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The Frequency of Psychiatric Disorders in Cystic Fibrosis Patients Aged 5-18 Years in Northwest of Iran

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Abstract

Objectives: Cystic fibrosis (CF) is a progressive genetic disorder. So far, no study, to the best of our knowledge, has investigated the psychiatric disorders of CF patients in Iran. Therefore, the present research aimed to determine the frequency of psychiatric disorders in patients with CF.

Materials and Methods: A number of 40 patients (24 boys vs. 16 girls) with CF within the age range of 5-18 years were included in this descriptive cross-sectional study, who attended the CF Clinic of Tabriz Children's hospital. A demographic questionnaire and the Farsi version of Kiddie Schedule for Affective Disorders and Schizophrenia-present and lifetime (K-SADS-PL, a semi-structured interview) were administered to determine the psychiatric disorders of these patients.

Results: Based on the results, separation anxiety was the most common psychiatric disorder (52.5%) among the patients followed by oppositional defiant (35%), major depressive (35%), general anxiety (32.5%), and enuresis (22.5%) disorders. The average age of the patients was 9.95 ± 0.85 years. In addition, the frequency of major depressive disorder was significantly higher in patients above 11 years old. Finally, the incidence of separation anxiety disorder was higher in girls within both age groups while enuresis disorder was significantly more frequent in boys of two age groups.

Conclusions: The importance of screening psychiatric disorders was identified based on a high frequency of psychiatric disorders in patients with CF. Therefore, early determination of psychiatric disorders allows for early referral to psychiatric services and thus may result in improving their life quality.

Keywords: Cystic fibrosis, Child, Adolescent, Psychiatric disorders, Depression, Frequency, Anxiety

Introduction

Cystic fibrosis (CF) is a progressive genetic disorder which involves both internal secretion glands such as mucous glands in the lungs and pancreas, as well as external secretion glands such as sweat glands, cervix, and male reproductive organs (1,2). Currently, people with CF can live for more than five decades (2,3) and thus understanding the psychiatric problems of CF in adults and adolescents has become more important. In addition, CF is more stressful due to the involvement of multiple organs of the patient and his family compared to the other chronic diseases (4).

Previous studies demonstrated that there is significant evidence of emotional disturbances in adolescents with CF (5-9) including problems such as anxiety, depression, eating problems, social isolation, as well as death thoughts and low self-esteem. Further, these adolescents feel less control over the life events and periods of CF (6,9,10).

In general, the emotional regulation in people with CF is often problematic. Interviews and psychiatric tests revealed that these patients experience more anxiety and depression. The changes in physical appearance, interpersonal relationship fading, and future awareness rising lead to an increase in the level of stress in patients, which can cause more psychiatric problems. These patients prefer isolation and nearly half of them have no intimate friends (6).

According to some statistical analysis from different studies, the World Health Organization (WHO) informed that there are no detailed data about the prevalence of CF in Asia due to lack of right registration system (11). Unfortunately, there is no accurate information regarding the epidemiology of CF in Iran. However, based on one study about the mutation of CF transmembrane conductance regulator gene, the number of reported CF patients was 1 per 100 000 in Iran (12). Furthermore, based on a report from north-west of Iran, the prevalence of CF in that area was 7.98% in 100 000 during 2004-2008 (13).

Therefore, an increase in detecting the new cases during their life span and referring them for treatment, patients experience more physical morbidity and related psychiatric problems. This represents the need for

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psychiatric intervention respecting improving these patients' quality of life.

Despite improving diagnostic and therapeutic techniques, the disease continues to be a life-limiting illness and its harmful effects on the physical and mental development of the individuals continues throughout their life. Based on the above-mentioned explanations, this study was performed since, to the best of our knowledge, there is no previous study about psychological disorders of CF patients in Iran. Accordingly, the current study aimed to estimate the frequency of psychiatric disorders in patients with CF. It was assumed that the specialist may help these patients by knowing their psychiatric problems and decide whether or not realizing the frequency of these psychiatric disorders is helpful for their treatment.

Materials and Methods

The present descriptive cross-sectional study was conducted to investigate psychiatric disorders in patients with CF. To this end, all CF patients whose age varied from 5 to 18 years were considered as the population of this study. The patients referred to CF clinic of Tabriz Children's Hospital in the Northwest of Iran, Tabriz, for treatment. Finally, 40 patients were selected for the purpose of the study due to long distances, as well as lack of consent for psychiatric interview and stigma of having psychiatric problems. There was no covariate factor such as gender or location to select these 5-18 years old patients and CF was diagnosed by positive results of genetic and sweat chloride tests

The informed consent was first completed by adolescent patients or their parents and children's parents. Then, demographic questionnaire and Farsi version of Kiddie Schedule for Affective Disorders and Schizophrenia-present and lifetime (K-SADS-PL) were used to collect the required data. K-SADS-PL is a semi-structured diagnostic interview designed for diagnosing psychiatric disorders in children and adolescents. It is based on DSM-IV criteria and was completed by personal interviews with parents and children/adolescents (14).

