

GENDER DIFFERENCES IN EXTERNALIZING AND INTERNALIZING BEHAVIORS AMONG CHILDREN AND ADOLESCENTS WITH CONGENITAL HEART DISEASE

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ABSTRACT

To determine gender differences in externalizing and internalizing behaviors among Children and Adolescents with congenital heart disease (CHD) in Pakistan. A comparative group design was used to study variables. The study was conducted at the Faisalabad Institute of Cardiology from January 2021 to December 2021. A sample of 326 children and adolescents diagnosed with cyanotic and acyanotic CHD was studied to assess the internalizing and externalizing problems in different types of CHD. The strength and Difficulty questionnaire was used to measure the emotional behavioral issues. Parent-reported form for children below 7 years of age and self-report for above 7 years was used. Detailed history and baseline demographics were recorded. The results explained that 49.1% of the CHD population is in the clinical range of externalizing and internalizing problems. The comparison of gender mean difference shows that the male population suffers more as compared to female ($p < .05$). Whereas no difference was found in internalizing problems in both genders while males have more externalizing issues and females are better in prosocial behavior as compared to male counterparts. Children and adolescents with cyanotic CHD have more clinical range of emotional and behavioral issues ($p < .01$). Children and adolescents now have a longer life as compared to previous decades but with this growing age and having a congenital condition, they are having problems in their psychological health which is in need of assessment and repair.

Keywords: Emotional Behavioral Issues, Externalizing, Internalizing, Gender.

INTRODUCTION

More than 95% of children with congenital heart defects (CHD) now cross their childhood. With major developments in the evaluation and treatment of congenital heart disease, greater life expectancy is achieved. There is an increase in estimated number of adults with congenital heart disease in Pakistan as sixty thousand children are born with CHD each year. A vast proportion of patients experience problems varying from mild to life-threatening, so CHD requires lifelong medical surveillance (Verheugt et al., 2008).

The congenital illness usually has an impact on the health and well-being of any individual. An illness of early onset with a need for frequent hospital visits, admissions, or different diagnostic and therapeutic procedures creates an adverse effect on the social and emotional health of children and adolescents (Dekker & Koot, 2002).

Congenital heart disease (CHD) has several birth defects, which disturb the normal functioning of the heart. These defects can start from abnormal development of the heart's or major blood vessels' structures. CHD can present at the time of birth but in many cases it can be detected in the prenatal environment. Many studies with children and adolescents have revealed increased life expectancy and normal growth (Dahlawi & Milne 2020). The global mortality rate significantly reduced between 1990

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to 2010. These contributing factors now resulted in a shift within future research. Now the researchers focused to sort out the ways to improve the paired emotional behavioral issues and quality of life in these children and growing adolescents (lozaano et al., 2012).

With this increased focus, the assessment was around the psychosocial functioning of CHD children and adolescents. The prime objective of all clinical care was not only to achieve life expectancy but research shifted to explore more possible psychological care and improved quality of life. There is no consensus among different researchers on assessing psychology but they are sorting out many ways to move forward. Many studies started to explore emotional behavior problems that can reduce their psychological and cognitive functioning as compared to healthy children of their age (Miatton, 2007).

Children and adolescents with CHD experience challenges in their all-over development. The congenital conditions can be affected by several factors that contribute to severe emotional and behavioral issues which make a hindrance in their normal development, socialization, or future life. Such behaviors include aggressive or destructive behavior, temper tantrum, and social issues (Sarvass, 2013). Follow-up studies investigated psychosocial outcomes and reported contradictory results in different cultures. Moreover, very few studies have evaluated the impact of CHD on the psychological health of the Pakistani population. Therefore, the following study assesses the relevant psychosocial problems in the CHD population.

The major objective of the current study is to explore the level and nature of emotional behavioral issues in local care hospital. As per our knowledge, it is the first study of its kind where the rate of CHD is quite higher than its neighboring countries. The advancement in pediatric cardiac care has made it possible for the long-term life of the CHD population. But with their increased life-years along with a congenital condition created many hurdles in their normal psychosocial functioning and daily routine. The assessment of these issues can help clinicians tackle them in a better way. Furthermore, this assessment helps to pave the way for their psychosocial care and improved quality of life.

PATIENTS AND METHODS

This prospective cohort based study was conducted at Faisalabad Institute of Cardiology (FIC), a tertiary cardiac care centre, and completed in one year from January 2021 to December 2021. The initial approval was forwarded to the Ethical committee review board from FIC and after this approval institutional review board (IRB) approval was taken from Government College University Faisalabad. Three hundred and twenty six children and adolescents of any type of un-operated CHD and any gender, presenting at out patient department (OPD) of Paediatric Cardiology FIC, were recruited through non probability consecutive sampling technique. The standardized tool, strengths and difficulty questionnaire was used in the study. The Strengths and Difficulty Questionnaire (SDQ) (Goodman, 2009) is a valid and reliable measure for assessing the mental health status of people in the age range 2 to 18. Four thousand five hundred clinical and academic studies used SDQ and over 5 million assessments of young people have been carried out on a single website since 1998. It takes 3 to 5 minutes to complete this scale. SDQ comprises 25 items based on 5 subscales for which each subscale score ranges from 0 to 10. A separate demographic sheet was attached to record all the demographic details of children and adolescents with CHD. The data of the study were collected from January 2021 to December 2021. The informed consent from parents, as well as a self from the participants above 16 years of age was taken and all the rights were given to the population as they can withdraw from the study at any time.

