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"Knowledge on factors of congenital heart disease among Paediatric doctors of selected Hospitals in Dhaka City, Bangladesh: A Cross Sectional Study"

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Abstract: *To assess the level of knowledge on factors of congenital heart diseaseamong Paediatricdoctors ofsome selected hospitals in Dhaka City this descriptive cross sectional study was done. The study was a descriptive type of cross sectional study place was Anwar Khan Modern Medical College Hospital and Dhaka Medical College Hospital 103Paediatric doctors who passed M.B.B.S Examination recently and who can participate willingly were included. About 60% (59.2%) respondents were below 25 years, 42(40.8%) of respondents were between 26-30 years. The mean age of respondent was 25.28±0.94 years, minimum 23 and maximum age 28 years. Out of 103 Paediatric doctors, 48(46.6%) were male and 55(53.4%) were female. Most of the respondents 205(85.4%) were Muslim. Majority of the participants (41.7%) were from medicine department, 26.2% participants were from surgery, 30.1% patients were from Obs and Gynae and 1.9% participants were from other department. Most of the participants (98.1%) had knowledge about congenital heart disease. 96.1% had knowledge regarding the risk factors of congenital heart disease. 52.4% participants reports that genetics is 1 of the factors responsible for CHD. 44.7% participants reported age of mother, 40.8% participants told that mother with HTN, 39.8% participants told mother with DM, 33% reported mother with obesity, 27.2% reported environmental and 57.3% participants noted all of them are responsible factors for CHD. 98.1% participants had knowledge about sign and symptoms of CHD, they reported abnormal heart study, a bluish discoloration of skin, fingernails tip of nose lips, fast breathing, poor feeding and poor weight were 90.3%, 92.2%, 73.8%, 72.8% and 69.9% respectively. Most of the participants 98.1% had knowledge about heart murmer and 96.1% participants had knowledge about cyanosis. Majority of the participants 85.4% reported that CHD can be diagnosed. 52.4% respondents had knowledge about new screening test for CHD. Most of the participants (97.1%) reported that CHD can be treated. Maximum respondents 76.7% noted that CHD can be treatment by both conservative and surgical procedure, 16.6% reported surgical treatment and only 6.8% reported CHD can be treatment by conservative treatment. Majority of the Paediatric doctors had satisfactory knowledge (88.3%). If doctors have the required knowledge on this topic then they can serve our community as they are alert about this disease.*

Keywords: *CHD, Discoloration of skin, HTN, Congenital heart disease.*

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I. Introduction

A CHD means a child is born with an abnormally structured heart and or large vessels. Such heart may have incomplete or missing parts, may be put together the wrong way, may have roles between chamber partitions or may have narrow or leaky valves or narrow vessels. There are many types of congenital heart defects, ranging from those that pose relatively small threat to the health of the child to those that require immediate surgery. Some CHD may go undirected until adulthood. In adults CHD often is diagnosed after heart failure develops or an arrhythmia causes sudden sudden cardiac death. CHD is the most common birth defect. It comprises over 30 types of defects, ranging from mild to revere. Some forms of CHD resolve without therapy others are fully correctable and others are life threatening either early or later in life. Nearly 3 children out of every thousand live births have severe CHD requiring early surgery while another 13/1000 require surgery on catheter based intervention later in childhood. The mortality rate has decreased nearly 40 percent in the in the

last 18 years in 2005, CHD was responsible for about 3600 deaths. Today more adults than children are living with CHD because medical advances have enabled more infants with heart defects to survive to adulthood. The number of adults living with CHD continues to grow, and the number of adults with CHD admitted to the hospital each year has doubles over the past decade research. Research and medical care focus on both the duration and the quality of life for individuals with CHD.

