda<sup>1</sup>, Mansi Dhingra<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

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**AIM AND OBJECTIVE:** To analyze pregnant women with heart disease and to assess its influence on fetomaternal outcome. **MATERIALS AND METHODS:** The study was carried out during the period of November 2011 to October 2014. 45 pregnant women with cardiac diseases who were admitted in department of obstetrics and gynecology at KIMS hospital were included in the study. **RESULTS:** Rheumatic heart disease (n=24, 53.33 %) with isolated mitral stenosis (24.4%) was the predominant cardiac problem among the study subjects while atrial septal defect (11.1%) was the most common form of congenital heart disease. Based on the NYHA functional classification 74 % were in class I, 22.3% patients were in class II and 2.22 % were in class IV on presentation. 28.9 percent deliveries were preterm. The pregnancy duration was shortened in more advanced classes of heart disease. 60% of the cases were delivered by cesarean section. Average birth weight of babies in class I WAS 2.63 +/- 0.2 kg, 2.5 +/-0.3 kg in class II, 2.1 kg in class IV. Out of 45, 2 patients had heart failure during the hospital stay. There were 2 perinatal mortalities and one maternal mortality. **CONCLUSION:** RHD was the predominant type of heart disease in pregnancy and most women were class I at the time of admission. The preterm delivery and cesarean rates were significantly high. A multidisciplinary approach is needed to reduce morbidity, mortality and to optimize the outcome.

**KEYWORDS:** Pregnancy, cardiac disease, fetomaternal outcome.

**INTRODUCTION:** Cardiovascular disease is the one of the most important non-obstetric cause of disability and death in pregnant woman occurring in 0.4 to 4.0 percent pregnancies. The reported maternal mortality rate ranges from 0.4 percent in patients with New York Heart Association (NYHA) classification I and II to 6.8 percent or higher among patients with classification III and IV severity.

Added hemodynamic burden of pregnancy, labor and delivery can aggravate symptoms and precipitate complications in a woman with preexisting cardiac disease.

Mortality due to heart disease can be preventable and is largely dependent on timely interference.

The purpose of this study was to analyze the pregnant women with heart disease and thereby to assess the influence of cardiac disease on pregnancy and delivery in terms of maternal and fetal outcome.

**AIMS AND OBJECTIVES:** To analyze pregnant women with heart disease and to assess its influence on fetomaternal outcome.

**MATERIALS AND METHODS:**

- **Type of Study:** retrospective study (Observational)

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- **Place of the Study:** Department of Obstetrics and Gynaecology, Kempegowda Institute of Medical Sciences Hospital, Bangalore.
- **Inclusion Criteria:** All the pregnant women from November 2011 to October 2014 delivered in KIMS with associated cardiac disease.
- **Exclusion Criteria:** pregnant women with other associated obstetric complications.
- All patients delivered in Department of OBG, KIMS Hospital during the period of November 2011 to October 2014 with associated cardiac disease were graded according to the NYHA classification.

All patients were classified according to:

- Age, parity, gestational age of women.
- Congenital/ acquired heart disease.
- Type of heart disease.
- History of cardiac surgery.
- Mode of delivery.
- Foetal outcome.
- Presence or absence of heart failure.

**RESULTS AND DISCUSSION:** During the study period, forty five patients with heart diseases were delivered in the department of OBG in KIMS Hospital.

### CHARACTERISTICS OF STUDY SUBJECTS.

MATERNAL AGE	NUMBER	PERCENTAGE (%)
18-30	41	92
>30	4	8

Table 1

PARITY	NUMBER	PERCENTAGE (%)
0	27	60
1	16	35
2	2	5
3	-	-

Table 2

GRAVIDITY	NUMBER	PERCENTAGE (%)
1	22	48
2	15	33.3

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3	6	13.3
4	1	2.2
5	-	-
6	1	2.2

Table 3

In this study, mean ( $\pm$ SD) maternal age was 27.00( $\pm$ 4.2) years, and primigravida were 48 percent.

ANTENATAL CARE	NUMBER	PERCENTAGE
REGULAR	21	46.6
IRREGULAR	24	53.3

Table 4

### TYPE OF HEART DISEASE RHEUMATIC HEART DISEASE-24(53.3%).

TYPE OF LESION	NUMBER	PERCENTAGE
Mitral Stenosis	11	24.4
Mitral regurgitation	6	13.3
Mitral valve prolapse with mitral regurgitation	5	11
Tricuspid regurgitation	1	2.2
Aortic regurgitation with mitral regurgitation with aortic stenosis	1	2.2

Table 5

### CONGENITAL HEART DISEASE-11(24.4).

TYPE OF LESION	NUMBER	PERCENTAGE
Atrial Septal Defect	5	11.
Ventricular Septal Defect	2	4.4
Situs Solitus + dextrocardia + corrected TGA + subPulmonic stenosis +VSD + mild AR	1	2.2
Patent Ductus Arteriosus	1	2.2
VSD + Pulmonary stenosis	1	2.2
dextrocardia	1	2.2

Table 6

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### OTHERS-10(22.2%).

