

Prevalence of Psychiatric Disorders among Children and Adolescents: A Study from Khuzestan

How to Cite This Article: Riahi F, Mohammadi, Izadi Mazidi M^{ID}, Khaleghi A, Hooshyari Z, Prevalence of Psychiatric Disorders among Children and Adolescents: A Study from Khuzestan. Iran J Child Neurol. summer 2022; 16(3): 95-107

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Abstract

Objective

This cross-sectional study aimed to study the prevalence rate of psychiatric disorders in children and adolescents in Khuzestan province.

Materials & Methods

A community sample consisting of 1028 (51.6% female) children and adolescents aged 6-18 years was selected using a multistage cluster sampling method. Data were gathered using the Kiddie-SADS-Present and Lifetime Version (K-SADS-PL) and a demographic questionnaire (i.e., gender, age, level of education, place of residence, parent's education, and parent's Job).

Results

Nearly 22.6% (22.3% of boys and 23% of girls) of all participants suffered from at least one psychiatric disorder. There was no significant difference in the prevalence of psychiatric disorders based on gender, age, father's education, mother's education, mother's job, and father's job (all $p > 0.05$). Psychiatric disorders were significantly more prevalent among children and adolescents in urban areas compared to rural places (2.9% vs. 8.1; $p < 0.001$). The most prevalent category was anxiety disorders (15%). Also, the most common disorders were specific phobia (7%), separation anxiety disorder (6.3%), and enuresis (5.2%). The most common comorbid disorders were mood disorders and anxiety disorders (56.3%), followed by anxiety disorders and elimination disorders (32.1%).

Received: 02-Oct-2019

Accepted: 30-Sep-2020

published: 16-Jul-2022

Conclusion

Psychiatric conditions are prevalent in children and adolescents living in Khuzestanian. The study's findings have important implications for providing effective psychiatric services.

Keywords: Prevalence; Psychiatric Disorders; Children; Adolescent

DOI: 10.22037/ijcn.v15i4.27319

Introduction

According to World Health Organization (WHO, 2017), psychiatric disorders are the main cause of disability in youth. These conditions affect children's development as well as their academic performance and potential to live productively and fulfilling (1). Evidence suggests that childhood and adolescence mental disorders also predict the later psychiatric problems (2). Therefore, it is important to gain an understanding of the prevalence, risk factors, and progression of psychiatric disorders in youth in order to establish mental health policies. Epidemiological studies are one of the most powerful sources of information for change (1). A review of several studies (published from 2000 to 2007) in the US found that approximately one-third of children and adolescents experience a psychiatric disorder during their lifetimes, and about one-fourth across the last year (3). In a sample of individuals aged 14 to 24 years in Germany, substance disorders were the most prevalent (annual 11.4%; lifetime 17.7%), with abuse being dramatically more common than dependence. The prevalence of other disorders was as follows: depressive disorders (16.8%), anxiety disorders (14.4%), eating disorders (3.0%), and threshold somatoform disorders (1.2%) (4). Using a population-based sample, Kim et al. (2011) found that the prevalence of autism spectrum disorders was 2.64% in South Korean (5). In a

study on 5 to 16 years old children and adolescents in Bangladesh, Jasmin et al. (2016) found that 18% of individuals had a psychiatric disorder, with prevalence rates of 15.0%, 9.0%, and 0.4% in behavioral disorders, emotional disorders, and developmental disorders, respectively (6). Some studies have also investigated this topic in Iran. For instance, according to Alavi et al. (2010), nearly 17.9% of children aged 6-11 years in Tehran were diagnosed as suffering from psychiatric disorders (7).

