

# Psychiatric Disorders in Iranian Children and Adolescents

Mohammad Reza Mohammadi, MD<sup>1</sup>  
 Nastaran Ahmadi, MSC<sup>1, 2</sup>  
 Maryam Salmanian, MSC<sup>1</sup>  
 Fatemeh Asadian-koohestani, MD<sup>1</sup>  
 Ahmad Ghanizadeh, MD<sup>3</sup>  
 Ali Alavi, MD<sup>3</sup>  
 Ayyoub Malek, MD<sup>4</sup>  
 Saeed Dastgiri, PhD<sup>5</sup>  
 Fatemeh Moharreri, MD<sup>6</sup>  
 Paria Hebrani, MD<sup>6</sup>  
 Soroor Arman, MD<sup>7</sup>  
 Javad Khoshhal Dastjerdi, PhD<sup>8</sup>  
 Ali Motavallian, PhD<sup>9</sup>

1. Psychiatry and Psychology Research Center, Tehran University of Medical Sciences, Tehran, Iran.
2. Yazd Cardiovascular Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
3. Research Center for Psychiatry and Behavioral Sciences, Shiraz University of Medical Sciences, Shiraz, Iran.
4. Clinical Psychiatry Research Center, Tabriz University of Medical Sciences, Tabriz, Iran
5. Tabriz Health Services Management Research Center, Tabriz University of Medical Sciences, Tabriz, Iran.
6. Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
7. Behavioral Sciences Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
8. Department of Geography, Geographic Sciences and Planning Faculty, University of Isfahan, Isfahan, Iran.
9. Deputy of Research, Iran University of Medical Sciences, Tehran, Iran.

**Corresponding author:**

Nastaran Ahmadi, MSC  
 Psychiatry and Psychology Research Center, Roozbeh Hospital, Tehran University of Medical Sciences, South Kargar Street, Tehran 13337, Iran.  
 Tel: +98 21 55413540  
 Fax: +98 21 55421959  
 Email: ahmadi.psy@gmail.com

**Objective:** The aim of the present study was to investigate the epidemiology of psychiatric disorders in children and adolescents in five provinces of Iran: Tehran, Shiraz, Isfahan, Tabriz and Mashhad.

**Method:** In the present study, we selected 9,636 children and adolescents aged 6-18 years through multistage cluster random sampling method from Tehran, Shiraz, Isfahan, Tabriz and Mashhad. We instructed the clinical psychologists to complete the Strengths and Difficulties Questionnaire (SDQ) for the participants, and those who received a high score on SDQ, completed the Persian version of Kiddie-SADS-Present and Lifetime Version (K-SADS-PL). We used descriptive analysis and 95% confidence interval to investigate the relationship between scores of the K-SADS questionnaire and demographic factors. We used one-way ANOVA to test the significant differences among the disorders according to sex, age and province of residence.

**Results:** Based on the results, oppositional defiant disorder (ODD) (4.45%) had the highest prevalence of psychiatric disorders in the five provinces and substance abuse and alcohol abuse (0%) had the lowest prevalence. In addition, attention deficit hyperactivity disorder (ADHD) had the most prevalence in boys (5.03%) and ODD had the most prevalence in girls (4.05%). Among the three age groups, 6 to 9 year olds had the highest rates of ADHD (5.69%); 10 to 14 and 15 to 18 year olds had the highest rates of ODD (4.32% and 4.37% respectively). Among the five provinces, Tehran and Mashhad allocated the highest rates of ODD; Isfahan and Shiraz had the highest rates of ADHD; and Tabriz had the highest rates of social phobia.

**Conclusion:** The current study revealed that the overall frequency of psychiatric disorders based on Kiddie-SADS-Present and Lifetime Version (K-SADS-PL) was higher than a similar study. Moreover, in this study, among the five provinces, Tehran and Mashhad allocated the highest rates of ODD; Isfahan and Shiraz had the highest rates of ADHD; and Tabriz had the highest rates of social phobia. Therefore, these percentage of psychiatric disorders in Iran lead us toward a greater use of consultation and mental health services.