II. Literature Review

Congenital heart disease (CHD) refers to structural or functional heart diseases, which are present at birth. These are primarily seen in neonates, infants and children; although it is not uncommon to see adults with uncorrected CHD. The reported incidence of CHD is 8-10/1000 live births according to various series from different parts of the world. The prevalence of CHD in the Indian subcontinent based on birth statistics and school based studies varies from as low as 0.8 to 5.2/1000 live births depending upon the age group considered (Sarker et al., 2014; Fatema et al., 2008; Fatema et al., 2010 & Kapoor 2008). Over the past 30 years there has been increasing awareness of the importance of early referral of newborn with heart disease to special center. Continuous advances in technology and training in pediatric cardiology and pediatrics have improved long term outcome and promised better quality of life (Hussain 2015). Like other developing countries, Bangladesh is facing a multitude of health problems. Pediatric heart diseases are only one of them. Congenital heart disease (CHD) occurs in 5-8 out of every 1000 live births (Samanek 1990 & Wren 2000). Approximately one quarter of these children have critical congenital heart disease (CCHD), which by definition requires surgery or catheter intervention in the first year of life and responsible for more deaths than any other type of malformation. Without early recognition, diagnosis and treatment, a majority of infants and children with congenital heart disease die in their first month of life in developing countries.5 Although, pediatric heart diseases are not explicitly included in the Millennium Development Goals, accomplishing some of the goals will have a direct impact on children with heart disease in developing countries. Improving vaccination and sanitation, increasing the number of skilled health care professionals and awareness for early diagnosis can benefit children with congenital and acquired heart disease (Leblanc 2009).There is a wide gap between the developed and developing countries regarding pediatric cardiac care. Absence of pediatric cardiac centers, presence of cardiac centers only in large cities, unstable political systems affecting social stability, and absence of specific health care policies in various countries are the reasons for this variation (Pezzella 2002). Four major reasons due to which treatment for congenital heart disease is currently out of reach for a majority of children in Bangladesh are: (1) Scarcity of pediatric cardiac care in public hospitals; (2) Expense of treatment in private hospitals; (3) Lack of resources and trained personnel in this field; and (4) Lack of awareness.8 Although there has been establishment of tertiary-level pediatric cardiac care services in public hospitals, the time has arrived to further enhancement in the country. Due to a lack of resources cardiac care inadequacy cannot be solved within a short span of time. Giving urgent attention to 2 important reasons for inadequate pediatric cardiac treatment in Bangladesh can change the scenario drastically. These are (1) Lack of awareness about CHD and (2) High rate of unsupervised home deliveries because of which CHD are not detected at birth. Too often referrals are delayed because of ignorance or limited knowledge of CHD or its natural history, inaccurate diagnosis and lack of awareness about available facilities. Moreover many families may seek advice from unqualified doctors, complicating the situation.In the current era, congenital heart surgery allows for repair or palliation of nearly all types of congenital heart malformations (Sharma 2001). Congenital heart surgery, together with transcatheter interventions, has resulted in a marked improvement in survival for those with CCHD (Rashkind 2005). With the advent of prostaglandin therapy for ductus arteriosus-dependent lesions, many previously lethal congenital heart conditions that present with severe hypoxemia, shock, and acidosis in the newborn period are now survivable and can be palliated.Intervention is typically performed in the first weeks of life to optimize hemodynamics and prevent end-organ injury associated with delayed diagnosis. Because timely recognition of CCHD could improve outcomes, it is important to identify and evaluate strategies to enhance early detection. In this scenario it is now vital to take basic steps such as increasing awareness of CHD amongst the general population and amongst healthcare providers in order to triage CHD cases for early referral and proper management. Only then it will be possible and feasible to improve the diagnosis and treatment of congenital heart disease within a short span of time. Recent studies show that a high proportion of neonate with critical CHD experienced late or no referral to cardiac specialty center accounting for significant number of death (Fixler et al., 2014). Methods to improve early detection of CCHD appear warranted. Evidence is there that routine pulse oximetry performed on asymptomatic newborns after 24 hours of life, but before hospital discharge, may detect CCHD (Aamir et al., 2007 & Ostamn et al., 2012). In practice, infants and older children with CHD may be diagnosed on the basis of physical examination findings, such as heart murmurs, tachypnea, or overt cyanosis. But, in neonate such findings are not always evident following birth. Skilled physical examination, which is a sensitive and specific screening tool in older children, does not always distinguish between neonates with and without congenital heart disease (Knowles et al., 2005). A recent study in the United

Kingdom suggested that 25% of infants with CCHD are not diagnosed with heart disease until after discharge from the newborn nursery (Chang et al., 2008). The median age of diagnosis in these cases was 6 weeks. A recent publication from the United States also suggested that delayed or missed diagnosis occurs in 7 per 100000 livebirths (Aamir et al., 2007). Newborns with CCHD are susceptible to profound, sudden worsening in clinical status leading to shock in the first few days and weeks of life. The severity of organ damage is a function of the extent of insult, differential flow to organs as the neonatal circulation responds to the hypoxic/ischemic insult, and the oxygen requirement of each organ.

III. Justification of the study

Non communicable disease account for the majority of deaths in developed countries obviously due to eradication of infectious diseases, and are considered as a leading cause of death globally. Cardiovascular diseases are come on the top of the list for causes of mortally due to their being very prevalent all over the world cardiovascular diseases lead to enormous cost in terms of wasted life and tertiary care expenditure in this regard (WHO, 1996). The cause of most congenial heart defects is unknown but rapid progress is being made in identifying the genetic basis of many congenital heart lesions. Both genetic and environmental factor may cause or contribute to cardiac malformation. Two to 4% cases of CHD are associated with known environmental on adverse maternal condition and teratogenic influences, including maternal diabetes malaria, phenyleketronuria or SLE congenital rubella syndome, maternal ingestion of drugs (lithium, ethams), warferrin, antimetaolites, anticonvalescent agent etc in our territory, awareness of health into mars people is not found frequently sufficient opportunity is absent to mars people regarding the risk factors of CHD. If our concerned authority considers their epidemic disease into our community then people can save their money and life also (Walters at al 1999).Mass awareness should be created on mothers at a national level govt. support to spread the message of prevent of heart problems in each and every homes which will include non-surgical treatment is the best solution to avoid costly invasive painful surgery and lead a healthy life without a scar on the chest. This study will be helpful to take necessary steps to come forward and chalk out elaborate program for people of Bangladesh to make them aware about the CHD. This research will provide new vision for emphasis on education and competing about potential risk factors for congenital heart disease as well are secondary preventives strategies. In our education system. The awareness of risk factors of CHD has security that is why people has poor knowledge on said matter and above all as we are the people of 3rd world country so cost of living of mars people is very viler able so awareness and perception of said matter don't develop into them. (Ginsbesy at al

1999) Doctors play an important role in society. They always faces with patients manage & counseling them.This Study will helps Paediatric doctors to spread this manage in each mother as well as society.

Research Question: What is the level of knowledge on risk factors of congenital heart disease amongPaediatricdoctors?

IV. Objectives

General objective:

1. To assess the level of knowledge on factors of congenital heart disease among Paediatric doctors of selected hospitals in Dhaka City.

Specific Objective:

1. To describe the socio demographic characteristics of Paediatric doctors.

Key Variables:

1) Age of the respondents.
2) Sex of the respondents.
3) Religion of the respondents.
4) Education level of the respondents.
5) Marital status.
6) Family member.
7) Occupation.
8) Monthly family income.
9) Relation with hypertension Diabetes.