RESULTS

Out of 326 children and adolescents, 51.8 % were male (n=169) and 48.2% were female (n=157) with male-to-female ratio of 1.1:1. Most of the children were below the age of 9 years. Both cyanotic and acyanotic patients were present in the sample. Most prevalent types of CHD were ASD (Atrial septal defect), VSD (ventricular septal defect), and TOF (tetralogy of fallot) which were 23.3%, 22.3%, and 23.4 % respectively. There were 88.7 % patients who were taking medication for CHD while 11.3% were not on any medication but had come to their follow-up for symptomatic inter-current illness. Baseline demographic characteristics of CHD children and adolescents are elaborated in the Table 1.

The mean differences between externalizing and internalizing problems in different types of CHD were assessed and are described in Table 2.

As regard gender based prevalence of emotional behavioral issues (EBP), 49.1% children and adolescents (n=160) were above the clinical cutoff of emotional behavioral issues. While 31.1% (n=101) children and adolescents were at the borderline level in emotional behavioral difficulties as described in Table3.

The emotional behavioral issues were sorted out. Figure 1 explains that male children and adolescents have more emotional behavioral issues than the female population

Table4 explains that both genders have same ratio in prevalent CHD type. It explains that CHD diagnosis ratio is equal in male and female children and adolescents

Table 1: Demographic characteristics of CHD children and adolescents (n=326)

Variables	N	%	Mean	SD
Gender(child)				
Male	169	51.8	4.26	
Female	157	48.2	4.20	
Age				
6-9	146	44.8	10.11	4.1
9- 13	82	25.2		
14-17	98	30		
Diagnosis				
PS	23	7.1		
ASD	76	23.3		
AVSD	41	12.6		
PDA	31	9.5		
VSD	73	22.3		
TGA	6	1.8		
TOF	76	23.4		
Medication Adherence			.89	.31
Yes	289	88.7		
No	37	11.3		

Table No. 2 Mean differences between Externalizing and Internalizing problems in different types of CHD

Diagnosis	Externalizing M(SD)	Internalizing M (SD)
PS	9.56 (2.10)	7.95 (3.06)
ASD	9.11 (3.45)	7.82 (3.23)
AVSD	9.68 (2.90)	9.78 (3.92)
PDA	8.25 (2.88)	7.12 (2.60)
TGA	7.00 (1.78)	7.66 (3.72)
TOF	9.07 (2.52)	8.96 (2.99)
VSD	9.32 (2.76)	8.30 (2.98)

Note= PS (pulmonary valve stenosis), ASD (atrial septal defect), AVSD (atrioventricular septal defect), PDA (patent ductus arteriosus). TGA (transposition of great arteries), TOF (tetralogy of fallot), VSD (ventricular septal defect).

Table3: Emotional behavioral problems in CHD children and Adolescents

Gender	EBP			Total
	Non clinical	borderline	Clinical	
female	42	44	71	157
male	23	57	89	169
Total	65 (19.9%)	101(31%)	160(49.1%)	326

Note=EBP emotional behavioral problem, Non-clinical (non-clinical range of EBP), Borderline (borderline range of EBP), Clinical (clinical range of EBP)

Figure 1: Gender differences in emotional behavioral issues in CHD Children and Adolescents

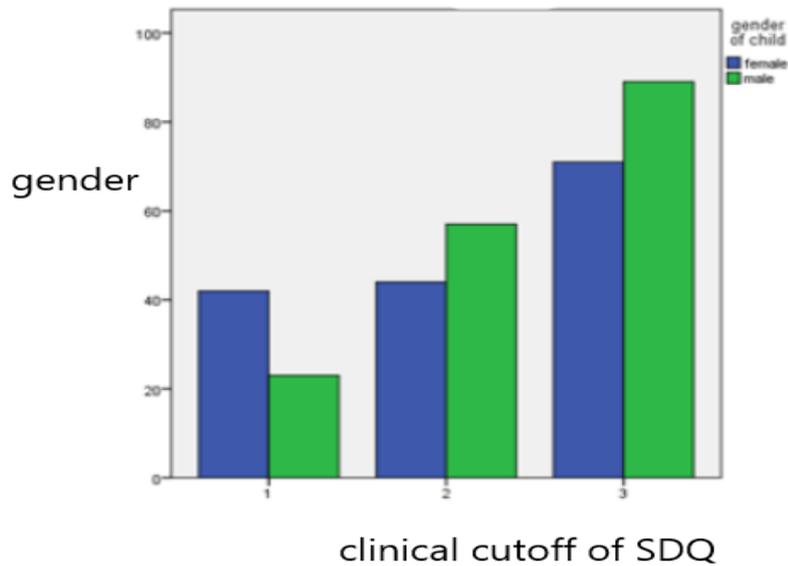


Table 4 : Gender difference in diagnosis of CHD among children and adolescents

Gender	diagnosis of disease							Total
	AS	ASD	AVSD	PDA	TGA	TOF	VSD	
female	12	42	17	18	4	39	25	157
male	11	34	24	13	2	37	48	169
Total	23	76	41	31	6	76	73	326