**Key words:** *Child and Adolescents, Iran, Kiddie-SADS-Present and Lifetime Version (K-SADS-PL), Psychiatric Disorder*

There has been a growing need to better understand the prevalence and associated factors for mental health problems in children and adolescents in Iran. The shortage of child mental health services is a priority in the world mental health agenda (1). Psychiatric community studies are necessary for planning and developing psychiatric services and are helpful in evaluating the socio-demographic correlations of mental disorders in a given community (2).

Studies on prevalence of child and adolescent psychiatric disorders in different parts of the world present very different and diverse reports. Mental health problems of children and adolescents occur frequently in the general population with prevalence rates of psychopathology estimated from 10% in Denmark, 7% in rural Brazil and Norway, 10% in Britain and Denmark and up to 15% in Russia and Bangladesh (3-9). In Iran, one prevalence study indicated that approximately 17.9% of 6-11 year-old children in Tehran suffer from psychological disorders (10).

However, a considerable discrepancy has been found between prevalence rates and the number of children being treated through childhood and adolescence. This is disturbing as psychopathology developed in childhood shows stability over time and can progress into adult psychiatric disorders. Factors associated with the development of psychopathological disorders include age and gender, location, socioeconomic markers and family conditions (11). The strength of these associations may vary between cultural settings. To screen mental health disorders in children and adolescents, we should use cross-culturally validated instruments to assess behavioral and emotional problems.

Iran, as a developing country, is undergoing significant social, cultural, and economic changes that all can influence its population's mental health status. According to recent surveys, Iran has a population of about 70 million; of whom, more than 20% are below 20 years of age; and some of these adolescents suffer from psychiatric disorders and need mental health services. Unfortunately, there is no estimation on the prevalence of child and adolescent psychiatric disorders in Iran. The only available data are from small-sized studies (12). Therefore, the researchers decided to evaluate the frequency of psychiatric disorders in a community sample of adolescents from different municipality areas of Tehran.

The following institutes conducted this survey in 2011: Tehran University of Medical Sciences, Psychiatry and Psychology Research Center, Deputy of Research, Ministry of Health and Medical Education, Mental Health Research Network, and Isfahan, Fars, Razavi Khorasan and East Azerbaijan University of Medical Sciences. The sites were completed in the following order: Tehran, Isfahan, Fars, Razavi Khorasan and East Azerbaijan.

The purpose of this study was to obtain prevalence rates of psychiatric disorders in a representative national sample of child and adolescents in Iran. This report focused on the DSM-IV prevalence rates of disorders and its associated socio-demographic correlates.

## Materials and Method

### *Sample Selection*

In a community-based study, we selected 9,636 children and adolescents aged 6-18 years by multistage cluster random sampling method. Therefore, after collaborating with the Statistical Center of Iran, we randomly collected 250 clusters from the urban areas of the five provinces, considering the population of each city. Then, of each cluster head, we selected eight cases, including four cases of each gender in different age groups (6 to 9 years, 10 to 14 years and 15 to 18 years). The sample of children and adolescents were living in five geographically distinct provinces, selected because they were representative of the distribution of the national population from Tehran, Shiraz, Isfahan, Tabriz and Mashhad. The population of these five provinces is equal to half of Iran's population; and approximately 12.2 million of the nation's population lives in the capital city, Tehran. Inclusion criteria were as follows: Being an Iranian citizen and having an age range of 6 to 18 years. Child and adolescents with mental retardation and severe physical illness were excluded.

The clinical psychologists were instructed to complete the Strengths and Difficulties Questionnaire (SDQ), which consists of five subscales including emotional symptoms, conduct problem, hyperactivity, peer problem and prosocial behaviors. The trained psychologists filled out the parent report form of SDQ at the participants' home to ensure confidentiality of the data. After evaluating the results of SDQ, we selected the children with total or subscale scores higher than the cut of point. Of the 9,636 participants, 2,100 had the scores higher than 17 and were identified as the abnormal group. Two clinical psychologists examined these children and referred to the children's home and interviewed them using the Persian version of Kiddie-Sads-Present and Lifetime Version (K-SADS-PL) (13). In addition, demographic data (gender, age, province of residence and education) were obtained. The time required to complete the K-SADS was about 30 to 40 minutes.

