

Research Paper

Investigating Psychological Problems in Parents of Children With Congenital Heart Diseases: A Cross-sectional Study



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ABSTRACT

Objectives: Depressive disorder is the second biggest health problem worldwide regarding disability caused by the disease. It is necessary to identify factors influencing the occurrence of depression, especially in parents whose children have an underlying disease. Accordingly, this study investigates the prevalence of depression in parents of children with congenital heart disease (CHD).

Methods: This cross-sectional study was conducted in 2021-2022 via the available sampling method on 88 parents of children under 12 years old with CHD, confirmed by a pediatric cardiologist. The Beck questionnaire was used to record the level of depression. Analysis of quantitative data was done with the independent sample t-test and analysis of variance. Statistical analysis was performed in the SPSS software, version 26.

Results: In this study, the mean age of the participants was 36.31±6.1 years, of which 59.1% were women. The result of the study showed that 51.1% of parents had children with CHD without depression, 22.7% had mild depression, 21.6% had moderate depression, and 4.5% had severe depression. Also, the findings of our study showed that the mean score of depression in people under 40 years old, in women, and in persons with a history of depression was significantly higher than in other people. However, the mean score of depression had no statistically significant difference based on the history of underlying disease, smoking, history of addiction, education, and type of CHD.

Discussion: Depression in parents of children with CHD has a high prevalence, which requires increasing the mental healthcare of parents during the period of children's involvement, and with proper treatment improved the mental health of parents.

Keywords:

Depression, Parents, Children, Congenital heart diseases (CHD)

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Introduction

Congenital heart disease (CHD) is a condition that is present from birth and affects the structure and function of the infant's heart. CHD is one of the most frequently diagnosed congenital disorders afflicting approximately 0.8% to 1.2% of live births worldwide, and about one-third of patients need hospitalization in infancy which is a leading cause of birth defect-associated infant illness and death. CHD has different degrees of involvement from mild to severe, and apparent symptoms are different depending on their severity from cyanosis, sleepiness, and fatigue to respiratory distress [1-4].

In recent years, advances in surgery and medical care for CHD have undeniably improved the outcome of the disease, and >90% of CHD patients can survive. This disability follows social and familial consequences. Previous studies show that the quality of life (QoL) of children with this type of disease is poorer compared to healthy children and demonstrated the existing correlation between the severity of disability and QoL. Compared to healthy children in terms of heart condition, children with a heart problem were more in need of particular healthcare, including medication needs, physical or speech therapy, and treatment for developmental or behavioral problems. As a result, children with CHD may grow up with certain characteristics, including poor cognitive and communication skills, impulsivity, and poor executive functioning [5-8]. Parents of children with CHD are at greater risk of distress and hopelessness than parents of healthy children or subjects with other diseases. Discomfort among these parents has been reported in 30% to 80% of cases [9]. Also, mothers have higher levels of distress and frustration than fathers. In all countries, parents, especially mothers, are at risk of mental disorders, anxiety, depression, physical problems, despair, and post-traumatic stress symptoms, which may affect the mother's performance. Less than half of parents of children with CHD demonstrated the symptoms of depression with or without anxiety. In the long, the majority of parents adapt successfully to this lifestyle, but approximately 40% report a need for psychosocial care. In these groups, early psychosocial interventions help to reduce the stress on parents and children [9, 10]. The present study investigates the prevalence of depression in parents of children with CHD. To the best of our knowledge, this is the first study on the depression of parents with CHD children in Hormozgan Province, Iran.

Materials and Methods

This cross-sectional study was performed to evaluate the prevalence of depression in parents of children with CHD. The study focused on all parents of children under 12 years old with CHD at the [Children's Hospital of Hormozgan University of Medical Sciences](#) from 2021 to 2022. All families were recruited according to a simple random method and divided into cyanotic and non-cyanotic groups based on the type of heart defects.

Study procedure and criteria

After applying the criteria, a total of 88 parents were included. Excluded subjects were families who had a history of mental diseases, were dissatisfied with continuing cooperation at every stage of the study, individuals who did not complete the questionnaire completely, and had a history of co-disease with CHD in children. The questionnaires were completed by the parents due to self-reporting was not possible in the children.

Data collection

Parents were asked to complete a checklist with general and demographic questions, such as gender, age, history of depression, history of underlying disease, history of smoking, history of addiction, education status, and type of heart disease. This checklist was followed by the Beck depression questionnaire, which refers to the prevalence of depression and its severity. Accordingly, the Beck questionnaire was used to analyze depression. This tool was validated by Iranian researchers. This questionnaire included 21 items, and each item was scored between 0 and 3 based on a Likert scale. After computing the depression score, the subjects were categorized into four levels as follows: 0-9 as normal, 10 to 16 as mild depression, 17-29 as moderate depression, and 30-65 as major depression.

