

# Study of prevalence of congenital heart diseases in children in a rural tertiary care hospital

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## Abstract

**Background:** Congenital Heart Diseases (CHD) are relatively common with a prevalence ranging from 3.7 to 17.5 per 1000 live births. **Objective:** To study the prevalence, age wise distribution and clinical spectrum of CHD in children from (0-15 years). **Material & Methods:** This hospital based study was conducted on 26,239 patients aged (0-15 years) in the Department of Paediatrics, Akash Hospital attached to Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bangalore, Karnataka, India from October 2013 to October 2016. Clinical Diagnosis, 2D Echocardiography and Color Doppler were considered for diagnosis of CHD. **Results:** Pattern of CHD in this study was Acyanotic Congenital Heart Disease (ACHD)-50 cases. Atrial Septal Defect(ASD)-48%, Ventricular Septal Defect(VSD)-16%, Patent Foramen Ovale(PFO)-12%, Patent Ductus Arteriosus(PDA)-8%, VSD+ASD-8%, Dextrocardia+Bicuspid Aortic Valve+ Aortic Regurgitation-2%, Partial Anomalous Pulmonary Venous Connection(PAPVC)-2%, Pulmonary Stenosis(PS)-2%, PDA+ASD+Pulmonary Arterial Hypertension(PAH)-2%, of total cases. No case of cyanotic congenital heart diseases (CCHD) was found during the study period. **Conclusion:** Prevalence of CHD was 1.9 per 1000 patients, Acyanotic CHD was the common heart disease found in the study. ASD was the most commonest lesion (48%), followed by VSD (16%), PFO(12%), PDA(8%).

**Key words:** Atrial Septal Defect, Congenital Heart Diseases, Children, Prevalence

## Introduction

Congenital heart defects (CHD) is the most common type of birth defects [1,2], with a wide range of birth prevalence estimates. Congenital Heart Diseases (CHDs) are the leading cause of mortality in the first year of life [3,4,5]. According to a status report on CHD in India, 10% of the present infant mortality may be accounted for by CHD [6]. According to a large hospital based study from India, the incidence of congenital heart disease is 3.9/1000 live births [7]. In a community based studies from India, [8,9] the prevalence of CHD ranges from 0.8-5.2/1000 patients. Thus, the prevalence of CHD is not uniform across the

country and setting. This study was planned because there was more number of cases of CHD in the rural population which were underreported in studies, many studies are from urban population, and the exact prevalence of CHD is less known in this area of rural population. The aim of the study was to know the prevalence, age wise distribution and clinical spectrum of CHD in children from (0-15 years) in a rural tertiary care hospital and report it in a scientific journal.

## Material and Methods

This study was conducted in the Department of Paediatrics, Akash Hospital attached to Akash Institute of Medical Sciences and Research Centre, Devanahalli,

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Bangalore, Karnataka, from October 2013 to October 2016. This was a prospective study, total number patients studied were 26,239, sample included all children aged (0-15 years) attending the pediatric outpatient department (OPD) and in patient department (IPD) admitted in the pediatric wards were included and studied in the study period. There was no definite sampling size/technique was used as we screened all the patients attending the paediatrics OPD and IPD. Preterm babies with diagnosed case of congenital heart disease were excluded from the study. Clinical Examination, 2D Echocardiography and color Doppler were considered for diagnosis of CHD. Clinically suspected cases were subjected for 2D Echocardiography and color Doppler. Descriptive data are presented as percentages. Descriptive statistics was calculated for CHD prevalence per 1000 patients.

**Place of study:** Department of Paediatrics, Akash Hospital attached to Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bangalore.

## Results

During the period of 3 years from October 2013 to October 2016, we saw 26,239 new patients aged between (0-15 years), including OPD and IPD, of these 50 children were diagnosed to be having some type of CHD, with a prevalence of 1.9 per 1000 patients. Details of CHDs are provided in Table-I and Table-II. Acyanotic heart diseases were present in 50 children, no cyanotic heart diseases was seen. ASD was the most common heart lesion (48%). Maximum number of cases were seen in 0-1 year age group (n=35, 70%). One girl child aged 10 years was diagnosed with ASD during our routine outpatient checkup, confirmed with 2D Echocardiography, operated for ASD closure in next 15 days in Cardiac centre in Bangalore.