Among the 2,100 (6-18 year olds) adolescents, 49 were excluded from the study due to providing incomplete information on the demographic questionnaire and the K-SADS, but 2,051 cases remained.

### *Measures*

#### *The Strengths and Difficulties Questionnaire (SDQ)*

SDQ is a structured questionnaire used to screen the child and adolescent psychiatric problems, and has three forms of parent, teacher and self-report. SDQ

contains 25 questions and five subscales including emotional symptoms, conduct problem, hyperactivity, peer problem and prosocial behaviors, with five questions for each scale. Goodman (1997) made this scale. The scoring of questions is 0 for "not true", 1 for "somewhat true" and 2 for "certainly true". However, some of the questions are scored reversely. The sum of the first four subscales generates the total difficulties score in the range of 0 to 40 (14-16). Ghanizadeh et al. (2007) evaluated the validity and reliability of the Persian version of the SDQs in 756 children and adolescents aged 3-18 years. They reported 0.73, 0.73 and 0.74 as the mean Cronbach's alpha coefficient of the total difficulties for the parent, teacher and self-report forms of SDQ, respectively. They also obtained the sensitivity of 90% and specificity of 67%. Overall their findings showed that the Persian version of the SDQs has acceptable to good psychometric properties (17). In another study, Tehrani Doost et al. (2009) measured psychometric properties of the Persian version of SDQ in 600 Iranian children aged 6-12 years. They reported 0.73 and 0.69 as the mean of internal consistencies for the parent and teacher report forms of SDQ, respectively; they also found good concurrent validity, as they found significant correlations among the SDQs and CBCL subscales. This research found that the cut-off points of the Persian version of the SDQ are similar to those of other studies (18).

#### ***Kiddie-Sads-Present and Lifetime Version (K-SADS-PL)***

Psychiatric disorders in children and adolescents were evaluated using the Schedule for Affective Disorders and Schizophrenia for School-Age Children/Present and Lifetime Version (KSADS- PL) based on mother/main caregiver report. KSADS- PL is a semi-structured psychiatric interview that ascertains diagnostic status based on DSM-IV criteria and includes five diagnostic groups:

1. Affective disorders (depressive disorders [major depression, dysthymia] and mania, hypomania);
2. Psychotic disorders;
3. Anxiety disorders (social phobia/ agoraphobia/ specific phobia/ obsessive- compulsive disorder/ separation anxiety disorder/ generalized anxiety disorder/ panic disorder/ posttraumatic stress disorder);
4. Disruptive behavioral disorders (ADHD/conduct disorder/oppositional defiant disorder);
5. Substance abuse, tic disorders, eating disorders, and elimination disorders (enuresis/encopresis) (19)

The aim of the interview is to establish rapport, obtain information about presenting complaints, prior psychiatric problems, and the child's global functioning. The interview opens with questions about basic demographics. Health and developmental history data should be obtained as this information may be helpful in making differential diagnoses (20).

Ghanizadeh and colleagues reported the test-retest reliability of the Persian version of this questionnaire to

be 0.81 and the inter-rater reliability to be 0.69 in which the sensitivity and specificity of the Persian version of K-SADS was shown to be high. The K-SADS-PL was used to diagnose ADHD and its psychiatric comorbidities. In this study, we considered all the lifespan related psychiatric diagnoses (21). In study of Polanczyk et al. that assessed the interrater agreement for K-SADS, kappa coefficients were 0.93 ( $p < 0.001$ ) for affective disorders, 0.9 ( $p < 0.001$ ) for anxiety disorders, 0.94 ( $p < 0.001$ ) for attention-deficit/hyperactivity disorders and disruptive behavior disorders (22).