TYPE OF LESION	NUMBERS	PERCENTAGE (%)
Paroxysmal supraventricular tachycardia	1	2.2
Aortic valve replacement	1	2.2
Dilated cardiomyopathy	3	6.6
Coarctation of aorta	1	2.2
History of myocardial infarction	1	2.2
Pulmonary arterial hypertension	1	2.2
Sick sinus syndrome with pacemaker in situ	1	2.2

Table 7

The findings were consistent with Karlaap et al in which majority of the patients with heart disease in pregnancy had rheumatic heart disease (70%) and most of the rheumatic heart lesions were mitral stenosis. In the study congenital lesion was 30 percent, and atrial septal defect was the most common congenital valvular disease.<sup>(1)</sup>

### HISTORY OF CARDIAC SURGERY.

HISTORY OF CARDIAC SURGERY	NUMBER OF PATIENTS	PERCENTAGE (%)
PRESENT	16	35.55
ABSENT	29	64.44

Table 8

### DISTRIBUTION OF THE PATIENTS ACCORDING TO NYHA CLASS ON PRESENTATION.

NYHA CLASS	NO. OF PATIENTS	PERCENTAGE (%)
I	34	75.55
II	10	22.22
III		
IV	1	2.22

Table 9

In a study by Sawhney et al. found 95.4 percent in class I and II and 4.8 percent in class III<sup>(2)</sup> Another study done by Hameed et al showed that 36 (55%) out of 66 patients were in class I, 28 (42%) in class II and 2 (3%) in class III on presentation.<sup>(3)</sup>

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### GESTATIONAL AGE OF THE WOMEN AT DELIVERY:

GESTATIONAL AGE (WEEKS)	NUMBER OF PATIENTS	PERCENTAGE (%)
<35	4	8.9
35-36	9	20
37-38	8	17.7
38-39	13	28.88
39-40	11	24.44

Table 10

Majority of the patients were term patients (71.1%). Prematurity being seen in 28.9 percent of the subjects.

Preterm delivery was 15 (23%) out of 66. Another study done by Sawhney et al<sup>14</sup> showed preterm birth rate was 12%. Studies done by Hsich et al. and Shime et al. reported higher incidences of preterm birth in patients with valvular heart disease.<sup>(4,5)</sup>

### MODE OF DELIVERY:

MODE OF DELIVERY	NO OF PATIENTS	PERCENTAGE (%)
VAGINAL	18	40
CESAREAN SECTION	27	60

Table 11

A study done by Hameed et al.<sup>(3)</sup> showed mode of delivery was vaginal in 61 (92%) out of 66 patients with valvular heart disease and others had cesarean section due to obstetric indications and cardiac lesions. Another study done by Bonow et al. showed mode of delivery was vaginal in 196 (78.1%) out of 251 and cesarean section done on 55 (21.9%) patients. The rate of cesarean delivery was higher in this study compared to others studies.<sup>(6)</sup>

### MATERNAL OUTCOME:

NYHA CLASS	FUNCTIONAL CLASSIFICATION	HEART FAILURE	MORTALITY
I	34	-	-
II	10	1	-
III	-	-	-
IV	1	-	1

Table 12

There was one patient who developed heart failure and one maternal mortality. The patient who developed heart failure was a 20 year old Primigravida with 38 weeks of gestational age diagnosed with congenital heart disease-Situs Solitus +dextrocardia +corrected TGA +subpulmonic stenosis + VSD +mild AR since 2 years belonging to NYHA class 2. The underwent LSCS under GA and

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developed breathlessness on extubation. She was shifted to ICU started digoxin, furosemide, LMWH, extubated on post op day 2.

Patient was booked outside at a private nursing home. Patient received irregular ANC with no anticoagulant therapy throughout the pregnancy and also in puerperium.

Maternal mortality was a 26 year old Primigravida with 35+6 weeks of gestational age who presented with cough with expectoration (blood streaked), breathlessness. Diagnosed to have dilated cardiomyopathy, intubated and started on inotropes. Patient died of ARDS with pulmonary edema with cardiogenic shock after one day of admission.

### FETAL OUTCOME:

NYHA CLASS	TERM	PRETERM	MEAN BIRTH WEIGHT (kgs)
I	27	7	2.63
II	6	4	2.5
III			
IV		1	2.11

Table 13

The preterm delivery rates progressively increased with the NYHA class of the patients.

There were two perinatal mortalities. The first was a premature female baby born to a primigravida with moderate Mitral Stenosis at 28 weeks weighing 750 gms who died 12 hours after birth. The second was fresh dead 2.11kg female baby delivered by post mortem cesarean section done for primigravida with 35weeks and 6 days gestational age with dilated cardiomyopathy.

Study done by Hameed et al. showed that live birth were 64 out of 66 patients and stillbirth were 2. Mean ( $\pm$ SD) birth weight was 2,897( $\pm$ 838) g.

**CONCLUSION:** RHD was the predominant type of heart disease in pregnancy and most women were NYHA class I at the time of admission. The preterm delivery and cesarean rates were significantly high. A multidisciplinary approach is needed to reduce morbidity, mortality and to optimize the outcome.

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