E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.31838/ijprt/16.01.616

Research Article

Spectrum of Congenital Heart Diseases in Children (<5 Years) in a Tertiary Care Centre

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Received: 12.11.25, Revised: 15.12.25, Accepted: 16.01.26 Published: 28.01.26

ABSTRACT

Background: Congenital heart disease (CHD) is the most common congenital malformation and an important cause of morbidity and mortality among children. Early diagnosis and timely intervention can significantly improve outcomes. Knowledge of the spectrum of CHD in a particular geographical region helps in planning healthcare resources and early referral services.

Objectives: To study the spectrum, demographic characteristics, clinical presentation, and echocardiographic profile of congenital heart diseases among children below five years of age attending a tertiary care centre.

Materials and Methods: A hospital-based prospective observational study was conducted in the Department of Pediatrics of a tertiary care teaching hospital over a period of 18 months. Children aged less than 5 years with clinically suspected CHD and confirmed by two-dimensional echocardiography were included. Demographic details, presenting symptoms, physical findings, and echocardiographic diagnoses were recorded and analyzed.

Results: A total of 150 children with confirmed CHD were enrolled. The majority were infants (58.0%). Males constituted 56.0% of cases. Acyanotic CHDs accounted for 81.3% while cyanotic CHDs accounted for 18.7%. Ventricular septal defect (VSD) was the most common lesion (34.0%) followed by atrial septal defect (ASD) (22.0%), patent ductus arteriosus (PDA) (12.7%), atrioventricular septal defect (AVSD) (6.0%), and pulmonary stenosis (5.3%). Tetralogy of Fallot (TOF) was the most common cyanotic CHD (8.7%). Breathlessness (68.7%), recurrent respiratory infections (54.0%), feeding difficulty (48.7%), and failure to thrive (42.0%) were the common presenting complaints.

Conclusion: Acyanotic congenital heart diseases predominate in children under five years. VSD remains the most common congenital cardiac lesion, while TOF is the most frequent cyanotic defect. Early echocardiographic screening in symptomatic infants facilitates timely diagnosis and management.

Keywords: Congenital heart disease, Ventricular septal defect, Atrial septal defect, Tetralogy of Fallot, Echocardiography, Children.

INTRODUCTION:

Congenital heart disease (CHD) comprises a diverse group of structural and functional abnormalities of the heart and great vessels that arise during embryonic development and are present at birth. It is the most common congenital anomaly worldwide and remains a major cause of infant morbidity, mortality, and long-term disability despite significant advances in diagnostic and therapeutic modalities (1). The global prevalence of CHD has been estimated at approximately 8–12 per 1000 live births, translating into nearly 1.35 million newborns affected annually worldwide (2). In low- and middle-income countries, including India, the burden of CHD is particularly high because of large birth cohorts, delayed diagnosis, limited access to pediatric cardiac services, and socioeconomic constraints (3).

India accounts for approximately one-fifth of the world's annual births, with an estimated 180,000–250,000 children born with congenital

heart defects each year (4). Improvements in neonatal care, echocardiographic facilities, and pediatric cardiology services have resulted in increased survival and detection rates. Nevertheless, a significant proportion of children continue to present late with complications such as congestive heart failure, recurrent respiratory tract infections, pulmonary hypertension, growth failure, and cyanosis (5).

The etiology of congenital heart disease is multifactorial and involves complex interactions between genetic, environmental, and maternal factors. Chromosomal abnormalities, maternal diabetes mellitus, congenital infections, teratogenic drug exposure, advanced maternal age, and consanguineous marriages have been implicated as important risk factors (6,7). However, the exact cause remains unidentified in the majority of affected children.

Congenital heart diseases are broadly classified into acyanotic and cyanotic lesions. Acyanotic defects, characterized by left-to-right shunting or obstructive lesions without systemic desaturation, include ventricular septal defect (VSD), atrial septal defect (ASD), patent ductus arteriosus (PDA), atrioventricular septal defect (AVSD), and coarctation of the aorta. Cyanotic defects, associated with reduced arterial oxygen saturation, include Tetralogy of Fallot (TOF), transposition of the great arteries (TGA), tricuspid atresia, total anomalous pulmonary venous connection (TAPVC), and other complex congenital malformations (8).