Ahmadi et al. (2016) found that 10.55% of Iranian children and adolescents, from five provinces of Tehran, Shiraz, Isfahan, Tabriz, and Mashhad, were diagnosed with at least one psychiatric disorder. Oppositional defiant disorder (ODD) (4.45%) had the highest prevalence, while substance abuse and alcohol abuse (0%) had the lowest. Moreover, attention deficit hyperactivity disorder (ADHD) and ODD had the highest prevalence in boys and girls, respectively. Among the three age subgroups, 10 to 14 and 15 to 18 years old subjects had the highest prevalence of ODD, while ADAH had the highest prevalence among those aged 6-9 years old (8).

In the study conducted by Moharrari et al. (2009) in Mashhad (Iran), the prevalence of psychiatric disorders was estimated to be 34%, based on the self-report measure, and 67.7%, according

to the parent report measure (9). Although some previous studies have addressed the need for patterns of service utilization, national data are still unavailable. The absence of data on the prevalence of mental disorders in a nationally representative sample of Khuzestan youth has impeded establishing mental health policy for this population. Therefore, this study aimed to investigate the prevalence of psychiatric disorders among children and adolescents in Khuzestan province.

Materials & Methods

The present study was conducted from September 22, 2016, to January 3, 2018. A total of 1028 children and adolescents (age range: 6-18 years; mean age: 11.96 ± 3.84) were recruited using the multistage cluster sampling method. For this purpose, 170 clusters of houses were randomly selected based on postal codes in both urban and rural areas of Khuzestan province; and in each cluster, 6 children and adolescents were randomly selected within equal blocks of age groups (6-9 years, 10-14 years, and 15-18 years) and gender. The Kiddie-Sads-Present and Lifetime Version (K-SADS-PL) measures were used to identify psychiatric disorders in the screening and diagnostic stage. Data were collected by 14 trained clinical psychologists. The inclusion criteria were defined as Iranian nationality, living in Khuzestan province for at least one year, and age range of 6 to 18 years. Suffering from severe physical illness was the exclusion criterion. The kids' parents were also asked to complete a questionnaire to obtain demographic data, including gender, age, level of education, parent's education, and economic situation.

Ethical Considerations

The study was approved by the ethical committee of the national institute for medical research development (code: IR.NIMAD.REC.1395.001). Signed informed consent forms were secured from the participants, and their records were kept confidential at all times. In addition, they were informed that they could withdraw from the study at any time.

Measures

K-SADS-PL

This semi-structured integrated parent-child interview method was developed by Chambers and colleagues (10). It intends to assess present and lifetime psychiatric history based on DSM-IV criteria and contains five diagnostic groups of: affective disorders; psychotic disorders; anxiety disorders; disruptive behavioral disorders; and substance abuse, tic disorders, eating disorders, and elimination disorders (enuresis/encopresis). Data from parents and children are recorded and synthesized to make a diagnosis. Most items were rated on a 0- to 3 point scale and others on a 0- to 2 point scale. K-SADS-PL provides rating individual symptoms as well as global and diagnostic specific impairment rating (11). In the study by Kaufman et al. (11), test-retest reliability coefficients were 0.77 to 1.00 (an excellent range) for present and/or lifetime diagnoses of oppositional defiant disorder (ODD), conduct, generalized anxiety, major depression, and any bipolar. Meanwhile, it was in the range of 0.63 to 0.67 for present diagnoses of posttraumatic stress disorder (PTSD) and ADHD. The concurrent validity of the interview also was well supported.

Analysis

Data were analyzed using descriptive analysis, χ^2 , Fisher exact tests, and binary logistic regression. The probability level of 0.05 was accepted as statistically significant. Statistical analyses were performed using SPSS version 16.

Results

Among the participants, 111 boys (22.3%) and 122 girls (23%) diagnosed as suffering from psychiatric

disorders. Distributions of psychiatric disorders according to socio-epidemiologic variables are listed in Table 1. There were no significant differences in prevalence of psychiatric disorders based on gender, age, father education, mother education, mother job, and father job (all $p > 0.05$). Psychiatric disorders were more prevalent in urban participants compared to those who lived in rural (table1, 2; $p = 0.001$).