Statistical Analysis

Quantitative and qualitative data are presented as the mean and standard deviation, as well as frequency and percentages, respectively. Moreover, independent *t* test was employed to compare the quantitative data between the groups. Finally, chi-square test was used for qualitative data comparison. The level of significance was considered $P < 0.05$.

Results

Totally, 60% of the patients were males and the remaining 40% were females. The average age of the participants was 9.95 ± 0.58. Additionally, the average height, weight, and body mass index (BMI) of the patients were 123.25 ± 23.9, 26.87 ± 2.18, and 16.55 ± 0.54, respectively. There was a remarkable difference between the weight of male and female patients ($P = 0.014$). However, there was no difference among both gender groups regarding other demographic data such as educational level, the location of residence, and the like. As illustrated in Figure 1, the frequency of different psychiatric disorders among the patients of the current study include separation anxiety (52.5%), major depressive (35%), oppositional defiant (35%), general anxiety (32.5%), enuresis (22.5%), specific phobia (15%), social phobia (10%), obsessive-compulsive (7.5%), and attention deficit hyperactivity (5%).

Examining the possible relationship between demographic findings and psychiatric disorders in these patients, the weight of patients and separation anxiety disorder were found to be significantly lower compared to the patients without a disorder. In addition, weight and BMI of patients with the oppositional defiant disorder were significantly less than those of the other patients. However, no significant difference was observed in other demographic factors (Table 1).

The patients were divided into two groups of children (less than 11 years old) and adolescents (more than 11 years old) groups in order to find the frequency of psychiatric disorders by the age group. Chi-square test results demonstrated that the frequency of depressive disorder was significantly higher in patients over 11 years than that of the patients less than 11 years. However, there was no remarkable variety between the 2 age groups respecting the other disorders (Table 2). Further, as regards the role of gender in comparing the patients with separation anxiety disorder among both genders, the results revealed that this disorder was significantly higher in girls than boys. Furthermore, the frequency of enuresis was significantly higher in boys compared to the girls. Finally, no difference was found between the two genders regarding other disorders (Table 3).

Finally, the frequency of psychiatric disorders was studied by dividing the participants into two groups with gastrointestinal or respiratory involvement. The frequency of major depressive disorder in patients with respiratory involvement was significantly higher ($P = 0.45$). Eventually, separation anxiety and oppositional

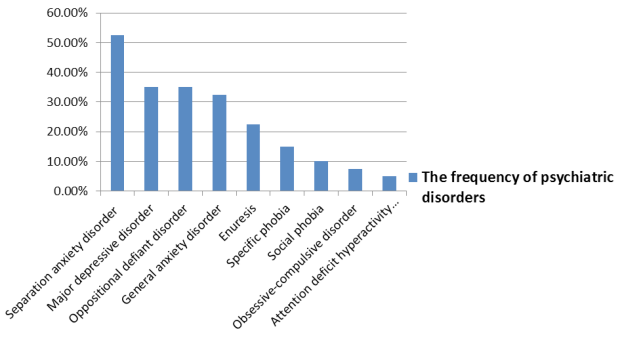

Figure 1. The Frequency of Psychiatric Disorders.

Table 1. Meaningful Demographic Variables

Variable	Group	Mean± SD	P Value
Weight	With separation anxiety disorder Without separation anxiety disorder	22.57±2.18 31.63±3.67	0.007
Weight	With Oppositional defiant disorder Without Oppositional defiant disorder	22.71±2.33 29.11±3.05	0.019
Body mass index	With Oppositional defiant disorder Without Oppositional defiant disorder	16.03±0.48 16.82±0.80	<0.0001

Table 2. Comparison of Major Depressive Disorder in 2 Age Groups

Variable	Group	Percent	*P* Value
Age <11 y	With major depressive disorder	10	0.048
	Without major depressive disorder	40	
Age ≥11 y	With major depressive disorder	25	
	Without major depressive disorder	25	

Table 3. Comparison of Specific Disorders in Both Genders

Disorder	Male	Female	*P* Value
Separation anxiety disorder	22.5%	30%	0.022
Enuresis	20%	2.5%	0.048

defiant disorders were significantly higher among patients with gastrointestinal involvement (P = 0.031, 0.043, respectively).

