

## An Update on Congenital Heart Defects in Humans (CHDs)

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### Abstract

The Congenital heart defects present in humans and a common mortality anomaly. It is (8-10/1000 births). The main reason is supposed to be multifactorial influences including environmental and genetic components and common Syndrome forms. In this we will briefly discuss about few of the causes that are responsible for the Congenital Heart Defects (CHDs), such as the 22q11.2 deletion, Disturbances in left-right patterning, Mutation in GDF1 gene, Maternal Obesity and SSRIs usage in maternity.

**Keywords:** Anomaly; Maternal; Syndromic

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### Introduction

In the year 1994 to 1990 a survey was conducted in US with The Sibley heart Centre at children's healthcare of Atlanta and the division of medical genetics at Emory University. It was found that out of 255849 births 43 children had 22q11.2 deleted and was born with a wide varieties of major cardiac defects. The gene NKX2-5, has been seen causing defects and has been identified through gene linkage analysis with non-syndromic CHDs [1].

Disturbances in left-right patterns may contribute to the development of cardiac cues, which leads to proper looping and vessel remodeling of normally asymmetrically developed heart. It is seen that heterozygous function loss mutations in gene GDF1 which add to cardiac defects.

It is also found the obesity during the pregnancy have infants with heart defects (cardiac defects).

The Selective Serotonin-reuptake inhibitors (SSRIs) are most commonly and most frequently used antidepressant in general use and also used during pregnancy. Very less data is present on SSRIs in human pregnancy, recent investigations and researches suggest maternal use of SSRIs at the time of pregnancy may result in birth defects mainly CHDs [2,3].

The operative mortality of children is most common operative method which requires lifelong operative method, further which requires lifelong anticoagulant. The decellularized homografts are a new technique of operating congenital heart defects.

Massive success have been achieved in cardiovascular diagnostics and cardiothoracic surgery which leads to an increased survival of

newborns with Congenital Heart Defects (CHD) reach adult age, which is creating a completely steady growth in patients having CHD, which are termed as patient with Grown-up Congenital heart disease (GUCH). The people or we can say the patients estimated to be 4 out of 1000 adults. These patients with GUCH more often need expert medical caring for a long period of time which inhibits high costs to the patient. Due to this the burden on the global health increases quickly due to CHD [4-7].

The eight most common sub-types of the CHD are VSD, ASD, PDA, PS, TOF, COARC, TGA and AoS.

VSD- Ventricular Septal Defect, it is treatable, medically diagnosis can be done, there are about less than 1 million cases per year in India.

ASD- Atrial Septal Defect, it is the hole in the wall between the heart's upper chambers, there are more than 1 million cases per year in India.

PDA- Patent Ductus Arteriosus, it is the condition where the ductus arteriosus fails to close after birth. It is treated with surgical and non-surgical methods.

PS- Pulmonary Stenosis, it is the heart valve disorders where there is a narrowing or blockage of the pulmonary valve.

ToF- Tetralogy of Fallot, a rare condition that is caused by a mixture or a combination of four defects that are present at birth. There are less than 100 thousand cases per year in India. It is treatable by a medical professional, it can last for years or be lifelong.

COARC- Coarctation of the aorta, a condition in which narrowing of the large blood vessel (aorta) that leads from the heart. There are less than 1 million cases per year in India. It is generally treated.

TGA- Transposition of Great Arteries, it is a swapping of the connections in the heart due to abnormal development of the heart during the first eight weeks of the pregnancy.

AoS- Aortic stenosis, a condition in which narrowing of the exit of the left ventricle of the heart is seen (where the aorta begins).

Geographic differences in Congenital heart Defects are:

- Asia has the highest number of total CHDs 9.3 persons out of 1000 persons, the maximum coming from only two countries

India and Iran. The PS (Pulmonary Stenosis) and ToF (Tetralogy of Fallot) are in high number whereas COARC (Coarctation of the aorta) and AoS (Aortic Stenosis) are in low number.

- Europe has the second highest number of patients of CHDs 8.2 out of 1000 persons.

- North America is the third highest with 6.9 out of 1000 persons.

## Conclusion

The number of patients have been continuously increasing in the last two decades. There is still more research and investigations to be done.

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