**Table-I: Pattern of Congenital heart diseases in the study**

ASD	24
VSD	08
PFO	06
PDA	04
VSD+ASD+PAH	04
Dextrocardia+BAV+MildAR+TrivialAR	01
PAPVC	01
PS	01
PDA+ASD+PAH	01

**Table-II: Spectrum of Age and sex wise distribution of Congenital Heart diseases**

Age group	Male	Female
0-1 years	17	18
1-5 years	03	03
5-15 years	04	05

## Discussion

The term congenital is derived from the Latin word (“con” means together and “genitus” means born)

**Period of study:** October 2013 to October 2016.

**Type of study:** Longitudinal study

**Sampling method:** No definite sampling technique used

**Inclusion Criteria:** all children aged (0-15 years) attending the pediatric outpatient department (OPD) and in patient department (IPD) admitted in the pediatric wards were included and studied in the study period.

**Exclusion criteria:** Preterm babies with diagnosed case of congenital heart disease were excluded from the study.

**Statistical Methods:** Descriptive data are presented as percentages. Descriptive statistics was calculated for CHD prevalence per 1000 patients.

referring to “present at birth”. CHD is known as a defect in “cardiocirculatory” structure or function that is

existent from birth, although it may be discovered later [10]. CHD remains the leading cause of death in children with malformation [11].

Large majority of these structural abnormalities of heart occur as an isolated anomaly, but around 33% have associated anomalies [12]. Etiology of CHD is multifactorial and a large collection of environmental and genetic causes have a role in its pathogenesis [13]. Malformations of the cardiovascular system are also associated with significant medical morbidity, which requires use of costly medical facilities [14].

As a group, congenital heart disease (CHD) constitute a significant proportion (upto 25% in some studies) of congenital malformations that present in the neonatal period. Recent studies from India and other developing countries have shown a decline in prevalence of rheumatic fever and rheumatic heart disease [15]. Congenital malformations and in particular CHD's are likely to become important contributors to infant mortality in the near future. Hence, it is important to determine the exact prevalence and case burden of congenital heart disease so that appropriate changes in health policies can be recommended [16].

Knowledge of the epidemiology of congenital heart disease is the basis on which investigative efforts will emerge to identify the causes of cardiac dysmorphogenesis and afford opportunities to prevent them [17].

In our study the prevalence of CHD was 1.9 per 1000 patients. In a hospital based study, Smitha et al found the prevalence of CHD in newborn for 5 years in Mysore from 6.6 to 13.06/1000[18]. However, in a recent study from Kanpur [19], again a hospital based study, the prevalence of CHD was found to be 26.4/1000. Both these studies found VSD as the commonest heart lesion. But our study found ASD as the commonest heart lesion followed by VSD as the second common lesion. Prevalence was more in females than in males, which was comparable to study by Bhardwaj R et al [20]. In our study maximum number of cases were seen in 0-1 year age group(n=30,70%) which was comparable to study by Kapoor R and Gupta S[19], where the maximum number of cases were seen in 0-3 year age group(n=233,82.9%). Because of our study and screening done maximum cases were detected in early age group (0-1 year), so early screening and diagnosis of CHD is important in the prognosis and treatment of congenital heart disease.

## Conclusion

The prevalence of CHD in our study was 1.9/1000 patients. ASD was the commonest lesion and CHD was more common in females, maximum number of cases with CHD was seen in 0-1 year age group in this study population. So the diagnosis of CHD should be kept in mind while doing routine cardiac examination in all age groups of children, earlier the diagnosis better is the prognosis. Innocent murmurs may not be innocent always, recommendations for universal screening has to be considered for timely interventions and better outcomes.

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