#### ***Statistical Analysis***

Data were entered into the SPSS 16. To investigate the relationship between scores of the K-SADS questionnaire and the demographic factors, we used descriptive analysis and 95% confidence interval. A  $p$  value of  $< 0.05$  was considered statistically significant. We used one-way ANOVA to test the significant differences of the disorders according to sex, age and province of residence.

#### **Results**

Among the 2,100 (6-18 year olds) children and adolescents, 49 cases were excluded from this study because they did not provide sufficient information in the demographic questionnaire and the K-SADS. Among the remaining 2,051 cases, 1,067 (52%) were boys and 984 (48%) were girls. The mean age of the participants in this study was 12.31. The mean age did not have a significant difference in the two sexes ( $P \geq 0.05$ ). The response rate was 96%.

Oppositional defiant disorder (ODD) (4.45%) had the highest prevalence of psychiatric disorders in the five provinces of the country and substance abuse and alcohol abuse (0%) had the lowest prevalence (Table 1).

#### ***The Prevalence of Psychiatric Disorders in Terms of Demographic Factors***

1. The Prevalence of Psychiatric Disorders in Terms of Gender:

Compared to other disorders, ADHD had the most prevalence in boys (5.03%) and ODD had the most prevalence in girls (4.05%). Comparison of 95% confidence interval of prevalence of psychiatric disorders between the two genders suggested a significant difference in ADHD and GAD of K-SADS between the two genders (Table 2).

2. The Prevalence of Psychiatric Disorders in Terms of Age:

Among the three age groups, 6 to 9 year olds had the highest rates of ADHD (5.69%); 10 to 14 year olds had the highest rates of ODD (4.32%); and 15 to 18 also had the highest rates of ODD (4.37%) (Table 3).

**Table1. Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population**

Psychiatric Disorders	Number	Percent	Confidence Interval	
			Min	Max
Depressive Disorders	137	1.42%	0.011	0.016
Mania	61	0.63%	0.004	0.007
Psychosis	12	0.12%	0.000	0.001
Panic Disorder	17	0.17%	0.000	0.002
Separation Anxiety Disorder	147	1.53%	0.012	0.017
Social Phobia	315	3.28%	0.029	0.036
Specific Phobias	117	1.21%	0.009	0.014
Generalized Anxiety	161	1.66%	0.014	0.019
Obsessive Compulsive Disorder	82	0.85%	0.006	0.010
Enuresis	98	1.02%	0.008	0.012
Encopresis	7	0.06%	0.000	0.001
Anorexia Nervosa	15	0.14%	0.000	0.002
Bulimia Nervosa	11	0.10%	0.000	0.001
Attention Deficit Hyperactivity Disorder	381	3.96%	0.035	0.043
Oppositional Defiant Disorder	429	4.45%	0.040	0.048
Conduct Disorder	32	0.34%	0.002	0.004
Tic Disorder	29	0.29%	0.001	0.004
Cigarette Use	3	0.02%	0.000	0.000
Post-Traumatic Stress Disorder	85	0.87%	0.006	0.010
Total	1016	10.55%	0.099	0.111

**Table2. Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Gender**

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Depressive Disorders	Male	57	1.13%	0.009	0.013
	Female	80	1.72%	0.014	0.019
Mania	Male	27	0.53%	0.003	0.006
	Female	34	0.74%	0.005	0.009
Psychosis	Male	6	0.12%	0.000	0.001
	Female	6	0.12%	0.000	0.001
Panic Disorder	Male	5	0.10%	0.000	0.001
	Female	12	0.25%	0.001	0.003
Separation Anxiety Disorder	Male	74	1.47%	0.012	0.017
	Female	73	1.57%	0.013	0.018
Social Phobia	Male	173	3.45%	0.030	0.038
	Female	142	3.07%	0.027	0.034
Specific Phobias	Male	55	1.10%	0.008	0.013
	Female	62	1.34%	0.011	0.015
Generalized Anxiety	Male	64	1.27%	0.010	0.015
	Female	97	2.11%	0.018	0.023
Obsessive Compulsive Disorder	Male	43	0.85%	0.006	0.010
	Female	39	0.85%	0.006	0.010

