Section: Obstetrics and Gynaecology

Original Research Article

CLINICAL PROFILE AND SPECTRUM OF CARDIAC DISEASE IN PREGNANCY IN TERTIARY CARE CENTRE IN NORTH INDIA

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ABSTRACT

Background: Cardiovascular disease in pregnancy is an important cause of indirect maternal morbidity and mortality, with a shifting pattern in developing countries due to coexistence of rheumatic and congenital heart diseases.
Objective: To evaluate the clinical profile and spectrum of heart disease in pregnancy at a tertiary care center.
Materials and Methods: This prospective observational study was conducted at a tertiary care hospital from February 2024 to February 2026. A total of 300 pregnant women with diagnosed or suspected cardiac disease were included. Detailed clinical evaluation, electrocardiography, and echocardiography were performed. Data were analyzed using descriptive statistics.
Results: Among 300 pregnancies, 13 cases (4.33%) had cardiac disease. Valvular heart disease was the most common (2.00%), with mitral stenosis being predominant (1.33%). Cardiomyopathy was observed in 1.00%, congenital heart disease in 0.67%, while arrhythmia and post-surgical cases each accounted for 0.33%. Most women had vaginal delivery (70%), while 30% underwent cesarean section.
Conclusion: Cardiac disease in pregnancy was relatively uncommon but clinically significant. Valvular heart disease remains the predominant lesion. Early diagnosis, multidisciplinary care, and close antenatal monitoring are essential to improve maternal and fetal outcomes.
Keywords: Pregnancy; Cardiac disease; Valvular heart disease; Rheumatic heart disease; Cardiomyopathy; Maternal outcome; Echocardiography.

INTRODUCTION

Cardiovascular disease in pregnancy is a significant and increasing cause of maternal morbidity and mortality worldwide. Advances in medical care have enabled more women with pre-existing cardiac conditions to reach reproductive age and undergo pregnancy. In developing countries, an epidemiological transition has resulted in a increased burden of persistent rheumatic heart disease along with a rising incidence of congenital and acquired cardiac disorders. The physiological changes of pregnancy, including increased blood volume, cardiac output, and heart rate, impose substantial hemodynamic stress that may unmask previously undiagnosed disease or exacerbate existing pathology.[1]

Heart disease complicates approximately 1–4% of all pregnancies and remains a leading cause of indirect maternal mortality.[2] In countries like India, rheumatic heart disease continues to predominate, whereas congenital heart disease is more common in developed regions. Clinical presentation varies widely, ranging from asymptomatic cases to severe complications such as heart failure, arrhythmias, and thromboembolism.[3] Studies have shown that cardiac disease significantly impacts both maternal and fetal outcomes, especially in resource-limited settings.[4,5] Maternal and fetal outcomes depend on disease severity, functional status, and timely management. A multidisciplinary approach improves prognosis.[6] This study aims to evaluate the clinical profile and spectrum of heart disease in pregnancy at a tertiary care centre.

MATERIALS AND METHODS

This prospective observational study was conducted at Shri Ram Murti Smarak Institute of Medical Sciences (SRMS IMS), Bareilly, a tertiary care teaching hospital. The study duration was two years, from February 2024 to February 2026. All pregnant women diagnosed with heart disease attending the obstetrics and cardiology departments or admitted during the study period were included.

Inclusion criteria comprised pregnant women with confirmed congenital or acquired heart disease and asymptomatic women with previously undiagnosed heart disease who provided informed consent. A detailed history was obtained, including demographic data, obstetric history, and presenting symptoms such as dyspnoea, palpitations, chest pain, and syncope. Clinical examination findings, including vital parameters and signs of heart failure, were recorded.

All patients underwent relevant investigations, including electrocardiography and echocardiography to determine the type and severity of cardiac disease. Functional status was assessed using the New York Heart Association (NYHA) classification. Patients were managed according to standard institutional protocols with a multidisciplinary approach involving cardiologists, obstetricians, and anesthesiologists.

Data were collected using a structured proforma and entered into Microsoft Excel for analysis. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. Statistical analysis was performed using appropriate tests, with a p-value <0.05 considered statistically significant.

RESULTS

A total of 300 participants were included in the study. The majority of women belonged to the age group of 20–30 years (43.33%), followed by 30–40 years (33.33%), while 23.33% were above 40 years of age. Most participants were from rural areas (80.00%), with only 20.00% residing in urban settings. Regarding antenatal care, a higher proportion of women were unbooked (63.33%) compared to those who were booked (36.67%).

In terms of obstetric profile, primigravida women constituted 56.67% of the study population, whereas 43.33% were multigravida.