DISCUSSION

Congenital heart disease is an illness which creates significant impairment in everyday functioning of children and adolescents and requires complete medical care as well as suitable interventions for day-to-day activities. In a study where a researcher explored the difference between healthy children and other chronically ill children, the pediatric cardiac patients displayed more poor physical and psychosocial health

This study serves as the first of its kind for exploring the relative externalizing and internalizing emotional behavioral issues in children and adolescents with CHD. Previously gender disparities have been documented extensively in various fields of cardiovascular disease such as ischemic heart disease, heart failure, and stroke. Our study serves this purpose in regard with CHD population. The results of our study elaborate that almost all types of CHD showed higher mean for externalizing problems as compared to internalizing problem. The long-term illness and physical weakness experienced by this population creates hindrances to their normal mental health and well-being. Their condition limits them from normal daily routine activities including schooling and social functioning. Gender has an effective distinct role in these problems. The resultant anxiety and stress creates many emotional and behavioral issues which can be varied with gender in this population (Dahlawi, 2020).

When investigating the relationship between the presence of emotional behavioral difficulties it reveals that the male CHD population showed greater problems as compared to female CHD children and adolescents. Although the parallel prevalence rate of CHD in both gender the difference depict that male have more relative stress due to hurdles and hindrances in the normal functioning of life. Previous studies also demonstrate this trend. In post-surgical treatment group, boys unlike girls demonstrated more psychosocial issues (23.8% vs 12.6%) as compared to their female counterparts (Alkan, et al., 2018; Abasse, 2020; Denniss, 2019).

Male children and adolescents pose greater risk as their number is greater from clinical cutoff of EBP. A study compared four CHD diagnostic groups of different CHD severities, they found that children and adolescents who were male revealed more social (mean 4.4) and externalizing problems (mean 9.0) than female children and adolescents (mean 2.2 and 5.2, respectively).

In another study of infants of 36 months with different variations in CHD diagnosis, infants did not differ in showing any risk of developing emotional problems; however, in growing time they demonstrated more behavioral issues with different modalities in their severity. There are 60% higher risks of emotional problem. Hence, these results suggest that children and adolescents with high disease severities develop more problems in their later life than lower disease severities (Clancy, 2020; Kovack, 2018).

Male and female children and adolescents ratio is somehow different in different types of CHD. In TOF and VSD female ratio is greater while other types have more male patients as compared to female. Age gender and parent-child interaction, as well as socio-demographic factors like socioeconomic condition, parental education, family system and size of family also contribute to these issues (Clancy, 2020; Kovack, 2018). Data discussed in this article indicates that men and women born with a heart defect differ in mortality, morbidity and, to some extent, the way they are managed. Whether this relates to inherent biological differences, the smaller size of women's vessels, or intrinsic genetic differences remains uncertain (Verheugt et al., 2008)

This study result was also explaining that the more severe or complex the diagnosis, the more internalizing and externalizing issues the population was suffering. It is also showing that the male population has more issues. The mean differences were showing that all types of CHD showed greater externalizing problems as compared to internalizing issues except TGA and AVSD.

In a developing country like Pakistan, the etiology of emotional behavioral issues along with the main disease is manifold. The demographic characteristics of financial burden, accessibility, and affordability of health services, family monthly income, living environment, and child characteristics are also important. Some previous studies in Pakistan showed a high prevalence of anxiety and depression, especially in women and in the rural population. They also concluded that female gender, poor academic performance and poor social support show worse psychosocial adjustment and quality of life (Mckusker, 2007; Azim, 2017).

Implications for practice

It is anticipated that the findings of current research will provide help to healthcare professionals in gaining new knowledge and paying particular attention to the psychosocial functioning of the growing CHD population. It also will direct them to refer and seek appropriate support for better psychological health of such CHD population. Future research will potentially inform the development of future preventive interventions, such as support groups of behavioral and emotional care for CHD children and adolescents with the special reference to their gender.

CONCLUSION

All previous studies in Pakistan mainly relied on the reporting of prevalence and level of CHD but this study assesses behavior and emotions relevant to their health-related quality of life. Furthermore, the investigation around the relationship between gender and behavioral and emotional issues were also assessed with reference to CHD which was needed earlier. There is a need for future qualitative studies that explore these issues in-depth in CHD and how behavior and emotions are being effected in the younger population.

Limitations The study sample was based on a cohort from a tertiary care hospital as it was the initial part of an RCT study.

Authors contribution AH; prepared the manuscript RK; supervised the research and critical review AM; reviewed data collection AR data collection support

Conflict of interest The study has no conflict of interest to be cleared by any author.

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