Operational definition

Congenital heart disease:

A malformation of the heart, aorta, or other large blood vessels that is the most frequent form of major birth defect in newborns. Abbreviated CHD. There are many types of CHD, including atrial septal defect (ASD), ventricular septal defect (VSD), pulmonary (valvular) stenosis, and aortic stenosis, coarctation of the aorta, Tetralogy of Fallot, and transposition of the great arteries. Much of the practice of pediatric cardiology consists of the diagnosis and treatment of CHD. Also known as congenital heart defect, congenital heart malformation, congenital cardiovascular disease, congenital cardiovascular defect, and congenital cardiovascular malformation.

Knowledge: Among the total respondent (n=103).88.3% have satisfactory knowledge followed by notsatisfactory knowledge 11.7% about the risk factors of CHD.

Paediatric Doctors:

Medical Paediatric is a term used in some countries to describe a physician in training who has completed medical school and has a medical degree, but does not yet have a full license to practice medicine unsupervised.

V. Methodology

The present study is a descriptive type of cross sectional study conducted in Anwar Khan modern medical college Hospital and Dhaka medical college hospital targeted 103 Paediatric doctors about their knowledge on CHD with Purposive sampling.

Study area: This study was conducted in Anwar Khan modern medical college Hospital and Dhaka medicalcollege hospital.

Study Period: It was conducted during the period of 18 March2015 and the 18 Aprilof the same year.

Study Population: This study was emphasized on 103 Paediatric doctors knowledge about CHD placed inAnwar Khan Modern Medical College Hospital & Dhaka Medical College Hospital.

Study Design & Technique: It was a Descriptive type of cross sectional study through the purposive samplingtechnique.

Inclusion Criteria:

1. Paediatric doctors who can understand and were willing to give consent were included in the current study.

Exclusion Criteria:

1. Paediatric doctors who were out of hospital due to leave or outside due to Community Placement.
2. It also exclude uninterested participant.

Sample Size

Sample size estimation (study design)

$$n = \frac{z^2 pq}{d^2}$$

(Here n = sample size z = Standard normal deviate usually considered 1.96 at 95% c1 level. p = Proportion of the target population with a particular character. Taken as50% 0.5, q = 1-p, d = desired degree of accuracy considered 0.05) calculated sample size 384.Feasible sample size = 100 (due to limitation of time)

Data collection tools: A pre testing semi structured interview schedule was used as a data collection tools.

Data processing and analyze: After collection the data was checked & verified daily an audited for errors andinconsistencies. All the results will be calculated with the help of computer by using the SPSS-16 Program. Data was presented according to the variable of the study showing parentage.

Ethical consideration: Any research should equally give due respect to ethical value. In the context of studyverbal approval from authority & written consent was taken for gathering data.

Limitations of the Study: The data were collected only from Paediatric doctors of AK Modern CollegeHospital& Dhaka Medical College Hospital. But this data do not reflect the actual status of our whole country. The sample size is too small to represent an overall view and due to limitation of time the research makes concise.

VI. Observations and Results

The study was a descriptive type of cross sectional study place was Anwar Khan Modern Medical College Hospital and Dhaka Medical College Hospital 103Paediatric doctors who passed M.B.B.S Examination recently and who can participate willingly were included. About 60% (59.2%) respondents were below 25 years, 42(40.8%) of respondents were between 26-30 years. The mean age of respondent was 25.28±0.94 years, minimum 23 and maximum age 28 years. Out of 103 Paediatric doctors, 48(46.6%) were male and 55(53.4%) were female.

Table-4.1.1: distribution of the respondents according to age (n=103).

Age (years)	Frequency	Percentage (%)
21-25	61	**59.2**
26-30	42	**40.8**
Total	103	**100.0**
Mean ± SD	**25.28±0.94**	
Range	**(23 – 28) years**	

Maximum 61(59.2%) of respondents were between 21-25 years, 42(40.8%) of respondents were between 26-30 years. The mean age of respondent was 25.28±0.94 years, minimum 23 and maximum age 28 years.

Table-4.1.2: distribution of the respondents according to sex (n=103).

Sex	Frequency	Percentage (%)
Male	48	**46.6**
Female	55	**53.4**
Total	**103**	**100.0**

Out of 103 respondents, 48 (46.6%) were male and 55(53.4%) were female. Male: Female ratio was 1:1.2.

Table-4.1.3: distribution of the respondents according to religion (n=103).

Religion	Frequency	Percentage (%)
Muslim	70	**67.9**
Hindu	29	**28.2**
Buddhist	**4**	**3.9**

Table shows the religious distribution of the respondents. Most of the respondents 103 (67.9%) were Muslim, 29(28.2%) were Hindu and 4(3.9%) were Buddhist.

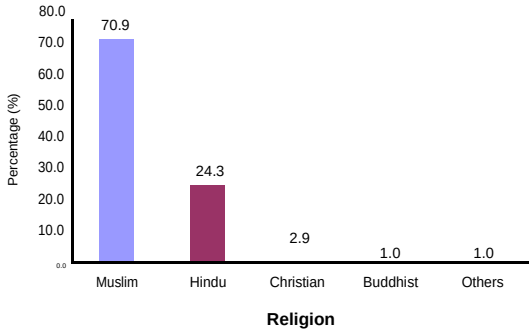

Figure-4.1.1: distribution of the respondents according to religion.

Majority of the participants 41.7% were medicine, 26.2% participants were surgery, 30.1% patients were Obs and Gynae and 1.9% participants were other department.

Table-4.1.4: distribution of the respondents bydepartment (n=103).

Department	Frequency	Percentage (%)
Medicine	43	**41.7**
Surgery	27	**26.2**
Gynae & Obs	31	**30.1**
Others	2	**1.9**
Total	**103**	**100.0**

Table-4.1.5: distribution of the respondents according to monthly family income (n=103).