Table 1. Frequency of Demographic Variables in Children and Adolescents (6-18) of Khuzestan province and Prevalence of Psychiatric Disorders in Terms of these Variables

		total		with disorder		CI (95%)
		N	P	n	p	
Sex	Boy	498	48.4	111	22.3	18.9-26.1
	Girl	530	51.6	122	23	19.6-26.8
Age	6-9	343	33.4	83	24.2	20-29
	10-14	342	33.3	72	21.1	17.1-25.7
	15-18	343	33.4	78	22.7	18.6-27.5
place of residence	Urban	843	82	218	25.9	23-29
	Rural	185	18	15	8.1	5-13
Father educations	Illiterate	66	6.5	15	22.7	14.3-34.2
	primary school	199	19.7	33	16.6	12.1-22.4
	Guidance & high school	227	22.5	55	24.2	19.1-30.2
	Diploma	275	27.3	70	25.5	20.7-30.9
	bachelor	191	18.9	43	22.5	17.2-29
	MSc or higher	50	5	11	22	12.8-35.2
	Missing	20	-	6		
Mother educations	Illiterate	121	11.9	25	20.7	14.4-28.7
	primary school	254	24.9	42	16.5	12.5-21.6
	Guidance & high school	221	21.7	58	26.2	20.9-32.4
	Diploma	265	26	68	25.7	20.8-31.2

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		total		with disorder		CI (95%)
		N	P	n	p	
Mother educations	bachelor	138	13.5	35	25.4	18.8-33.2
	MSc or higher	21	2.1	4	19	7.7-40
	Missing	8	-	1		
Father jobs	Public sector	433	42.8	103	23.8	20-28
	Private sector	526	52	112	21.3	18-25
	unemployed	52	5.1	12	23.1	13.7-36.1
	Missing	17	-	6		
Mother jobs	Public sector	87	8.5	19	21.8	14.5-31.6
	Private sector	26	2.5	3	11.5	4-29
	unemployed (Housewife)	908	88.9	210	23.1	21-26
	Missing	7	-	8		
total		1028	100	233	22.7	20-25

Table 2. Odds Ratios (95% CI) for total psychiatric disorder in term of demographic variables

Variables and their categories		OR (crude) CI (95%)	P-value	OR (adjusted)	CI (95%)	P-value			
Demographic variables	Sex	male	1.00 Baseline	0.78-1.39	0.78	1.10	0.81-1.49	0.53	
		female	1.043						
	Age group	6-9	1.00 Baseline						
		10-14	0.84	0.58-1.19	0.33	0.79	0.55-1.15	0.23	
		15-18	0.92	0.65-1.31	0.66	0.86	0.59-1.25	0.43	
	Locus of life	Urban	1.00 Baseline						
		Rural	0.25	0.15-0.44	0.001	0.22	0.12-0.42	0.001	
	Father education	Illiterate	1.00 Baseline						
		primary school	.676	.340-1.343	.263	0.64	0.31-1.32	0.23	
		High school	1.087	.567-2.084	.801	0.73	0.35-1.51	0.39	
Diploma		1.161	.614-2.194	.646	0.67	0.31-1.45	0.31		
bachelor		.988	.506-1.927	.971	0.56	0.24-1.31	0.18		
	MSc or higher	.959	.397-2.318	.926	0.57	0.19-1.67	0.31		

Variables and their categories		OR (crude) CI (95%)	P-value	OR (adjusted)	CI (95%)	P-value		
Demographic variables	Mother education	Illiterate	1.00 Baseline					
		primary school	0.76	0.44-1.32	0.33	0.67	0.36-1.22	0.19
		High school	1.36	0.80-2.33	0.25	0.90	0.47-1.71	0.75
		Diploma	1.32	0.79-2.23	0.29	0.86	0.43-1.68	0.65
		Bachelor	1.30	0.73-2.34	0.37	0.97	0.43-2.20	0.94
		Msc or higher	0.90	0.28-2.92	0.87	0.72	0.17-2.91	0.64
	Father job	Public sector	1.00 Baseline					
		Private sector	0.87	0.64-1.17	0.36	1.07	0.74-1.57	0.71
		unemployed	0.96	0.49-1.90	0.91	0.99	0.47-2.12	0.99
Mother job	Public sector	1.00 Baseline						
	Private sector	0.47	0.12-1.72	0.25	0.51	0.12-2.05	0.34	
	Unemployed (Housewife)	1.08	0.63-1.83	0.78	1.19	0.60-2.34	0.61	