Statistical analysis

Frequency and percentage for qualitative data and Mean±SD for the quantitative were used. The Shapiro-Wilk test was applied to assess the normality of the quantitative data. Accordingly, all quantitative variables were normal ($P>0.05$). The independent sample t-test and the one-way analysis of variance were applied to compare the mean of depression in different levels of qualitative variables. All statistical analysis was done in the SPSS software, version 26. The $P<0.05$ was considered statistically significant.

Table 1. Characteristics of patients

Variables	Classification	No. (%)
Age group (y)	<40	57(64.8)
	>40	31(35.2)
Gender	Women	36(40.9)
	Men	52(59.1)
History of depression	Yes	3(3.4)
	No	85(96.6)
History of underlying disease	Yes	12(13.6)
	No	76(86.4)
Smoking	Yes	10(11.4)
	No	78(88.6)
Addiction	Yes	4(4.5)
	No	84(95.5)
Education	≤Diploma	60(68.2)
	College education	28(31.8)
Total study population		88

Results

A total of 88 families were accepted to participate. The Mean±SD age of the participants was 36.32±6.1 years. A total of 59.1% (52 parents) were female. Most of the participants had less than a diploma education (68.2%). A history of moderate depression was shown in 3.4% (3 participants), and 13.6% (12 participants) had an underlying disease. [Table 1](#) displays the detailed characteristics of demographic information.

Also, the type of heart disease diagnosed in children is listed in [Table 2](#). Accordingly, 40.9% of children had ventricular septal defect. Based on cyanotic and non-cyanotic results, only the tissue factor was cyanotic (18.2), and other problems were non-cyanotic.

According to the Beck questionnaire, the participants were categorized into four levels. The mean score of depression obtained in the study was 10.92±9.55. Depression was not present in 51.1% of the participants. The result of the analysis is shown in [Table 3](#).

Table 2. Types of CHD in children

Types of the Disease	No. (%)
VSD	36(40.9)
TOF	16(18.2)
ASD	5(5.7)
ALCAPA	7(8.0)
Other	24(27.3)

Abbreviations: VSD: Ventricular septal defect; TOF: Tetralogy of Fallot; ASD: Atrial septal defect; ALCAPA: Anomalous origin of the left coronary artery from the pulmonary artery.

Table 3. Classification of participants based on depression scores

Depression Status	No. (%)
Normal	45(51.14)
Mild	20(22.73)
Moderate	19(21.59)
Major	4(4.54)

Table 4. Comparison of depression in difference levels of some characteristics of patients

Variables	Mean±SD	P	
Age (y)	<40	13.32±1.19	<0.001
	≥40	6.52±1.64	
Gender	Man	8.17±1.36	0.018
	Woman	12.83±1.39	
History of depression	Yes	26.33±2.84	0.009
	No	10.38±1.0	
History of underlying disease	Yes	14±3.0	0.184
	No	10.43±1.09	
History of smoking	Yes	12±2.13	0.414
	No	10.78±1.11	
History of addiction	Yes	4.75±2.21	0.154
	No	11.21±1.05	
Education	≤Diploma	11.73±1.28	0.243
	Academic education	9,18±1.63	
Type of heart disease	VSD	10.08±1.79	0.274
	TOF	11.50±2.55	
	ASD	12.20±4.67	
	ALCAPA	6.14±1.89	
	Etc.	12.92±1.81	
Severity of depression	No	3.53±0.47	0.03
	Mild	13.05±0.48	
	Moderate	20.63±0.70	
	Sever	37.25±3.35	

Abbreviations: VSD: Ventricular septal defect; TOF: Tetralogy of Fallot; ASD: Atrial septal defect; ALCAPA: Anomalous origin of the left coronary artery from the pulmonary artery.

The relationship between the variables and the mean of depression is shown in [Table 4](#). There were significant moderate correlations between the mean depression score with age <40 years and women. The score of depression was higher in the two mentioned groups, but the parameters, including underlying disease, history of smoking and drug abuse, education, and type of heart disease were not significantly related to the depression score ([Table 4](#)).