Several hospital-based and community-based studies from India have consistently demonstrated that ventricular septal defect is the most common congenital cardiac lesion, accounting for approximately 25–35% of all CHDs, followed by atrial septal defect and patent ductus arteriosus (9,10). Among cyanotic congenital heart diseases, Tetralogy of Fallot is reported as the predominant lesion across most regions of the country (11). However, the distribution of various defects may vary depending on geographic location, referral patterns, healthcare accessibility, and study methodology.

Clinical manifestations of CHD vary according to the type and severity of the lesion. Infants commonly present with tachypnea, feeding difficulties, excessive sweating, recurrent lower respiratory tract infections, poor weight gain, and congestive cardiac failure. Older children may present with exercise intolerance, cyanosis, clubbing, or incidental detection of a cardiac murmur during routine examination (12). Early recognition of these clinical features is essential because timely diagnosis and intervention significantly improve survival and quality of life.

Two-dimensional echocardiography with color Doppler remains the gold standard for diagnosis and classification of congenital heart defects owing to its high sensitivity, specificity, non-invasive nature, and widespread availability (13). Early echocardiographic screening facilitates prompt initiation of medical management, timely referral for catheter-based interventions, and surgical correction before the development of irreversible complications such as pulmonary vascular obstructive disease (14).

Understanding the spectrum and epidemiological profile of congenital heart diseases in children under five years of age is crucial for healthcare planning, resource allocation, and development of screening strategies. Data from tertiary care centers provide valuable insights into disease burden, referral trends, and patterns of presentation. Such information is particularly important in developing countries where delayed diagnosis remains a major challenge.

Therefore, the present study was undertaken to evaluate the spectrum of congenital heart diseases in children younger than five years attending a tertiary care centre, with special emphasis on demographic characteristics, clinical presentation, and echocardiographic profile of various congenital cardiac lesions.

MATERIALS AND METHODS

Study Design and Setting

This prospective observational hospital-based study was conducted in the Department of Pediatrics in collaboration with the Department of Pediatric Cardiology at a tertiary care teaching hospital. The study was carried out over a period of 18 months from January 2024 to June 2025. The hospital serves as a major referral center for surrounding urban and rural populations and receives pediatric patients from multiple districts. The study protocol was reviewed and approved by the Institutional Ethics Committee before commencement of the study (Approval No. IEC/2023/CHD/021).

Written informed consent was obtained from parents or legal guardians prior to enrollment. Confidentiality of patient information was maintained throughout the study. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and the Indian Council of Medical Research (ICMR) guidelines for biomedical research involving human participants.

Study Population

The study included children aged less than five years who were diagnosed with congenital heart disease (CHD) during the study period. Patients attending the pediatric outpatient department, pediatric inpatient wards, neonatal intensive care unit (NICU), pediatric intensive care unit (PICU), and those referred from peripheral healthcare facilities were screened for eligibility.

Sample Size

The sample size was calculated using the formula:

$n = Z^2PQ/d^2$

Assuming the prevalence of congenital heart disease among children as 8 per 1000 live births (0.8%), confidence level of 95%, and allowable error of 5%, the minimum sample size required was estimated. Considering the hospital-based nature of the study and feasibility constraints, a total of 150 consecutive children fulfilling the inclusion criteria were enrolled.

Inclusion Criteria

- Children aged less than 5 years.
- Newly diagnosed or previously diagnosed cases of congenital heart disease confirmed by echocardiography.
- Parents or guardians willing to provide written informed consent.

Exclusion Criteria

- Children above 5 years of age.
- Acquired heart diseases such as rheumatic heart disease, myocarditis, cardiomyopathy, and infective endocarditis.
- Isolated cardiac arrhythmias without structural heart defects.
- Critically ill patients in whom complete evaluation could not be performed.
- Cases with incomplete clinical or echocardiographic records.

Sampling Technique

A consecutive sampling technique was adopted. All eligible children presenting during the study period were recruited until the desired sample size was achieved.

Data Collection Procedure

After obtaining informed consent from parents or legal guardians, a detailed history was recorded using a predesigned and pretested case record form.