The most common categories were Anxiety Disorders (15%), Neurodevelopmental disorders (5.7%), and Behavioral Disorders (5.3%), and the least prevalent categories were Eating Disorders (0.3%) and Substance abuse disorders (0.8%). Specific Phobia (7%), Separation Anxiety Disorder (6.3%), and Enuresis (5.2%) were the most prevalent disorders, Alcohol abuse (0.1%), Anorexia Nervosa (0.1%), and Encopresis (0.1%). Prevalence of all disorders is shown in Table 4 and Figure1, 2.

Table 3. Prevalence of Psychiatric Disorders in the Khuzestan province children and adolescents (6-18)

Psychiatric Disorders		Number	Percent	CI (95%)
Mood disorders	Depressive Disorders	16	1.6	1-2.5
	Total mood disorder	16	1.6	1-2.5
Psychotic disorder		6	0.6	0.3-1.3

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	Psychiatric Disorders	Number	Percent	CI (95%)
Anxiety disorders	Separation Anxiety Disorder	65	6.3	5-8
	Social Phobia	17	1.7	1-2.6
	Specific Phobias	72	7	5.6-8.7
	Agoraphobia	48	4.7	3.5-6.1
	Generalized Anxiety	21	2	1.3-3.1
	Obsessive Compulsive Disorder	15	1.5	0.9-2.4
	Post-Traumatic Stress Disorder	3	0.3	0.1-0.8
	Total Anxiety Disorders	154	15	12.9-17.3
Behavioral Disorders	Attention Deficit Hyperactivity Disorder	29	2.8	2-4
	Oppositional Defiant Disorder	22	2.1	1.4-3.2
	Conduct Disorder	7	0.7	0.3-1.4
	Tic Disorder	3	0.3	0.1-0.8
	Total Behavioral Disorders	54	5.3	4.05-6.8
Neurodevelopmental disorders	Mental retardation	39	3.8	2.8-5.1
	Autism	2	0.2	0.05-0.7
	Epilepsy	25	2.4	1.6-3.6
	Total Neurodevelopmental disorders	59	5.7	4.5-7.3
Substance abuse disorders	Tobacco use	7	0.7	0.3-1.4
	Alcohol abuse	1	0.1	0.02-0.5
	Total Substance abuse disorders	8	0.8	0.4-1.5
Elimination Disorders	Enuresis	53	5.2	4-6.7
	Encopresis	1	0.1	0.02-0.5
	Total Elimination Disorders	53	5.2	4.6.7
Eating Disorders	Anorexia Nervosa	1	0.1	0.02-0.5
	Bulimia Nervosa	2	0.2	0.05-0.7
	Total Eating Disorders	3	0.3	0.1-0.8
Total Psychiatric disorders		233	22.7	20-25