Monthly income	Frequency	Percentage (%)
1000 - 25000Tk.	16	**15.5**
25000-50000 Tk.	70	**68.0**
50000-75000 Tk.	9	**8.7**
75000-100000 Tk.	5	**4.9**
> 100000 Tk.	3	**2.9**
Total	103	**100.0**
Mean±SD **Range**	**43470.7±23634.3** **(10000-150000 Tk)**	

Distribution of the respondents according to monthly family income, maximum 68.0% participants had monthly family income 25000-50000 Tk followed by 15.5% participants had 10000-25000 Tk.

Table-4.1.6: distribution of the respondents according to marital status (n=103).

Marital status	Frequency	Percentage (%)
Married	30	**29.1**
Unmarried	73	**70.9**
Total	**103**	**100.0**

Distribution of the study subjects according to marital status, it was found that the maximum study subjects 70.9% were unmarried and 29.1% participants were married.

Table-4.1.7: distribution of the respondents according to family type (n=103).

Family size	Frequency	Percentage (%)
2 Persons	13	**12.6**
3 Persons	25	**24.3**
4 Persons	42	**40.8**
5 Persons	17	**16.5**
Above 5	6	**5.8**
Total	**103**	**100.0**

The family members of the study respondents, 40.8% had 4 family members, 24.3 participants had 3 family members, 16.5% participants had 5 family members and 12.6% had 2 family membersThe parents/husbands occupational distribution of the study respondents, 35% had govt. job, 28.2% participants had non govt. job, busiThe family members of the study respondents, 40.8% had 4 family members, 24.3 participants had 3 family members, 16.5% participants had 5 family members and 12.6% had 2 family members ness had 25.2%.

Table- 4.1.8: distribution of the respondents according parents/husbands occupational distribution (n=103).

Occupation	Frequency	Percentage (%)
Govt. job	**36**	35.0
Non Govt. job	**29**	28.2
NGO	**5**	4.9
Business	**26**	25.2
Others	**1**	1.0
Retired	**6**	5.8
Total	103	100.0

Table-4.1.9: distribution of the respondents by knowing about congenital heart disease (n=103).

Knowledge about congenital heart disease	Frequency	Percentage (%)
Yes	101	**98.1**
No	2	**1.9**
Total	**240**	**100.0**

Most of the participants 98.1% had knowledge about congenital heart disease.

Table- 4.2.1: distribution of the respondents knowledge regarding the risk factors of CHD (n=103).

Knowledge regarding risk factors of congenital heart disease	Frequency	Percentage (%)
Genetics	54	**52.4**
Age mother	46	**44.7**
Mother with HTN	42	**40.8**
Mother with DM	41	**39.8**
Mother with obesity	34	**33.0**

Environmental	28	**27.2**
All of them	**59**	**57.3**

Majority of the participants had satisfactory knowledge (88.3%) followed by not satisfactory knowledge 11.7%. The knowledge regarding factors responsible for CHD, 52.4% participants reports were genetics, 44.7% participants reported age of mother, 40.8% participants opinion mother with HTN, 39.8% participants opinion mother with DM, 33% reported mother with obesity, 27.2% reported environmental and 57.3% participants noted all of them are responsible factors for CHD.

Table- 4.2.2: distribution of the respondents by most common factors Responsible for CHD (n=103).

Most common factors of congenital heart disease	Frequency	Percentage (%)
Genetics	41	**39.8**
Environmental	2	**1.9**
Genetic environmental interaction	60	**58.3**
Total	**103**	**100**

The most common factors responsible for CHD, maximum 58.3% participant's reports were genetic environmental interaction followed by genetics 39.8%.

Table- 4.2.3: distribution of the respondents by knowing ANC necessary for CHD (n=103).

ANC	Frequency	Percentage (%)
Yes	97	**94.2**
No	6	**5.8**
Total	**103**	**100.0**

Most of the respondents 94.2% reported ANC was necessary for CHD.

Table- 4.2.4: distribution of the respondents by the level of thinking that antenatal visit is necessary for CHD(n=103).

Level of ANC	Frequency	Percentage (%)
Highly necessary	88	**85.4**
Moderately necessary	9	**8.7**
Never necessary	6	**5.8**
Total	**103**	**100.0**

Most of the respondents 85.4% reported ANC was highly necessary for CHD followed by 8.7% moderately necessary.

Table- 4.2.5: distribution of the respondents by the type of relation of genetic factor with CHD (n=103).

What type of relation of genetic factor with CHD	Frequency	Percentage (%)
Mostly related	72	**69.9**
Mild related	20	**19.4**
Not related	11	**10.7**
Total	**103**	**100.0**

Majority of the participants 69.9% reported genetic factor was mostly related with CHD, 19.4% reported mildly related and 10.7% reported not related.

Table- 4.2.6: distribution of the respondents by the level of risk factors related with mothers diabetes and HTN(n=103).

Which level of risk factors related with mothers DM & HTH	Frequency	Percentage (%)
Always related	59	**57.3**
Sometime related	36	**65.0**
Not related	8	**7.8**
Total	**103**	**100.0**

Maximum 65.0% participants reported sometimes related risk factors for CHD with mothers DM and HTN followed by 57.3% reported sometimes and 7.8% reported not related.

Table- 4.2.7: distribution of the respondents according by the level related with mothers TORSCH infection(n=103).

Which level is related with mothers TORSCH infection	Frequency	Percentage (%)
Always related	57	**55.3**
Sometime related	32	**31.1**
Not related	14	**13.6**
Total	**103**	**100.0**

Maximum 55.3% participants reported always related mothers TORSCH infection for CHD followed by 31.1% reported sometimes and 13.6% reported not related.

Table- 4.2.8: distribution of the respondents by knowing CHD can be prevented (n=103).