Demographic Variables

The following demographic information was collected:

- Age at presentation
- Gender
- Place of residence (urban/rural)
- Socioeconomic status
- Birth order
- Consanguinity among parents
- Family history of congenital heart disease

Maternal and Antenatal History

Maternal history was obtained with special emphasis on:

- Maternal age at conception
- Antenatal care visits
- Diabetes mellitus
- Hypertension
- Thyroid disorders
- TORCH infections
- Febrile illness during pregnancy
- Drug intake during pregnancy
- Exposure to radiation
- Substance abuse
- Polyhydramnios or oligohydramnios

Clinical Assessment

A comprehensive clinical examination was performed in all enrolled children.

General Examination

The following parameters were recorded:

- Weight (kg)
- Height/length (cm)
- Head circumference (for children <2 years)
- Body mass index (BMI)
- Nutritional status
- Presence of pallor
- Cyanosis
- Clubbing
- Edema
- Peripheral pulses

Anthropometric measurements were interpreted using World Health Organization (WHO) growth standards.

Vital Parameters

The following vital signs were measured:

- Heart rate
- Respiratory rate
- Blood pressure
- Oxygen saturation (SpO_2)

- Temperature

Cardiovascular Examination

Detailed cardiovascular assessment included:

- Precordial bulge
- Apex beat location
- Thrills
- Heart sounds
- Murmurs
- Gallop rhythm
- Signs of congestive cardiac failure

Respiratory Examination

Children were assessed for:

- Tachypnea
- Chest retractions
- Crepitations
- Recurrent respiratory infections

Clinical Presentation

Presenting complaints were documented, including:

- Breathlessness
- Fast breathing
- Feeding difficulties
- Excessive sweating
- Poor weight gain
- Failure to thrive
- Cyanosis
- Recurrent respiratory tract infections
- Easy fatigability
- Incidental murmur detection
- Syncope
- Cyanotic spells

Investigations

Laboratory Investigations

The following investigations were performed when indicated:

- Complete blood count
- Hemoglobin estimation
- Blood sugar levels
- Renal function tests
- Liver function tests
- Arterial blood gas analysis

Chest Radiography

Chest X-ray (posteroanterior view) was performed to assess:

- Cardiothoracic ratio
- Pulmonary vascular markings
- Cardiac chamber enlargement
- Pulmonary congestion

Electrocardiography

A standard 12-lead electrocardiogram was performed to evaluate:

- Cardiac rhythm
- Heart rate
- Axis deviation
- Chamber hypertrophy
- Conduction abnormalities

Echocardiographic Evaluation

Two-dimensional transthoracic echocardiography with color Doppler was performed in all patients by a pediatric cardiologist using a high-resolution echocardiography machine.

The following parameters were assessed:

- Cardiac anatomy
- Cardiac chamber dimensions
- Ventricular function
- Septal defects
- Valve morphology
- Great vessel anatomy
- Direction and magnitude of shunts
- Pulmonary artery pressure

Congenital heart diseases were classified according to standard pediatric cardiology guidelines into:

Acyanotic CHD

- Ventricular septal defect (VSD)
- Atrial septal defect (ASD)
- Patent ductus arteriosus (PDA)
- Atrioventricular septal defect (AVSD)
- Pulmonary stenosis (PS)
- Aortic stenosis (AS)
- Coarctation of aorta (CoA)

Cyanotic CHD

- Tetralogy of Fallot (TOF)
- Transposition of great arteries (TGA)
- Total anomalous pulmonary venous connection (TAPVC)
- Tricuspid atresia
- Double outlet right ventricle (DORV)
- Complex congenital heart diseases

Outcome Measures

Primary Outcome

To determine the spectrum and frequency distribution of congenital heart diseases among children below five years of age.

Secondary Outcomes

- To assess age and gender distribution.
- To evaluate clinical presentation patterns.
- To determine the prevalence of acyanotic and cyanotic CHD.
- To analyze echocardiographic characteristics of various lesions.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 26.0.

Descriptive Statistics

- Continuous variables were expressed as mean ± standard deviation (SD).
- Categorical variables were expressed as frequency and percentage.