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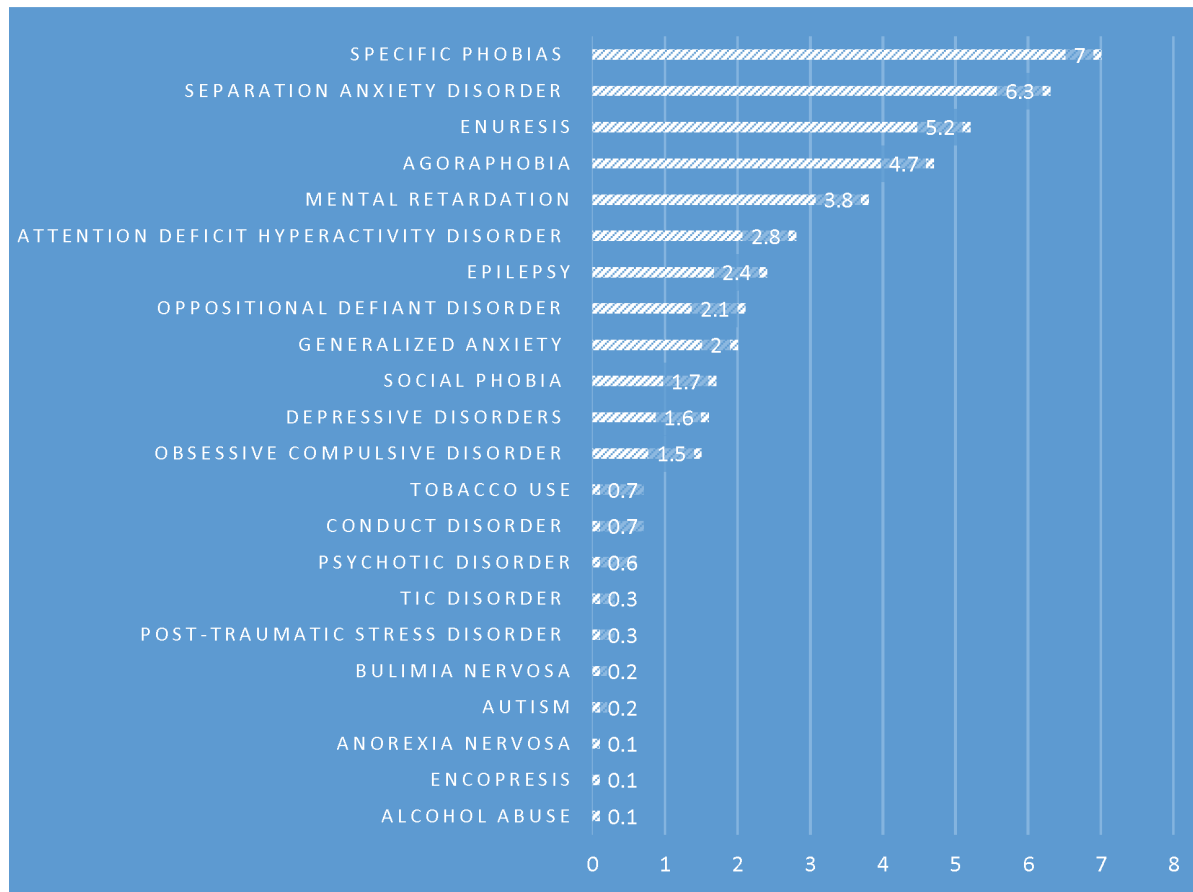


Figure 1. Prevalence of psychiatric disorders in children and adolescents Khuzestan province