With respect to the mode of delivery, the majority of women underwent normal vaginal delivery (70.00%), while 30.00% had lower segment cesarean section (LSCS)

Table 1: Baseline Demographic and Obstetric Characteristics (n = 300)

Variable	Category	Number (n)	Percentage (%)
Age (years)	20–30	130	43.33%
	30–40	100	33.33%
	>40	70	23.33%
Residence	Rural	240	80.00%
	Urban	60	20.00%
Antenatal Status	Booked	110	36.67%
	Unbooked	190	63.33%
Obstetric Profile	Primigravida	170	56.67%
	Multigravida	130	43.33%
Mode of Delivery	Vaginal	210	70.00%
	LSCS	90	30.00%

Table 2: Distribution of Cardiac Diagnoses among Study Participants (n = 300)

Diagnosis	Number (n)	Percentage (%)
CHD (ASD)	2	0.67
VHD – MS	4	1.33
VHD – MR	2	0.67
Cardiomyopathy	3	1.00
Arrhythmia (SVT)	1	0.33
Post-surgery (MVR)	1	0.33

Out of 300 pregnancies, 13 cases (4.33%) were diagnosed with heart disease. Valvular heart disease was the most common, accounting for 6 cases (2%), with mitral stenosis (1.33%) being more frequent than mitral regurgitation (0.67%). Cardiomyopathy was observed in 1% of cases. Congenital heart disease, specifically atrial septal defect, contributed to 0.67% of cases. Arrhythmias (supraventricular tachycardia) and post-surgical cases (mitral valve replacement) were relatively rare, each accounting for 0.33% of the study population.

DISCUSSION

Cardiovascular disease in pregnancy remains a significant contributor to indirect maternal morbidity and mortality, especially in low- and middle-income countries where rheumatic and congenital heart diseases continue to coexist. In the present study, cardiac disease was observed in 4.33% of the 300 pregnant women, indicating an important but relatively low burden in a tertiary care hospital setting.

Valvular heart disease was the most frequent cardiac abnormality, with mitral stenosis being more common than mitral regurgitation. This pattern reflects the persistent burden of rheumatic heart disease in India. Similar findings have been reported in several Indian studies, where rheumatic valvular lesions account for the majority of cardiac disease in pregnancy, ranging from 50% to 70% of cases.[7,8] This continued prevalence is largely attributed to inadequate early treatment of streptococcal infections and suboptimal long-term secondary prophylaxis.

In contrast, studies from developed countries have shown a changing trend in the spectrum of cardiac disease in pregnancy. Regitz-Zagrosek et al. reported that congenital heart disease has become the most common cardiac condition in pregnancy in high-income settings due to improved survival following pediatric cardiac interventions.[9] This highlights a clear epidemiological difference between developed and developing regions.

In the present study, congenital heart disease (atrial septal defect) accounted for 0.67% of cases, which is comparable to other Indian tertiary care studies where congenital lesions contribute a smaller proportion compared to rheumatic heart disease.[10] With advances in pediatric cardiology, the number of women with corrected congenital heart disease reaching reproductive age is gradually increasing.

Cardiomyopathy was observed in 1.00% of cases in our study. This finding is consistent with previously reported incidences of peripartum cardiomyopathy in India and Africa. Sliwa et al. have reported that peripartum cardiomyopathy is more prevalent in developing countries and is associated with delayed diagnosis and higher morbidity if not detected early. Early recognition and timely management are essential to improve outcomes.[11]

Arrhythmias and post-surgical cardiac conditions were rare in the present study, each accounting for 0.33% of cases. Although infrequent, arrhythmias in pregnancy may be underdiagnosed and can be associated with hemodynamic instability if not appropriately managed.[12]

Overall, the findings of the present study are consistent with existing Indian literature, which shows that rheumatic valvular heart disease remains the predominant cardiac lesion in pregnancy. However, a gradual shift toward congenital heart disease and cardiomyopathy is being observed, reflecting changing epidemiological patterns. These findings emphasize the importance of early diagnosis, preconception counsesling, and multidisciplinary management to improve both maternal and fetal outcomes.

CONCLUSION

Cardiovascular disease in pregnancy remains an important cause of maternal morbidity despite its relatively low prevalence. In the present study, 4.33% of 300 pregnant women had cardiac disease, with valvular heart disease, particularly mitral stenosis, being the most common lesion. Other conditions included congenital heart disease, cardiomyopathy, arrhythmias, and post-surgical cardiac status in smaller proportions. The findings reflect the persistent burden of rheumatic heart disease along with a gradual shift toward diverse cardiac disorders. Early detection, regular antenatal surveillance, preconception counseling, and a multidisciplinary approach are essential to improve maternal and fetal outcomes and reduce pregnancy-related complications effectively.

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