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## Maternal and fetal outcomes in pregnancies with cardiac diseases presenting complications in a tertiary care center

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### Abstract

**Background:** Heart disease complicates approximately 1% to 3% of pregnancies. Cardiovascular illness is the primary non-obstetric cause of maternal mortality. Pregnant women are mostly affected by congenital and acquired heart issues.

**Materials and Methods:** The study was conducted in the Department of General Medicine, Sambhram Institute of Medical Sciences and Research Kolar, Karnataka, India from January 2017 to December 2017. The study examined 120 instances of heart illness that negatively impacted pregnancy. Cardiac illness was present in 1.29 percent of the women who gave birth at this location. Among a sample of 120 women, 95 were admitted for the purpose of safe confinement, 4 underwent a first trimester abortion, and 2 experienced an ectopic pregnancy that resulted in rupture. Cardiac disease was detected in 33% of the women for the first time during pregnancy. The incidence of RHD was found to be 19% among patients, MVP in 6% of cases, and CHD in 7% of cases. Teenage pregnancies were found to be correlated with heart disease in two instances. Rheumatic heart disease is observed in 53% of instances, whereas congenital heart disease is detected in 44% of women.

**Results:** A total of 95 women (92%) exhibited symptoms classified as NYHA class I or II. 25 cases of solitary multiple sclerosis (46.16%) were observed. VSD was identified as the most prevalent congenital heart disease among a cohort of 23 women. There were 18 incidents involving Autism Spectrum Disorder (ASD). ASD with PHT is observed in two instances. A total of 18 ladies underwent cardiac surgery to repair their hearts. A total of 10 individuals underwent surgical intervention for congenital heart disease, with 8 of these patients undergoing right heart valve surgery. A total of 78 women underwent natural childbirth, with 3 instances involving assisted delivery and 16 instances necessitating a caesarian section. Intraoperative problems were observed in three instances, but postoperative complications were observed in 10 cases. The NICU received admissions for a total of 11 newborns, with 19 of them being premature. Three infants died. Nine cases (9%) were provided with ventilator assistance.

**Conclusion:** During the course of our inquiry, we documented two instances of maternal mortality. A pulmonary embolism with cardio respiratory arrest was identified as the cause during the postoperative phase.

**Keywords:** Maternal and fetal outcome, pregnancy, cardiac diseases, tertiary care centre

### Introduction

Approximately 1% to 3% of pregnancies are complicated by heart disease [1]. Heart disease is the leading non-obstetric factor contributing to maternal mortality. Pregnancy-related heart problems can be categorized into two main groups: congenital and acquired. The acquired category encompasses rheumatic heart disease, cardiomyopathies, and ischemic heart disease. Rheumatic heart disease exhibits a higher incidence rate with acquired populations residing in developing countries, such as India [2, 3]. Cardiomyopathies and ischemic heart diseases exhibit a high prevalence in economically prosperous countries. During a typical pregnancy, there is an increase in both heart rate and stroke volume [4, 5]. Heart disease exacerbates these alterations. The presence of co-morbidities such as pregnancy, anemia, and urinary tract infections contributes to the cardiac burden and intensifies the severity of heart failure. Consequently, it is imperative to provide comprehensive monitoring and follow-up for pregnant women diagnosed with cardiac disease. The comprehensive cardiac and obstetric care has advanced, enabling pregnant women to deliver their babies without any risks. A significant portion of the previous studies exhibited a retrospective and constrained series design. A prospective study was undertaken over a 10-month period, focusing on women who were undergoing safe confinement, pregnancy termination, and critical care at a government hospital [6-8].

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## Materials and Methods

The present study was conducted in the Department of General Medicine, Sambhram Institute of Medical Sciences and Research Kolar, Karnataka, India, with the aim of examining the potential impact of maternal cardiac disorders on maternal and fetal outcomes in pregnancies. This facility serves as a government referral center for all the hospitals in the vicinity. The research was carried out for a duration of two years, spanning from January 2017 to December 2017. The study encompassed pregnant women who were diagnosed with heart illness and subsequently admitted to the hospital for either safe confinement or termination of pregnancy, with any concurrent cardiac issues. The study also encompasses pregnant women who have heart problems and experience labor pain, who are admitted through the casualty department<sup>[9, 10]</sup>.