Discussion and Conclusion

As a chronic genetic disorder, CF includes many organs of the body. It basically affects two major gastrointestinal and respiratory systems (1,2,15), the treatment of which is closely related with more costs compared to the treatment of other chronic diseases (1,2,10). Recently, the prognosis of patients has significantly increased, ultimately leading to more survival of patients up to the adulthood period. Based on the findings of the CF Foundation Patient Registry, more than 47.5% of the patients in the United States are over 18 years (2). Moreover, according to some studies, developing psychiatric and behavioral disorders is one of the most essential issues of adolescents with chronic disease. For instance, the possible rate of depression is high, or they have low self-reliance (16). Several studies focused on the psychosocial and economic effects of CF. Some psychiatric disorders such as depression, which has an increasing prevalence, can lead to serious problems in these patients (17,18). Given the above-mentioned explanations, it seems that determining the frequency of psychiatric disorders in patients with CF is the first step toward highlighting the importance of screening and treating the patients in order to improve their quality of life.

For instance, Thompson et al found that children with CF were significantly affected by symptoms of anxiety and less self-esteem (19). Additionally, Goldbeck et al investigated the anxiety and depression incidence in German CF patients aged 12-64 years and reported that patients suffered either from anxiety (20.6%) or depression (9.6%) disorders (20).

In addition, based on the results of this study, the prevalence of psychiatric disorders was as follows: separation anxiety disorder (52.5%), general anxiety disorder (32.5%), specific phobia disorder (15%), social phobia disorder (10%), obsessive-compulsive disorder (7.5%), and major depressive disorder (35%). One of the criteria under question in K-SADS-PL was related to eating disorders like bulimia and anorexia. Raymond et al examined eating disorders and psychiatric problems in CF patients and reported no CF patient with any kind of eating disorders (21). Similarly, no bulimia, anorexia, or other kinds of eating disorders were observed in CF patients of the current study.

In another study by Pearson et al, the frequency of psychiatric disorders was compared in patients within the age group of 8-15 and 15-40 years old. The results of the study indicated that the symptoms associated with depression (42.4%) and anxiety (22.2%) disorders were observed in patients aged 15-40 years while eating disorders were more common in patients aged 8-15 (22). Further, based on the findings of the present study, the frequency of major depressive disorder was significantly higher in patients more than 11 years old compared to those aged less than 11 years. However, the frequency of anxiety disorders had no significant difference between the two age groups.

Lawler psychologically investigated 11 patients and reported a higher rate of psychiatric problems such as preoccupation with death and depression disorders (10). Furthermore, Burke et al using K-SADS-PL studied 105 children with Crohn's disease, ulcerative colitis, and CF and observed that the prevalence of depression was 11.5% among CF patients during their life (23). The frequency of major depressive disorder was reported 35% in the current study.

Moreover, Ploessl et al represented that 90% of the patients with CF suffered from major depressive disorder while half of them were treated by the antidepressants. Additionally, based on their results, the frequency of depressive disorders was more in patients with respiratory involvement (18). In addition, in the present study, the frequency of major depressive disorder was more in

patients with respiratory involvement while that of the oppositional defiant and separation anxiety disorders was more in patients with gastrointestinal involvement.

Further, Snell et al indicated a reduction in BMI in CF patients with depressive disorders while there was no relationship between BMI and major depressive disorder in the current study. However, BMI was lower in patients with oppositional defiant and separation anxiety disorders.

According to Snell et al, the average rate of annual hospitalization in patients with or without depression disorders was 4 and1.2 times. This indicates that the annual hospitalization was significantly greater in patients with depression disorders ultimately leading to an increase in treatment costs in these patients (17). However, in the present study, there was no relationship between hospitalization times and the presence of psychiatric disorders.

The health-related quality of life is another factor regarding CF which is emphasized by several pieces of research since it can affect different aspects of life such as the physical appearance, social communications, and psychological behaviors. Recent reviews reported many factors in this respect, importantly medical criteria for assessing the severity of diseases such as BMI and lung exacerbations. Havermans et al provided initial evidence on a kind of correlation between anxiety and depression and health-related quality of life in 57 CF patients. They found that screening for these disorders may be a help in psychosocial programs and appropriate medical treatment (24). Accordingly, the current study can be helpful in determining the disorders and consequently enhancing the quality of life of the patients. Therefore, based on the results related to the frequency of psychiatric disorders in these patients, the screening of these disorders is considered important and can be beneficial for detecting and providing the psychiatric services more quickly.

Suggestion for Further Research

The researchers can evaluate the correlation of severity of CF with psychiatric disorders through conducting similar surveys on parents of the patients with CF. Furthermore, examining the effect of treatment of psychiatric disorders on the quality of life of the parents and their teenagers, as well as the effect of treatment on the prognosis of CF are subject to further investigation.

Limitation of the Study

The researchers used the Farsi version of Kiddie-Schedule for Affective Disorders and Schizophrenia-present and lifetime (K-SADS-PL) which was based on DSM-IV since no new Farsi version was available during the time of the study.

Conflict of Interests

Authors have no conflict of interests.

Ethical Issues

This study was approved by the Ethics Committee of Psychiatry and Behavioral Sciences Research Center in Tabriz University of Medical Sciences under the ethical code of IR.TBZMED.REC.1395.608.

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