CHD can be prevented?	Frequency	Percentage (%)
Yes	90	**87.4**
No	13	**12.6**
Total	**103**	**100.0**

Most of the respondents 87.4% noted CHD can prevented.

Table- 4.2.9: distribution of the respondents by type of precaution reduces the risk of CHD (n=103).

Types of precaution	Frequency	Percentage (%)
Regular ANC	102	**99.0**
TORSCH screening	72	**69.9**
MR	38	**36.9**
Mother age between 18-35 years	77	**74.8**
Control DM & HTN	**84**	**81.6**

Most of the participants 99% reported regular ANC needed for the prevention of CHD, 69.9% TORSCH screening, 36.9% reported MR, 74.8% mother age between 18-35 years and 81.6% reported control of DM & HTN of mother.

Table- 4.3.1: distribution of the respondents by knowing the sign symptoms for CHD (n=103).

Sign and symptoms of CHD	Frequency	Percentage (%)
Yes	101	**98.1**
No	2	**1.9**
Total	**103**	**100.0**

Most of the participants 98.1% had knowledge about sign symptoms of CHD.

Table- 4.3.2: distribution of the respondents by knowing what is Heart murmur and cyanosis (n=103**)**

Do you know heart murmur and cyanosis	Frequency	Percentage (%)
Heart murmur	101	**98.1**
Cyanosis	**99**	**96.1**

Respondents by knowing what Heart is murmur 98.1 and cyanosis 96.1.

Table- 4.3.3: distribution of the respondents by telling CHD heart disease can be diagnosed (n=103).

CHD can be diagnosed	Frequency	Percentage (%)
Yes	88	**85.4**
No	15	**14.6**
Total	**103**	**100.0**

Majority of the participants 85.4% reported CHD can be diagnosed.

Table- 4.3.4: distribution of the respondents by knowing the new screening test for CHD (n=103).

New screening test	Frequency	Percentage (%)
Yes	54	**52.4**
No	49	**47.6**
Total	**103**	**100.0**

52.4% respondents had knowledge about new screening test for CHD.

Table- 4.3.5: distribution of the respondents by knowing CHD can be treated (n=103).

CHD can be treated	Frequency	Percentage (%)
Yes	100	**97.1**
No	3	**2.9**
Total	**103**	**100.0**

Most of the participants 97.1% reported CHD can be treated.

Table- 4.3.6: distribution of the respondents according to treatment type of CHD (n=103).

Treatment type of CHD	Frequency	Percentage (%)
Conservative treatment	7	**6.8**
Surgical treatment	17	**16.5**
Both conservative and surgical treatment	79	**76.7**
Total	**103**	**100.0**

Maximum respondents 76.7% noted that CHD can be treatment by both conservative and surgical procedure, 16.6% reported surgical treatment and only 6.8% reported CHD can be treatment by conservative treatment

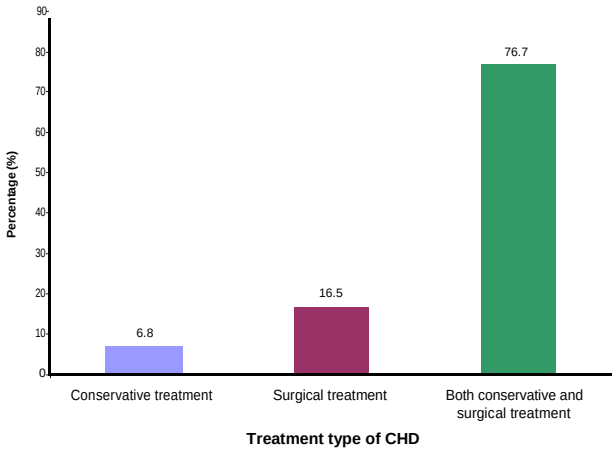

Figure. 4.1.2: distribution of the respondents according to treatment type of CHD.

Majorit of the participants had satisfactoryu knowledge (88.3%) followed by not satisfactory knowledge 11.7%.

Table- 4.3.7.: distribution of the respondents according to knowledge regarding the risk factors of congenitalheart disease (n=103).

Knowledge level	Frequency	Percentage (%)
Satisfactory knowledge	91	**88.3**
Not satisfactory knowledge	12	**11.7**
Total	**103**	**100.0**

Respondents according to knowledge regarding 88.3 and not satisfactory knowledge 11.7 the risk factors of congenital heart disease total 100.0 (n=103).

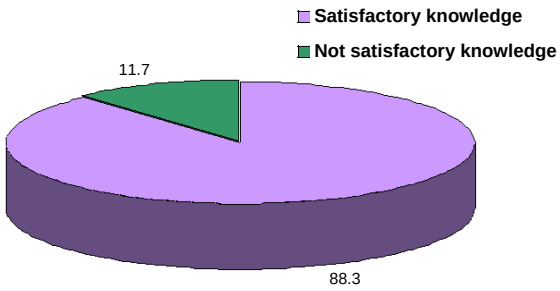

Figure 4.1.3: distribution of the respondents according to knowledge regarding the risk factors of congenitalheart disease

Chi-square test was performed to see the association between socio-demographic characteristics of the study respondents and knowledge about congenital heart disease. There is no significant association between level of knowledge about CHD and socioeconomic demographic characteristics.

Table-4.3.8: Association with knowledge about CHD and age, sex and religion of the Paediatric doctors.

Variables	Knowledge about congenital heart disease		Total	p value
	Satisfactory	Not satisfactory		
Age group (in years)				
< 25 yrs	53	8	61	**0.577**
38	4	0	42	
Sex				
Male	45	3	48	**0.111**
Female	46	9	55	
Religion				
Muslim	65	8	73	**0.796**
Hindu	22	3	25	
Christian	2	1	3	
Buddhist	1	0	1	
Others	**1**	**0**	**1**	

Chi-square test was performed to see the association between department of study participants and knowledge about congenital heart disease. There is no significant association between level of knowledge about CHD and socioeconomic demographic characteristics.