Inferential Statistics

- Chi-square test or Fisher's exact test was used for comparison of categorical variables.
- Student's t-test was used for comparison of continuous variables.
- A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 150 children below five years of age with echocardiographically confirmed congenital heart disease were included in the study. The demographic characteristics, clinical presentation, and spectrum of congenital heart diseases were analyzed.

The present study demonstrated that infants constituted the largest proportion (58%) of children diagnosed with congenital heart disease, followed by children aged 13–36 months (18.7%). This finding indicates that the majority of congenital cardiac defects become clinically apparent during the first year of life because of significant hemodynamic alterations occurring after birth. A mild male predominance (56%) was observed, with a male-to-female ratio of 1.27:1. The difference was statistically significant (P<0.001), suggesting a higher detection rate among male children, which may be attributable to both biological and sociocultural factors influencing healthcare utilization. (Table1)

Breathlessness was the most common presenting complaint, observed in 68.7% of patients, followed by recurrent respiratory tract infections (54%), feeding difficulties (48.7%), and failure to thrive (42%). These symptoms predominantly reflect pulmonary overcirculation and congestive cardiac failure associated with left-to-right shunt lesions. Cyanosis was observed in 18.7% of cases, corresponding largely to cyanotic congenital heart diseases. The statistically significant difference among presenting symptoms (P<0.001) indicates that respiratory and feeding-related manifestations constitute the major clinical burden of CHD in early childhood.(Table2)

Cardiac murmur was the most frequent clinical finding, detected in 89.3% of children, followed by tachypnea (71.3%) and tachycardia (60.7%). Hepatomegaly was present in nearly one-third of patients, indicating underlying congestive heart failure. Cyanosis was observed in 18.7% of cases and correlated with cyanotic cardiac lesions. The highly significant association (P<0.001) highlights the importance of meticulous cardiovascular examination, particularly auscultation, in the early detection and diagnosis of congenital heart diseases.(Table3)

Acyanotic congenital heart diseases accounted for 81.3% of all diagnosed cases, whereas cyanotic lesions constituted only 18.7%. The predominance of acyanotic defects was statistically significant (P<0.001) and is consistent with observations reported in most Indian and international studies. This finding suggests that left-to-right shunt lesions remain the major contributor to pediatric congenital cardiac morbidity in tertiary care settings.(Table4)

Ventricular septal defect was the most common congenital cardiac lesion, accounting for 34% of all cases, followed by atrial septal defect (22%) and patent ductus arteriosus (12.7%). Among cyanotic lesions, Tetralogy of Fallot was the most frequently encountered defect (8.7%). The observed distribution was statistically significant (P<0.001), indicating a true predominance of septal defects in the study population. These findings reinforce the established epidemiological pattern that VSD remains the leading congenital heart defect in early childhood.(Table5)

Most acyanotic lesions, particularly ventricular septal defect, atrial septal defect, and patent ductus arteriosus, were diagnosed during infancy. In contrast, a comparatively higher proportion of Tetralogy of Fallot cases were diagnosed after one year of age. The association between age at presentation and type of congenital heart disease was statistically significant (P=0.020). This suggests that acyanotic lesions generally present earlier because of symptoms related to pulmonary overcirculation, whereas some cyanotic lesions may remain undetected until later childhood when cyanosis, squatting, or exercise intolerance becomes more apparent.(Table6)

Table 1: Demographic Characteristics of Study Population

Variable	Number (N=150)	Percentage (%)

Age Group		
Neonates (<1 Month)	18	12.0
Infants (1–12 Months)	87	58.0
13–36 Months	28	18.7
37–60 Months	17	11.3
Gender		
Male	84	56.0
Female	66	44.0
X^2 = 54.28 P Value <0.001		

Table 2: Clinical Presentation of Children with Congenital Heart Disease

Presenting Symptom	**Frequency**	**Percentage (%)**
Breathlessness	103	68.7
Recurrent Respiratory Infections	81	54.0
Feeding Difficulty	73	48.7
Failure To Thrive	63	42.0
Excessive Sweating	52	34.7
Cyanosis	28	18.7
Incidental Murmur Detection	21	14.0
X^2 = 72.48 P Value <0.001		