**Table2 (Continue). Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Gender**

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Enuresis	Male	64	1.27%	0.010	0.015
	Female	34	0.74%	0.005	0.009
Encopresis	Male	3	0.06%	0.000	0.001
	Female	4	0.08%	0.000	0.001
Anorexia Nervosa	Male	6	0.12%	0.000	0.001
	Female	9	0.19%	0.001	0.002
Bulimia Nervosa	Male	6	0.12%	0.000	0.001
	Female	5	0.10%	0.000	0.001
Attention Deficit Hyperactivity Disorder	Male	252	5.03%	0.045	0.054
	Female	129	2.79%	0.024	0.031
Oppositional Defiant Disorder	Male	242	4.84%	0.044	0.052
	Female	187	4.05%	0.036	0.044
Conduct Disorder	Male	22	0.44%	0.003	0.005
	Female	10	0.21%	0.001	0.003
Tic Disorder	Male	16	0.31%	0.002	0.004
	Female	13	0.27%	0.001	0.003
Cigarette Use	Male	3	0.06%	0.000	0.001
	Female	0	0.00%	-	-
Post-Traumatic Stress Disorder	Male	34	0.68%	0.005	0.008
	Female	51	1.10%	0.008	0.013
Total	Male	565	11.30%	0.106	0.119
	Female	451	9.76%	0.091	0.103

**Table3. Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Age**

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Depressive Disorders	6-9	17	0.68%	0.005	0.008
	10-14	49	1.17%	0.009	0.013
	15-18	71	2.34%	0.020	0.026
Mania	6-9	8	0.31%	0.002	0.004
	10-14	20	0.49%	0.003	0.006
	15-18	33	1.08%	0.008	0.012
Psychosis	6-9	0	0.00%	-	-
	10-14	7	0.17%	0.000	0.002
	15-18	5	0.17%	0.000	0.002
Panic Disorder	6-9	0	0.00%	-	-
	10-14	8	0.19%	0.001	0.002
	15-18	9	0.29%	0.001	0.004

**Table3 (Continue). Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Age**

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Separation Anxiety Disorder	6-9	47	1.91%	0.016	0.021
	10-14	68	1.64%	0.013	0.018
	15-18	32	1.06%	0.008	0.012
Social Phobia	6-9	69	2.81%	0.024	0.031
	10-14	143	3.45%	0.030	0.038
	15-18	103	3.41%	0.030	0.037
Specific Phobias	6-9	30	1.21%	0.009	0.014
	10-14	60	1.44%	0.012	0.016
	15-18	27	0.89%	0.007	0.010
Generalized Anxiety	6-9	18	0.72%	0.005	0.008
	10-14	73	1.76%	0.015	0.020
	15-18	70	2.32%	0.020	0.026
Obsessive Compulsive Disorder	6-9	15	0.61%	0.004	0.007
	10-14	41	0.98%	0.007	0.011
	15-18	26	0.85%	0.006	0.010
Enuresis	6-9	47	1.91%	0.016	0.021
	10-14	36	0.87%	0.006	0.010
	15-18	15	0.49%	0.003	0.006
Encopresis	6-9	3	0.12%	0.000	0.001
	10-14	1	0.02%	0.000	0.000
	15-18	3	0.10%	0.000	0.001
Anorexia Nervosa	6-9	0	0.00%	-	-
	10-14	8	0.19%	0.001	0.002
	15-18	7	0.23%	0.001	0.003
Bulimia Nervosa	6-9	3	0.12%	0.000	0.001
	10-14	3	0.06%	0.000	0.001
	15-18	5	0.17%	0.000	0.002
Attention Deficit Hyperactivity Disorder	6-9	140	5.69%	0.052	0.061
	10-14	157	3.79%	0.034	0.041
	15-18	84	2.77%	0.024	0.030
Oppositional Defiant Disorder	6-9	118	4.79%	0.043	0.052
	10-14	179	4.32%	0.039	0.047
	15-18	132	4.37%	0.039	0.047
Conduct Disorder	6-9	4	0.17%	0.000	0.002
	10-14	14	0.34%	0.002	0.004
	15-18	14	0.46%	0.003	0.006
Tic Disorder	6-9	3	0.12%	0.000	0.001
	10-14	16	0.38%	0.002	0.005
	15-18	10	0.34%	0.002	0.004
Cigarette Use	6-9	0	0.00%	-	-
	10-14	0	0.00%	-	-
	15-18	3	0.10%	0.000	0.001