Table-4.3.9: Association with knowledge on CHD and study department of the Paediatric doctors.

Department	Knowledge about congenital heart disease		Total	p value
	Satisfactory	Not satisfactory		
Medicine	41	2	43	**0.225**
Surgery	23	4	27	
Gynae & Obs	25	6	31	
Others	**2**	**0**	**2**	

Chi-square test was performed to see the association between socio-demographic characteristics of the study respondents and knowledge about congenital heart disease. There is no significant association between level of knowledge about CHD and socioeconomic demographic characteristics.

Table-4.4.1: Association with knowledge on CHD and monthly income and marital status of the Paediatricdoctors

Variables	Knowledge about congenital heart disease		Total	p value
	Satisfactory	Not satisfactory		
Monthly family income (in Taka)				
10000-25000 Tk.	14	2	16	**0.753**
25000-50000 Tk.	63	7	70	
50000-75000 Tk.	7	2	9	
75000-100000 Tk.	4	1	5	
> 100000 Tk.	3	0	3	
Marital status				
Married	24	6	30	**0.090**
Unmarried	**67**	**6**	**73**	

A number of children with CCHD are so severely compromised at presentation that they die before surgical intervention. Investigators have reported that between 3% and 6% of neonates with dextrotransposition of the great arteries died because of hemodynamic compromise before surgical intervention could be offered. After birth, screening for congenital heart disease by physician or pediatrician is currently not even accomplished by physical examination within the first 24 hours of life and on subsequent nursery visits. Presently in the cities of Bangladesh due to their easy availability there is indiscriminate use of echocardiograms without prior CXR, sometimes even without any indication or pediatric cardiology consultation. Hypoxemia is difficult to detect in newborns, and the transitional circulation masks important clinical findings such as absent femoral pulses while the ductus arteriosus remains patent. Earlier, though, it was found that clinical assessment is as good as investigational workup in differentiating innocent and pathological murmurs in children (Hussain et al., 2009). Perhaps most importantly, physical examination skills are on the decline in current trainees (Gidding 2003). Practicing pediatricians currently have limited experience in discriminating innocent from pathological murmurs even in older children. In a contemporary series in which echocardiography was performed to evaluate for possible heart disease based on suspicious physical examination, fewer than 15% of

subjects were found to have significant congenital heart disease (de-Wahl et al., 2009).19. When used as a screening tool, echocardiography has a high frequency of either false-positive results (usually related to the transitional circulation) or recognition of clinically benign diagnoses (eg. PFO, small muscular ventricular septal defects). In addition, there may be an inadequate supply of trained personnel who could perform this screening with a reasonable degree of accuracy. Therefore, to improve timely detection of CCHD a number of investigators have proposed that pulse oximetry can be considered as a complementary modality to the newborn physical examination (Mahle et al., 2012). Pulse oximetry has the potential to identify hypoxemia that might not otherwise produce visible cyanosis. Pulse oximetry is used routinely in the assessment of young children in neonatal intensive care units and emergency departments. It has been proposed as an adjunct to the assessment of the newborn in the delivery room (O'Donnell et al., 2007). As such, some have proposed that pulse oximetry be considered as a vital sign equivalent in importance to pulse, respirations, and blood pressure (Mahle et al., 2009). The investigators observed that pulse oximetry is much more effective in identifying infants with CCHD and is more accurate and much less expensive than screening all newborns with echocardiography. Using a cutoff of 95% in lower-extremity saturation, Hoke et al, (2002) suggested that 81% of neonates with CCHD could be identified. However, arterial oxygen saturation varies considerably in the first 24 hours, with many healthy newborns having arterial saturations of less than 95%. As such, oximetry screening before 24 hours of life can result in a significant number of false-positive results due to transition from fetal to neonatal circulation. A study from the United Kingdom reported that the falsepositive rate was as high as 5% when oximetry screening was performed in the first 24 hours compared with 1% at the time of hospital discharge (Thangaratinam et al., 2012). Later screening can miss an opportunity for intervention for defects that are impacted by closing PDA. Therefore, to achieve an acceptable specificity, testing after 24 hours of birth would appear to be the most reasonable strategy. A screen is considered positive if (1) any oxygen saturation measure is <90% (in the initial screen or in repeat screens); (2) oxygen saturation is <95% in the right hand and foot on three measures, each separated by one hour; or (3) a >3% absolute difference exists in oxygen saturation between the right hand and foot on three measures, each separated by one hour. Any screening that is 95% in the right hand or foot with a 3% absolute difference in oxygen saturation between the right hands or foot is considered a negative screen and screening would end. Pulse oxymetry is highly specific for detection of CCHD with moderate sensitivity, thereby meeting criteria for universal screening. Thus screening all newborn babies with pulse oxymeter in addition to the usual routine physical examination is essential to identify CHD and can be used as universal screening for CHD (Arlettaz et al., 2006). Prenatal diagnosis of CHD Over the past two decades, imaging has become the principle diagnostic tool in prenatal detection of fetal malformations. Cardiac abnormalities are among the major malformations that are most frequently missed in prenatal ultrasound examinations which is a cause for concern because undetected CHD increases the risk of early neonatal mortality. Prenatal diagnosis allows full investigation of affected fetuses for coexisting abnormalities and improved counseling of families and offer a proper perinatal and neonatal management (Brown et al., 2006). Studies show that if CHD is detected before birth, there are significant benefits for babies, their families and for medical services around the time of birth and in the first year of life (Brown et al., 2006). Prenatal diagnosis and appropriate treatment may prevent the devastating consequences of early circulatory collapse, such as brain damage. But access to and availability of this type of prenatal screening may be limited in rural or low socioeconomic status areas and within certain racial/ethnic groups. Generally, detailed fetal echocardiography is not performed routinely for prenatal screening but is reserved for cases which are at high-risk for CHD like family history of CHD; coexisting maternal disease; exposure to teratogens in early pregnancy; infections such as parvovirus B19, rubella, coxsackie; abnormal karyotype and extracardiac foetal anomalies such as diaphragmatic hernia, exomphalos noted on a general foetal sonogram. Only 10 percent of the fetuses with cardiac anomalies have identified risk factors. Hence, basing referral for foetal echocardiography on the presence of risk factors only excludes about 85% of foetuses with severe detectable heart defects from screening (Smreck et al., 2003). In such cases, detailed foetal echocardiography is commonly done between 18 and 22 weeks of gestation.31 prenatal diagnosis will improve the chances of survival of a baby with a critical congenital defect by ensuring that the necessary prenatal and postnatal care is provided. Appropriate detection of cardiac abnormalities can only be achieved by carrying out routine fetal echocardiography in all fetuses in the second trimester, irrespective of the presence or absence of risk factors for the development of congenital cardiac disease. This is not yet possible in a developing country like Bangladesh. With identifiable risk factors fetal echocardiography at 18-22 weeks of gestation and pulse oxymetry in addition to routine clinical examination of newborn as screening for CHD at 24-48 hours of life should be performed.