### Inclusion Criteria

- All pregnant patients with cardiac problems, regardless of gestational age, who do not have any other medical conditions.
- During the hospitalization, pregnant women who have been diagnosed with cardiac illness.

### Exclusion Criteria

- The study excludes pregnant patients who have comorbidities such as anemia, perinatal hemorrhage (PIH), chronic renal disease, and gestational diabetes mellitus (GDM).
- Individuals who gave their consent for participation in the study.

At 36 weeks of gestation, pregnant women diagnosed with heart illness falling within NYHA class I and II are admitted to the hospital. Patients diagnosed with NYHA class III and IV are promptly admitted to the hospital. If cardiac symptoms occur at any stage of pregnancy, patients are promptly admitted and provided with intensive care. Prompt treatment is necessary for conditions that can lead to heart failure, such as anemia, infections, and preeclampsia. Cardiac patients should have their medication regimen reviewed and seek a cardiology opinion. RHD is treated with penicillin prophylaxis. Infective endocarditis prophylaxis is achieved by administering Inj. Ampicillin at a dosage of 50mg/kg and Inj. Gentamycin at a dosage of 3mg/kg<sup>[11-14]</sup>. Obstetric indications necessitate the performance of Caesarean birth. LSCS is indicated for cardiac conditions such as pulmonary hypertension, Eisenmenger syndrome, and aortic coarctation. During the process of labour, the patient is positioned in a bed with a propped up arrangement, and nasal oxygen is provided. If necessary, IE prophylaxis is provided. The implementation of rigorous monitoring of vital signs, limitation of intravenous fluids, and the continuation of cardiac medications during the intrapartum period if necessary. The application of outlet forceps with liberal episiotomy reduces the second stage of labour. The episiotomy wound is sutured consecutively in layers. During the postpartum period, patients are closely observed for postpartum hemorrhage (PPH), pulmonary edema, and lower respiratory infection (LRI), and specific measures are implemented to mitigate these problems. It is advisable to seek a check-up from a cardiologist during the postpartum time. It is advisable to initiate breastfeeding at the earliest opportunity. Pediatricians conduct examinations on infants. New-born infants receive vaccinations according to the national schedule<sup>[15-19]</sup>.

## Results

**Table 1:** Gestational Age

	Frequency	Percentage
First Trimester	11	9%
Preterm	24	20%
Term	79	66%
Postdated	6	5%
Total	120	100

**Table 2:** NYHA Grading

	Frequency	Percentage
I	63	52.5%
II	43	35.8%
III	14	11.6%
Total	120	100

**Table 3:** Type of heart disease

	Frequency	Percentage
CHD	51	42.5%
MVP	09	7.5%
RHD	60	50%
Total	120	100

**Table 4:** Surgeries

Corrective Procedure	No. of women	Percentage
Mitral valve replacement	2	10%
ASD Closure	8	40%
VSD Closure	9	45%
PDA ligation	1	5%
Total	20	100

**Table 5:** Indication for emergency LSCS

Type	No. of women	Percentage
Fetal distress	2	13.33%
CPD	2	13.33%
Failed induction	3	20%
Twins	2	13.33%
Breech	2	13.33%
Previous LSCS	2	13.33%
Ectopic	2	13.33%
Total	15	100

**Table 6:** Neonatal Outcome

	Frequency	Percentage
Post term	2	2.10%
Preterm	19	20%
Term	74	77.8%
Total	95	100.0

**Table 7:** NICU Admission

	Frequency	Percentage
No	83	87.36%
Yes	12	12.6%
Total	95	100.0

## Discussion

Heart disease is the leading non-obstetric factor contributing to maternal morbidity and mortality. The impact on new-born outcomes is substantial. Favorable outcomes are observed in women classified as NYHA class I and II who actively mitigate risk factors associated with heart failure, including anemia, infections, and arrhythmias. In addition, they undergo routine

cardiac monitoring and strict compliance with cardiac medication. Women with a severe form of cardiac disease should refrain from pregnancy, and in such cases, surgical intervention should be performed prior to conception. Hink and Bolte (year) reported that cardiac disease has a detrimental impact on approximately three percent of pregnancies. The outcome has a substantial impact on both the maternal figure and the offspring<sup>[19]</sup>. The study conducted by Hema Priya, L *et al.* examines the maternal and fetal outcomes of women who received treatment for heart disease at our hospital. The prevalence rate of heart disease among pregnant women who sought care at this clinic was determined to be 1.29%<sup>[20]</sup>. The study conducted by Sahni G *et al.* revealed a frequency ranging from 0.3% to 3.5%. The prevalence percentage of this referral center may not provide an accurate representation of the broader population. The research population consisted of a total of one hundred pregnant women. Among the patients, four underwent MVA with check curettage<sup>[22-24]</sup>.