Discussion

The present study investigated the prevalence of depression in parents of children with CHD. The review study of Biber et al. on children with chronic diseases showed the ages and the severity of disease are related to the level of stress of parents and are direct ratio and according to the severity of CHD, depression was higher in parents with severe CHD, and the child's diseases had negative impact on parents relation [\[10\]](#).

The results of Fonseca et al. showed that based on the time of diagnosis (for example, before birth, after birth), CHD children's parents (40% of whom had heart disease) compared to healthy children's parents, would be more anxious, even if they had a similar QoL. The prevalence of depression would increase by nearly 50% [\[11\]](#). Although there was no control group for comparison in the present study, their findings (the effect of heart disease in children on the increase in parental depression) are almost similar to our study and were nearly 50%.

A longitudinal study was conducted by Lawoko and Soares on psychological complications and their determinants in parents of children with heart disease, with a follow-up interval of one year. The prevalence of depression in this study was about 18%. According to the results of this study, mothers reported more severe psychological problems than fathers. In their previous study, the same researchers found that parents of children with heart disease are more at risk of anxiety and despair than parents of children with other diseases and healthy children's parents. The findings of the mentioned study regarding the worse conditions of mothers are similar to the current research. Still, in this study, nearly 50% of parents had depression, which is much more than the mentioned study. The difference may be due to the difference in sampling, the difference in controlling the effect of confounders, the difference in the criteria for entering and exiting the study, and the difference in the investigated questionnaires [\[12\]](#).

Bevilacqua et al. did not observe any difference in the levels of stress and depression in parents who were diagnosed with heart disease in their children during pregnancy or after birth. Mothers who understood the diagnosis before birth were more depressed, while other groups, were more stressed. The level of self-reported stress and depression of parents within two weeks after their children were hospitalized in the first third months of life was significantly higher in mothers than in fathers [\[13\]](#).

The findings of the mentioned study are quite similar to the present study. It was also found that mothers have higher levels of depression. However, other psychiatric disorders, such as stress and anxiety, were not investigated, which requires more detailed investigation in future studies. In a cohort study conducted by Solberg et al. on Norwegian mothers and children (n=36437), 111 children with heart disease were identified. They found that the postpartum mental health of mothers of infants with severe (but not mild/moderate) heart disease was different compared to the control group at 6, 18, and 36 months postpartum. Mothers of children with heart disease have high levels of depression and anxiety symptoms [\[11, 14\]](#). Heart problem was a significant risk factor for mental health problems in children and their mothers at all time points [\[15\]](#). Family factors and individual factors played a role in the risk of developing mental health problems and mutual effects between the mental health of mother and child at 18 and 36 months of age were determined over time. Also, based on this study, the level of education and economic status do not affect the depression and anxiety disorders of parents. Although in the present study people in periods different subjects were not followed up, the findings regarding the high level of psychiatric disorders in parents of children with heart disease were similar to our study. Also, similar to this study, it was found that education has no effect on the level of depression of people, but the economic level of people was not investigated, which requires careful evaluation in future studies because it is a variable that affects the mental health of Iranian society.

In a study by Cantwell-Bartl and Tibballs, from a total of 18 parents whose infant had hypoplastic left heart syndrome diagnosed in utero, 8 out of 9 mothers and 6 out of 9 fathers had depression and anxiety disorders [\[16\]](#). Six mothers had acute stress disorder and one mother had post-traumatic stress disorder. In addition, 2 out of 4 fathers had acute stress disorder, and one father had post-traumatic stress disorder. Only five parents were without psychiatric symptoms. This was the first study related to parents of infants with hypoplastic left heart syndrome in the intensive care unit. The high prevalence of parental psychiatric

disorders in this study is related to multiple stressors experienced by them, including the diagnosis of heart disease received after the birth of their baby (for 10% of parents) and the life-threatening nature of hypoplastic left heart syndrome, the intensive care unit state, and surgery [16].

Despite different methods, most studies agree that the period of diagnosis of a child's heart disease is a stressful period for parents, which may endanger the mental health of parents. However, the mentioned studies have limitations such as small sample size, reliance on retrospective studies, oversimplification in grading the severity of heart disease, low participation rate, use of self-report criteria, lack of clinical evaluation of mental health problems in parents, and lack of information about possible confounding factors [13, 14, 16-18].

Conclusion

Depression in parents with children with heart problems has a high prevalence, which requires increasing the mental health care of parents during the period of children's involvement with heart disease so that with proper treatment, the mental health of families can be increased.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of [Hormozgan University of Medical Sciences](#) (Code: IR.HUMS.REC.1401.008). All participants signed informed consent.

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Authors' contributions

All authors contributed equally to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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