VII. Discussion

This hospital-based research work was designed to assess knowledge about congenital heart disease of Paediatric doctors in the setting of Anwar Khan Modern Medical College & Hospital and Dhaka Medical College Hospital. The reteach work was done on a total of 103 Paediatric doctors. To our knowledge, this was the first survey to examine Paediatric doctor's knowledge of congenital heart disease. In present study, maximum 61(59.2%) of respondents were below 25 years, 42(40.8%) of respondents were between 26-30 years. The mean age of respondent was 25.28±0.94 years, minimum 23 and maximum age 28 years. Out of 103 Paediatric doctors, 48(46.6%) were male and 55(53.4%) were female. Male: Female ratio was 1:1.2. Most of the respondents 205(85.4%) were Muslim, 29(12.1%) were Hindu and 4(1.7%) were Buddhist. Majority of the participants 41.7% were medicine, 26.2% participants were surgery, 30.1% patients were Obs and Gynae and 1.9% participants were other department. Maximum 68.0% participants had monthly family income 25000-50000 Tk followed by 15.5% participants had 10000-25000 Tk. it was found that the maximum study subjects 70.9% were unmarried and 29.1% participants were married. 40.8% had 4 family members, 24.3 participants had 3 family members, 16.5% participants had 5 family members and 12.6% had 2 family members. Parents/husbands occupation was observed 35% had govt. job, 28.2% participants had non govt. job, and business had 25.2%. Most of the participants 98.1% had knowledge about congenital heart disease. Most of the participants 96.1% had knowledge regarding the risk factors of congenital heart disease. The knowledge regarding factors for responsible for CHD, 52.4% participants reports were genetics, 44.7% participants reported age of mother, 40.8% participants opinion mother with HTN, 39.8% participants opinion mother with DM, 33% reported mother with obesity, 27.2% reported environmental and 57.3% participants noted all of them are responsible factors for CHD. The study participants stated that the most common factors responsible for CHD 58.3% participant's reports were genetic environmental interaction followed by genetics 39.8%. Most of the respondents 94.2% reported ANC was necessary for CHD. Most of the respondents 85.4% reported ANC was highly necessary for CHD followed by 8.7% moderately necessary. Majority of the participants 69.9% reported genetic factor was maximum related with CHD, 19.4% reported mildly related and 10.7% reported minimum related. Maximum 65.0% participants reported sometimes related risk factors for CHD with mothers DM and HTN followed by 57.3% reported sometimes and 7.8% reported never related. Maximum 55.3% participants reported always related mothers TORSCH infection for CHD followed by 31.1% reported sometimes and 13.6% reported never related. Most of the respondents 87.4% noted CHD can prevented. Most of the participants 99% reported regular ANC needed for the prevention of CHD, 69.9% TORSCH screening, 36.9% reported MR, 74.8% mother age between 18-35 years and 81.6% reported control of DM & HTN of mother. Most of the participants 98.1% had knowledge about sign symptoms of CHD. Maximum participants had knowledge about sign and symptoms of CHD, they reported abnormal heart study, a bluish discoloration of skin, fingernails tip of nose lips, fast breathing, poor feeding and poor weight were 90.3%, 92.2%, 73.8%, 72.8% and 69.9% respectively. Most of the participants 98.1% had knowledge about heart murmer and 96.1% participants had knowledge about cyanosis. Majority of the participants 85.4% reported CHD can be diagnosed. 52.4% respondents had knowledge about new screening test for CHD. Most of the participants 97.1% reported CHD can be treated. Maximum respondents 76.7% noted that CHD can be treatment by both conservative and surgical procedure, 16.6% reported surgical treatment and only 6.8% reported CHD can be treatment by conservative treatment. Maurit et al. (2001) conducted a study on mothers of children with CHD. The study group comprised 74 children aged 2 weeks to 19 years (mean age 49.8+7.27 months) chosen randomly from those who visited the pediatric cardiology outpatient clinic at Hadassah University Hospital between September 1996 and November 1997. Eighteen percent of the parents failed to describe their child's malformation correctly. The study found that parental understanding of the heart defect correlated with parental education. Future prenatal diagnosis was considered by 88% of families, and termination of pregnancy by 40%. Only 40% of children were aware of their heart problem. Children of parents who were ignorant about the condition tended to lack knowledge themselves. 68% of Jewish families turn to non-medical personnel for medical advice (Maurit et al., 2001).Abdullah et al. (2004) conducted a study on parents of 205 patients attending the paediatric cardiology clinic at King Khalid University Hospital, Riyadh from June 1999 to June 2000. The parents were interviewed using standard questionnaire pertaining to their knowledge about child cardiac disease, medication & bacterial endocardial prophylaxis (BEP). The patient mean age was 5 years & 8 months with a range of 1 month to 15 years. The result of the study revealed that 201 (98%) parents knew the correct name of their child cardiac condition, and 48 out of 50 (92%) knew the names of their child's current medication. 113 out of 176 (64%) parents with at risk children were aware of measures to prevent endocarditis. It was concluded that though the parents knew the names & current medication of their child heart lesions the knowledge of endocarditis and BEP was limited. Therefore an intensified education and awareness programme are needed in order to prevent potential major morbidity & mortality for paediatric patient with CHD (Abdullah et al., 2004).After evaluating thirty six questions about congenital heart disease, knowledge score were categorized less 15 considered not satisfactory and more than 15 were considered as satisfactory knowledge. Majority of the Paediatric doctors had