Nitta, M *et al.*, Andhra Pradesh is renowned for its exceptional antenatal care standards. A total of 33 women, accounting for 33% of the sample, received their initial diagnosis of heart disease during the present pregnancy. The age group distribution that was most frequently observed was 26-30 (N=69-69%). Among the 120 female participants included in the research, a mere 2% (N=2) were found to be under the age of 20<sup>[25]</sup>.

According to Drenthen (year), this study bears resemblance to various other studies conducted in India. Congenital cardiac disease was the most prevalent kind in Western studies. Approximately eight women diagnosed with Rheumatic Heart Disease (RHD) had surgical intervention, with one instance involving valve replacement and another case involving combined valve replacement. There was a positive correlation observed between the severity of stenosis and greater NYHA functional class<sup>[26]</sup>.

According to Babah *et al.* (year), it was determined that ventilatory support was necessary in 9 instances, with the majority of cardiac patients being placed on elective mechanical ventilation and subsequently weaned within a 24-hour period. Patients who exhibited lower respiratory infection (LRI) and pulmonary edema were also chosen to receive ventilator assistance. We offered antibiotic prophylaxis to the moms with heart conditions and did not see any instances of endocarditis<sup>[27]</sup>.

According to Ertekin *et al.* (28), several interventions have been found to potentially enhance outcomes for both mothers and infants. These interventions include early diagnosis, preconceptional counselling, health education, routine and regular antenatal check-ups, identification and correction of saggrivating heart failure, regular cardiac follow-up, strict adherence to cardiac medications, and institutional delivery.

### Conclusion

It is advisable for pregnant women experiencing cardiac complications to arrange regular prenatal checkups. If deemed necessary, corrective procedures during pregnancy should be performed in the second trimester; nonetheless, it is important to note that there exists a significant danger to the fetus. Prior to conception, it is imperative for the cardiologist to assess any cardiac drugs administered. Ideally, the process of childbirth should occur within a tertiary care facility that employs a multidisciplinary approach. Foetal echocardiography (ECHO) is performed at approximately 20 weeks of gestation to identify inherited heart abnormalities in neonates. Undoubtedly, implementing a uniform treatment approach and ensuring

widespread availability of obstetric and cardiac care will significantly improve the results for women suffering from heart disease.

### Declarations

**Ethics approval and consent to participate:** Not applicable.

**Consent for publication:** All the authors approved the manuscript for publication.

**Availability of data and material:** All required data is available.

**Competing interests:** All authors declare no competing interests.

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### References

1. Sermer M, Colman J, Siu S. Pregnancy complicated by heart disease: A review of Canadian experience. *J Obstet Gynaecol.* 2003;23(5):540-544.
2. Suganthi P. Maternal and perinatal outcome in heart disease complicating pregnancy one year study in a tertiary care centre [Doctoral dissertation]. Thanjavur: Thanjavur Medical College; 2017.
3. Florio MRM. In: Antismoking initiatives of the department of health, education, and welfare: Hearing before the subcommittee on health and the environment of the committee on interstate and foreign commerce, house of representatives, ninety-fifth congress, second session... February 15, 1978. US Government Printing Office; c1978. p. 60.
4. Suganthi P. Maternal and perinatal outcome in heart disease complicating pregnancy one year study in a tertiary care centre [Doctoral dissertation]. Thanjavur: Thanjavur Medical College; c2017.
5. Lakshmi PS. A prospective observational study on maternal and fetal outcome in pregnancies with maternal cardiac diseases.
6. Mosca L, Benjamin EJ, Berra K, *et al.* Effectiveness-based guidelines for the prevention of cardiovascular disease in women-2011 update: a guideline from the American Heart Association. *Circulation.* 2011;123(11):1243-1262.
7. Hady AES, El-Shamy M, El-Rifai AA, Goda H, Samad AA, Moussa S. Maternal and perinatal outcome of pregnancies complicated by cardiac disease. *Int J Gynaecol Obstet.* 2005;90(1):21-25.
8. Bhatla N, Lal S, Behera G, *et al.* Cardiac disease in pregnancy. *Int J Gynaecol Obstet.* 2003;82(2):153-159.
9. Koregol M, Mahale N, Nayak R, Bhandary A. Maternal and perinatal outcomes of pregnancies complicated by cardiac disease. *J Turk Ger Gynecol Assoc.* 2009;10:30-34.
10. Salam S, Mushtaq S, Din MUK, Gul I, Ali A. Maternal and fetal outcome in pregnancy with heart disease in tertiary care hospital in India. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(9):3947-3952.
11. Pujitha KS, Sheela SR. A study of maternal and fetal outcome in cardiac disease in pregnancy at tertiary care center. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(11):5095-5099.
12. Ford AA, Wylie BJ, Waksmonski CA, Simpson LL. Maternal congenital cardiac disease: Outcomes of pregnancy in a single tertiary care center. *Obstet Gynecol.*