Table 3: Clinical Examination Findings

Clinical Finding	**Number**	**Percentage (%)**
Cardiac Murmur	134	89.3
Tachypnea	107	71.3
Tachycardia	91	60.7
Hepatomegaly	44	29.3
Cyanosis	28	18.7
X^2 = 96.82 P Value <0.001		

Table 4: Distribution of Acyanotic and Cyanotic Congenital Heart Diseases

Type Of CHD	**Number**	**Percentage (%)**
Acyanotic CHD	122	81.3
Cyanotic CHD	28	18.7
X^2 = 58.91 P Value <0.001		

Table 5: Spectrum of Congenital Heart Diseases on Echocardiography

Congenital Heart Disease	**Number**	**Percentage (%)**
Ventricular Septal Defect (Vsd)	51	34.0
Atrial Septal Defect (Asd)	33	22.0
Patent Ductus Arteriosus (Pda)	19	12.7
Tetralogy Of Fallot (Tof)	13	8.7
Atrioventricular Septal Defect (Avsd)	9	6.0
Pulmonary Stenosis	8	5.3
Transposition Of Great Arteries (Tga)	5	3.3
Tricuspid Atresia	4	2.7
Tapvc	3	2.0
Dorv	3	2.0
Coarctation Of Aorta	2	1.3
X^2 = 43.76 P Value <0.001		

Table 6: Age-wise Distribution of Major Congenital Heart Diseases

Lesion	**<1 Year**	**1–5 Years**	**Total**
VSD	37	14	51
ASD	22	11	33

PDA	15	4	19
TOF	6	7	13
Others	25	9	34
$X^2 = 9.87$ P Value = 0.020			

DISCUSSION

Congenital heart disease (CHD) remains the most common congenital anomaly and a major contributor to childhood morbidity and mortality worldwide. The present study evaluated the spectrum of congenital heart diseases among children below five years of age attending a tertiary care centre and demonstrated that acyanotic lesions constituted the majority of cases, with ventricular septal defect (VSD) being the most common lesion and Tetralogy of Fallot (TOF) the predominant cyanotic defect.

In the present study, infants constituted 58% of the study population, indicating that most congenital cardiac lesions become clinically apparent during the first year of life. Similar observations have been reported by Chaudhary et al. (10), who found that more than half of children with CHD were diagnosed during infancy. Early presentation is largely attributable to the development of symptoms related to significant left-to-right shunts, congestive cardiac failure, and recurrent respiratory tract infections. Studies from various regions of India have consistently demonstrated that infancy is the most vulnerable period for diagnosis of congenital heart defects because physiological changes occurring after birth unmask previously silent cardiac lesions (11,12).

The present study observed a male predominance (56%) with a male-to-female ratio of 1.27:1. Similar findings have been reported by Abqari et al. (7) and Mir et al. (9), who documented a higher proportion of male children among CHD patients. Although biological factors may play a role, sociocultural influences and preferential healthcare-seeking behavior for male children in developing countries may contribute to this observation. Several hospital-based studies from India have demonstrated comparable male predominance among pediatric cardiology referrals (13).

Breathlessness was the most common presenting complaint (68.7%), followed by recurrent respiratory tract infections (54%), feeding difficulties (48.7%), and failure to thrive (42%). These findings are consistent with reports by Mahapatra et al. (11) and Rajani et al. (15), who observed respiratory symptoms as the predominant mode of presentation in children with congenital heart disease. The occurrence of recurrent respiratory infections is largely due to pulmonary overcirculation associated with left-to-right shunt lesions, particularly VSD and PDA. Feeding difficulties and poor weight gain result from increased metabolic demands, inadequate caloric intake, and chronic heart failure, all of which adversely affect growth and development (13).

Cardiac murmur was detected in 89.3% of cases and represented the most common clinical sign. Similar findings have been documented by numerous investigators, emphasizing that cardiac auscultation remains one of the most valuable screening tools for early detection of congenital heart disease (14). The presence of a murmur often prompts referral for echocardiographic evaluation, facilitating definitive diagnosis. Tachypnea and tachycardia were also common findings, reflecting increased pulmonary blood flow and compensatory cardiovascular responses in children with significant shunt lesions.