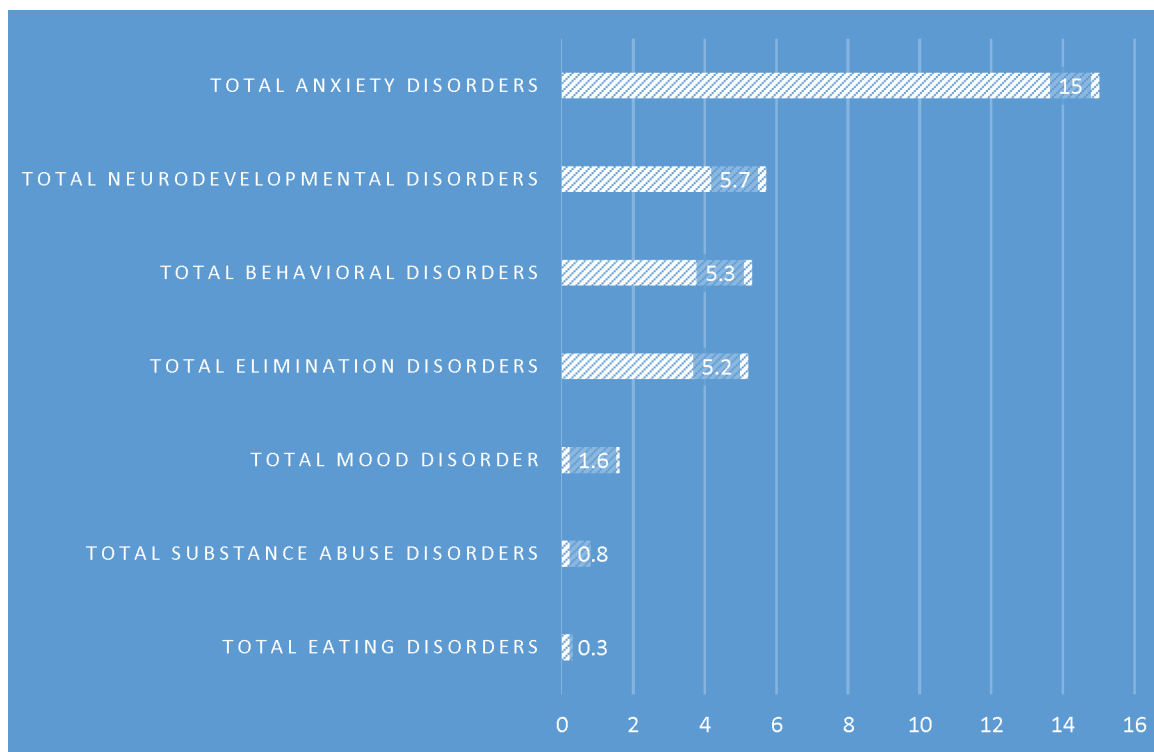


Figure 2. Prevalence of psychiatric disorders in children and adolescents Khuzestan province

The most common comorbid disorders were Mood Disorders and Anxiety Disorders (56.3%), followed by Anxiety Disorders and Elimination disorders (32.1%). The prevalence of all concurrent disorders is shown in Table 5.

Table 4. Comorbidity disorders according to the type of psychiatric disorder in the Khuzestan province

comorbid Main disorder	Mood Disorders F(P)	Psychotic DisordersF(P)	Anxiety DisordersF(P)	Behavioral Disorders F(P)	Neurodevelopmental disorders F(P)	Substance abuse disorders F(P)	Elimination Disorders F (P)	Eating disorders
Mood Disorders		2	9(56.3)	3(18.8)	1	1	1	0
Psychotic Disorders	2		2	2	1	0	0	0
Anxiety Disorders	9(5.8)	2(1.3)		16(10.4)	12(7.8)	1(0.6)	17(11)	1(0.6)
Behavioral Disorders	3(5.6)	2(3.7)	16(29.6)		10(18.5)	3(5.6)	11(20.4)	0
Neurodevelopmental disorders	1(1.7)	1(1.7)	12(20.3)	10(16.9)		1(1.7)	4(6.8)	0
Substance abuse disorders	1	0	1	3	1		0	0
Elimination Disorders	1(1.9)	0	17(32.1)	11(20.8)	4(7.5)	0		0
Eating disorders	0	0	1	0	0	0	0	

Discussion

The current study was an effort to identify the gaps in our knowledge of the state of mental health in children and adolescents in Khuzestan province. The findings revealed that 22.66% of children and adolescents suffer from psychiatric disorders. This result is comparable to the findings of the national survey of psychiatric disorders among children and adolescents in Iran, which reported a prevalence rate of 22.31% (12). Comparisons with other studies are complicated by differences in diagnostic categories, sampling, and case finding methods (4). Anxiety disorders, with a prevalence rate of 15%, were the most common mental disorder. It is cautiously consistent with the results