- 2008;112(4):828-833.
13. Doshi HU, Oza HV, Tekani H, Modi K. Cardiac disease in pregnancy-maternal and perinatal outcome. *J Indian Med Assoc.* 2010;108(5):278-280.
  14. Hameed A, Karaalp IS, Tummala PP, *et al.* The effect of valvular heart disease on maternal and fetal outcome of pregnancy. *J Am Coll Cardiol.* 2001;37(3):893-899.
  15. Konar H, Chaudhuri S. Pregnancy complicated by maternal heart disease: A review of 281 women. *J Obstet Gynecol India.* 2012;62(3):301-306.
  16. Sen M, Bhattacharyya P, Chowdhury N. Pregnancy with heart disease--fetomaternal outcome. *J Evol Med Dent Sci.* 2014;3(5):1178-1184.
  17. Chhetri S, Shrestha NR, Pilgrim T. Pregnancy complicated by heart disease in Nepal. *Heart Asia.* 2014;6(1):26-29.
  18. Hink E, Bolte AC. Pregnancy outcomes in women with heart disease: experience of a tertiary center in the Netherlands. *Pregnancy Hypertens.* 2015;5(2):165-170.
  19. Hema Priya L, Bhandiwad A, Desai N, Kondareddy T. Maternal outcomes of rheumatic heart disease in pregnancy. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(3):803.
  20. Yücesoy G, Özkan S, Bodur H, *et al.* Maternal and perinatal outcome in pregnancies complicated with hypertensive disorder of pregnancy: A seven year experience of a tertiary care center. *Arch Gynecol Obstet.* 2005;273(1):43-49.
  21. Sahni G, Elkayam U. Cardiovascular disease in pregnancy. *Cardiol Clin.* 2012;30(3):11-12.
  22. Balint OH, Siu SC, Mason J, *et al.* Cardiac outcomes after pregnancy in women with congenital heart disease. *Heart.* 2010;96(20):1656-1661.
  23. Sliwa K, Libhaber E, Elliott C, *et al.* Spectrum of cardiac disease in maternity in a low-resource cohort in South Africa. *Heart.* 2014;100(24):1967-1974.
  24. Nitta M, Shimizu S, Kaneko M, Fushimi K, Ueda S. Outcomes of women with congenital heart disease admitted to acute-care hospitals for delivery in Japan: A retrospective cohort study using nationwide Japanese diagnosis procedure combination database. *BMC Cardiovasc Disord.* 2021;21(1):1-10.
  25. Drenthen W, Pieper PG, Hesselink RJW, *et al.* Outcome of pregnancy in women with congenital heart disease: A literature review. *J Am Coll Cardiol.* 2007;49(24):2303-2311.
  26. Babah O, Saalu T, Adekanye T, Owie E, Soibi-Harry A, Ofogbu O. Trends and outcomes of instrumental vaginal deliveries at Lagos University Teaching Hospital: A 10-year review. *AJFMED.* 2022;1(1):9-13.
  27. Ertekin E, Hagen VIM, Salam AM, *et al.* Ventricular tachyarrhythmia during pregnancy in women with heart disease: data from the ROPAC, a registry from the European Society of Cardiology. *Int J Cardiol.* 2016;220:131-136.