satisfactory knowledge (88.3%) followed by not satisfactory knowledge 11.7%. Chi-square test was performed to see the association between socio-demographic characteristics of the study respondents and knowledge about congenital heart disease. There is no significant association between level of knowledge about CHD and socioeconomic demographic characteristics. In the present study majority of the Paediatric doctors had satisfactory knowledge (88.3%) followed by not satisfactory knowledge 11.7% about congenital heart disease. This was higher than the Cheuk and his colleagues (2004), and much lower. This difference is perhaps not unexpected when determinants of parental knowledge in this domain are considered. Cheuk and his colleagues reported that parental understanding of heart defects correlate with parental occupation and educational level (Cheuk et al., 2004). Similarly these were identified as significant determinants in the present study. Septal defects were more likely to be mentioned as the diagnosis but interestingly, Ebstein's anomaly was correctly mentioned by parents of two patients out of the three patients encountered in this study. This is probably because the name Ebstein as the clinical diagnosis itself is specific. Moreover, because the cardiologist tend to spend more time explaining to patients with Ebstein's anomaly as they have noticed a remarkably high incidence in Sudan (Mohammed et al., 2005). Twenty one per cent of the parents were able to indicate the location of the defect correctly on the diagram. Seventy three per cent of the parents correctly mentioned that the heart defect was congenital without knowing the possible aetiological causes. This was not consistent with the findings of Cheuk's study, in which half of the parents were aware of the hereditary nature and possible aetiology. This may reflect the lack of knowledge of the parents in our study; it could be due to high percentage of illiteracy. El-Mahdi LM (2005) done a study to assess the parental knowledge, attitude and practice towards their children's congenital heart disease. The knowledge of one's own disease is an important determinant of health related behaviour. It involved 100 children with congenital heart disease and their parents. The children's age ranged from 6 months to 15 years. This study was designed to assess parents' knowledge, attitudes and practice towards their children's congenital heart disease, its management and prevention of its complications. It also meant to identify determinants of parental knowledge and to assess the impact of parental knowledge on the growth of their children. Although (30%) of the parents correctly mentioned their children's congenital heart disease, yet only (21%) of them correctly indicated the heart lesion or lesions diagrammatically. However, more than (77.3%) of the parents were aware of the indications and aims of previous surgical and catheter interventions. Seventy three percent of the parents correctly indicated that the heart defect was congenital without knowing the possible aetiological causes. Ninety two percent of the parents were aware of the symptoms attributable to the underlying heart disease. Unfortunately, of the 57 parents whose children were taking cardiac medications only (43.9%) and (15.8%) knew correctly the functions and important side effects of the medications respectively. With regard to exercise capacity, (56.9%) of the parents indicated its level appropriate for heart lesions. While (27%) of the parents had heard of the term infective endocarditis, only (09.4%) of the parents were aware of the need for antibiotics before dental procedures. Significant determinants of parents' knowledge of the nature of their children's heart disease were cardiac diagnosis, occupation of parents and their educational level. No significant determinants of knowledge regarding symptoms, the impact of heart disease on exercise capacity and infective endocarditis were identified. Parental negative attitudes and high concern were prevalent. Nutritional practice was inefficient in promoting growth. Ultimately, no significant correlation was found between parental knowledge and growth of their children. The parents' knowledge about their children congenital heart disease is generally poor but did not correlate with their growth. Better educational programs and nutritional re-evaluation are recommended, along with providing better health care facilities and developing the concept of team management (Al-Mahdi 2005).

VIII. Conclusion

Congenital heart defects do have a relevant impact on the population, both in terms of human suffering and economic costs. The challenge for the future is to reduce the incidence of CHD through primary prevention and to give accurate genetic counselling. To achieve this, the etiology and pathogenesis of CHD must be elucidated. For now, ensuring an accurate family history is obtained, including detailed cardiac diagnoses for all affected family members, could provide valuable clues about possible causation and inheritance. This is particularly relevant to families with multiple affected individuals, and a referral to a genetics service should be considered.

Conflict of interest: The Author has no conflict of interest of the study.

Recommendations

- This study was done on Paediatric doctor knowledge from selected hospital in Dhaka City. But is does not reflect the actual status of our whole country.
- Necessary steps should take among the mass Paediatric doctors for increasing the level of knowledge regarding the risk factors of CHD through such study.

- Paediatric doctors should take initiative in our community as people can develop their knowledge about the risk factors of CHD.

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