of Zarafshan (13) that reported a prevalence of 14% for anxiety disorders among elementary school students. However, it is highly lower than values reported by studies intended to investigate anxiety disorders (among children, adolescents, or both) in Bandarabas, Zahedan, Shiraz, and Ardebil (85%, 55.97%, 54.5%, and 24.1%, respectively) and higher than the rate of anxiety disorders in Gorgan, Urmia, Tabriz, and Rafsanjan (10.8%, 6.8%, 6.9%, and 8.4%, respectively)(13). In this study, the most prevalent category was neurodevelopmental disorders, followed by behavioral disorders. We didn't find significant differences in prevalence of psychiatric disorders among participants with different age subgroups, gender, level of parent's

education, and parents' job status. In contrast with our findings, low parental education (whether father or mother) has been reported to be one of the risk factors for psychiatric disorders in children and adolescents in some previous studies (12, 14). In terms of age subgroups and gender, also, some studies mentioned higher prevalence of a number of disorders in some age subgroups or genders (e.g., 8, 10, and 12 for different age subgroups; and 7, 8, and 12 based on the gender).

The observed difference in the results of various studies can be attributed to participants' socioeconomic status, sample size, sampling method, data collection tools, and the location and time of the survey, among various factors. In line with some previous studies (12, 15, 16), mental disorders were significantly more prevalent among children and adolescents in urban areas compared to rural places. The higher prevalence of mental disorders in urban areas, compared to rural areas, can be attributed to higher levels of stress and challenges in cities. On the other hand, a wide spectrum of factors contribute to the mood of children living in urban areas, compared to rural areas, and due to the diversity of such events, individuals who live in urban settings more often experience failure than those who live in rural areas. Experienced failure not only affects the incidence of mental disorders but also can exacerbate their severity (12).

Comorbidity

In the present study, 38.2% of patients were diagnosed with more than one psychiatric disorder. This rate is lower than that of Noterdaeme et al. (16), which reported that more than 60% of patients suffered from more than one psychiatric disorder. Analyses of comorbidities indicated that anxiety disorders had the highest comorbidity with other

disorders, excluding substance abuse disorders. Previous studies that assessed comorbidities in mood disorders, psychotic disorders, alcohol use, eating disorders, and anxiety disorders are in line with this finding (12, 17-24). The most common comorbid disorders were anxiety disorders and mood disorders. This finding is similar to previous studies that mentioned the simultaneous presence of these disorders (12, 17, and 25), although comorbidity prevalence varies widely. The high co-occurring of anxiety and depressive disorders in youth has developed transdiagnostic models of psychopathology that discuss shared cognitive, affective, and behavioral processes underlying multiple disorders (26-28). Children and adolescents with anxiety disorders were vulnerable to elimination disorders as the second common comorbidities. More details about the comorbidity of psychiatric disorders among children and adolescents have been inserted in Table 5.

Limitations

The current study was the first epidemiological survey of psychiatric disorders with a large sample of children and adolescents living in Khuzestan province. However, some limitations should be taken into account. First, the participants didn't include the detained or homeless children and adolescents. Second, a self-report design was followed to collect data, which is prone to bias (e.g., not observing honesty in answering the items). Moreover, responses might have been affected by memory bias.

In Conclusion

About one-fifth of children and adolescents in Khuzestan province suffer from psychiatric disorders, and anxiety disorders are the most common category. Living in an urban area was

associated with a higher rate of psychiatric disorders. In sum, the findings can be used by related authorities to provide effective psychiatric services and should be considered in future etiological and interventional works.

Author's Contribution

M.M. and A.K. were the project leaders and were responsible for project design. M. I and F.R were responsible for sampling and preparation of the data. Z.H. performed the statistical analyses and interpreted of the data. M. I drafted the manuscript; all authors read and approved the final manuscript

Acknowledgement

This study was supported by the national institute for medical research development (NIMAD) (Grant number: 940906). The authors thank the cooperation of the families of the participants.

Conflict of Interest

the authors declare no conflict of interest.

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