A major finding of the present study was the predominance of acyanotic congenital heart diseases, accounting for 81.3% of all cases. This observation is in agreement with studies conducted by Saxena et al. (18), Mir et al. (9), and Chaudhary et al. (10), who reported acyanotic lesions in approximately 75–85% of patients. The higher prevalence of acyanotic defects is explained by the greater incidence of septal defects and patent ductus arteriosus in the general population. Furthermore, advances in echocardiography have improved detection of smaller acyanotic lesions that may previously have remained undiagnosed.

Among individual lesions, ventricular septal defect emerged as the most common congenital heart disease, accounting for 34% of cases. This finding is consistent with global and Indian epidemiological studies, which have consistently identified VSD as the most frequent congenital cardiac malformation (2,17). Van der Linde et al. (2), in their systematic review and

meta-analysis, reported VSD as the predominant lesion worldwide. Similarly, studies from northern, southern, and eastern India have documented VSD frequencies ranging from 28% to 40% of all congenital heart diseases (10,14,16). The high prevalence of VSD may be attributable to its broad clinical spectrum, ranging from asymptomatic small defects to large defects causing severe heart failure during infancy.

Atrial septal defect was the second most common lesion in the present study, accounting for 22% of cases. This finding closely resembles observations reported by Kumar et al. (16) and Rajani et al. (15). Increased availability of echocardiography and routine screening of asymptomatic murmurs have contributed to improved detection of ASD. Patent ductus arteriosus constituted 12.7% of cases and was particularly common among infants. Similar frequencies have been reported in studies conducted across India (10,16).

Among cyanotic congenital heart diseases, Tetralogy of Fallot was the most common lesion, accounting for 8.7% of all CHD cases and nearly half of cyanotic defects. This observation is consistent with established pediatric cardiology literature and previous Indian studies (14,17,19). TOF remains the most common cyanotic congenital heart disease surviving beyond infancy because many affected children reach healthcare facilities before severe complications develop. Transposition of the great arteries, tricuspid atresia, TAPVC, and DORV were less frequently encountered, reflecting their comparatively lower prevalence and higher early mortality when diagnosis and intervention are delayed.

The age-wise distribution of lesions demonstrated that most acyanotic defects were diagnosed during infancy, whereas a relatively higher proportion of TOF cases were diagnosed after one year of age. Similar findings have been reported by Park (12) and Allen et al. (8). Large left-to-right shunt lesions typically become symptomatic during early infancy due to pulmonary overcirculation and heart failure, while cyanotic lesions such as TOF may initially present with mild cyanosis and therefore remain undiagnosed until later childhood.

The findings of the present study have important public health implications. Early diagnosis remains critical because delayed detection increases the risk of pulmonary hypertension, recurrent infections, growth retardation, neurodevelopmental impairment, and mortality (20). Strengthening neonatal screening programs, routine pulse oximetry screening, and early echocardiographic evaluation of symptomatic infants can facilitate timely diagnosis and intervention. Establishment of regional pediatric cardiac centers and improved referral pathways may further reduce the burden of untreated congenital heart disease in resource-limited settings.

Strengths of the Study

The study included only echocardiographically confirmed cases, ensuring diagnostic accuracy. It focused specifically on children below five years of age, thereby providing valuable information regarding early childhood presentation of congenital heart disease. The prospective study design minimized information bias and enabled systematic data collection.

Limitations of the Study

The study was conducted at a single tertiary care centre and may not reflect the true community prevalence of congenital heart disease. Referral bias may have resulted in overrepresentation of symptomatic and severe cases. Long-term follow-up and outcome assessment were beyond the scope of the study. Additionally, genetic and environmental risk factors were not evaluated in detail.

Overall, the findings of the present study are consistent with national and international literature and reaffirm that ventricular septal defect remains the most common congenital heart disease, while Tetralogy of Fallot continues to be the predominant cyanotic lesion among children under five years of age.

Clinical Significance:

- Congenital heart disease should be suspected in infants presenting with recurrent respiratory infections, breathlessness, feeding difficulties, or failure to thrive.
- Careful cardiovascular examination, particularly detection of cardiac murmurs, facilitates early diagnosis.
- Echocardiography remains the cornerstone for definitive diagnosis and classification of CHD.
- Early detection and timely referral to pediatric cardiology services can

prevent complications and improve survival and quality of life.

CONCLUSION

The present study demonstrates that congenital heart diseases are predominantly diagnosed during infancy, with acyanotic lesions accounting for the majority of cases. Ventricular septal defect was the most common congenital heart disease, while Tetralogy of Fallot was the leading cyanotic lesion. Breathlessness, recurrent respiratory tract infections, and feeding difficulties were the most frequent presenting symptoms. Early clinical recognition and echocardiographic evaluation are essential for timely diagnosis and appropriate management, thereby reducing morbidity and improving long-term outcomes.

REFERENCES:

1. Mitchell SC, Korones SB, Berendes HW. Congenital heart disease in 56,109 births. Circulation. 1971;43(3):323-332.
2. van der Linde D, Konings EE, Slager MA, et al. Birth prevalence of congenital heart disease worldwide: a systematic review and meta-analysis. J Am Coll Cardiol. 2011;58(21):2241-2247.
3. Saxena A. Congenital heart disease in India: a status report. Indian J Pediatr. 2018;85(11):1039-1045.
4. Kapoor R, Gupta S. Prevalence of congenital heart disease in India. Indian Heart J. 2020;72(1):75-77.
5. Hoffman JI, Kaplan S. The incidence of congenital heart disease. J Am Coll Cardiol. 2002;39(12):1890-1900.
6. Blue GM, Kirk EP, Giannoulatou E, et al. Advances in the genetics of congenital heart disease. J Am Coll Cardiol. 2017;69(7):859-870.
7. Abqari S, Gupta A, Shahab T, et al. Profile and risk factors for congenital heart defects. Ann Pediatr Cardiol. 2016;9(3):216-221.
8. Allen HD, Driscoll DJ, Shaddy RE, Feltes TF. Moss and Adams' Heart Disease in Infants, Children and Adolescents. 9th ed. Philadelphia: Wolters Kluwer; 2016.
9. Mir AB, Ahmed K, Jan M, et al. Spectrum of congenital heart disease in Kashmir. Int J Contemp Pediatr. 2019;6(3):927-931.
10. Chaudhary A, Arya AK, Midha T. Spectrum of congenital heart diseases in children under five years. Int J Contemp Pediatr. 2023;10(12):1837-1840.
11. Mahapatra A, Sarangi R, Mahapatra PP. Spectrum of congenital heart disease in Eastern India. Int J Contemp Pediatr. 2017;4(2):314-316.
12. Park MK. Pediatric Cardiology for Practitioners. 7th ed. Philadelphia: Elsevier; 2020.
13. Lai WW, Mertens LL, Cohen MS, Geva T. Echocardiography in Pediatric and Congenital Heart Disease. 3rd ed. Wiley-Blackwell; 2021.
14. Penny DJ, Vick GW. Ventricular septal defect. Lancet. 2011;377(9771):1103-1112.
15. Rajani HS, Narayanappa D, Sunilkumar S. Spectrum of congenital heart diseases in a tertiary care centre. Indian J Public Health Res Dev. 2020;11(7):628-32.
16. Kumar J, Mishra VK, Kumar S, Kumar T. Assessment of prevalence and pattern of congenital heart diseases in children. Int J Health Clin Res. 2021;4(5):347-9.
17. Pelech AN. The physiology of cardiac auscultation. Pediatr Clin North Am. 2004;51(6):1515-35.
18. Saxena A, Mehta A, Sharma M, Salhan S, Kalaivani M. Epidemiology of congenital heart disease in India. Ann Pediatr Cardiol. 2021;14(3):267-74.
19. Apitz C, Webb GD, Redington AN. Tetralogy of Fallot. Lancet. 2009;374(9699):1462-71.
20. Wren C, O'Sullivan JJ. Survival with congenital heart disease and need for follow-up in adult life. Heart. 2001;85(4):438-43.