Table3 (Continue). Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Age

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Min
Post-Traumatic Stress Disorder	6-9	18	0.72%	0.005	0.008
	10-14	38	0.91%	0.007	0.011
	15-18	29	0.95%	0.007	0.011
Total	6-9	297	12.08%	0.114	0.127
	10-14	434	10.49%	0.098	0.111
	15-18	285	9.44%	0.088	0.100

Table4. Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Province of Residence

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Depressive Disorders	Tehran	56	2.28%	0.019	0.025
	Shiraz	12	1.00%	0.008	0.012
	Isfahan	12	0.51%	0.003	0.006
	Tabriz	12	0.98%	0.007	0.011
	Mashhad	45	1.87%	0.016	0.021
Mania	Tehran	40	1.62%	0.013	0.018
	Shiraz	1	0.08%	0.000	0.001
	Isfahan	6	0.25%	0.001	0.003
	Tabriz	1	0.08%	0.000	0.001
	Mashhad	13	0.53%	0.003	0.006
Psychosis	Tehran	9	0.36%	0.002	0.004
	Shiraz	0	0.00%	-	-
	Isfahan	1	0.04%	0.000	0.000
	Tabriz	0	0.00%	-	-
	Mashhad	2	0.08%	0.000	0.001
Panic Disorder	Tehran	13	0.53%	0.003	0.006
	Shiraz	0	0.00%	-	-
	Isfahan	0	0.00%	-	-
	Tabriz	1	0.08%	0.000	0.001
	Mashhad	3	0.12%	0.000	0.001
Separation Anxiety Disorder	Tehran	47	1.91%	0.016	0.021
	Shiraz	4	0.34%	0.002	0.004
	Isfahan	15	0.63%	0.004	0.007
	Tabriz	45	3.66%	0.032	0.040
	Mashhad	36	1.49%	0.012	0.017
Social Phobia	Tehran	39	1.59%	0.013	0.018
	Shiraz	9	0.76%	0.005	0.009
	Isfahan	38	1.62%	0.013	0.018
	Tabriz	102	8.33%	0.077	0.088
	Mashhad	127	5.28%	0.048	0.057

**Table4 (Continue). Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Province of Residence**

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Specific Phobias	Tehran	16	0.66%	0.004	0.008
	Shiraz	2	0.17%	0.000	0.002
	Isfahan	12	0.51%	0.003	0.006
	Tabriz	55	4.49%	0.040	0.049
	Mashhad	32	1.32%	0.010	0.015
Generalized Anxiety	Tehran	38	1.55%	0.013	0.018
	Shiraz	35	2.94%	0.026	0.032
	Isfahan	18	0.76%	0.005	0.009
	Tabriz	21	1.70%	0.014	0.019
	Mashhad	49	2.04%	0.017	0.023
Obsessive Compulsive Disorder	Tehran	18	0.72%	0.005	0.008
	Shiraz	11	0.91%	0.007	0.011
	Isfahan	21	0.89%	0.007	0.010
	Tabriz	11	0.89%	0.007	0.010
	Mashhad	21	0.87%	0.006	0.010
Enuresis	Tehran	36	1.47%	0.012	0.017
	Shiraz	7	0.59%	0.004	0.007
	Isfahan	13	0.55%	0.004	0.007
	Tabriz	19	1.55%	0.013	0.018
	Mashhad	23	0.95%	0.007	0.011
Encopresis	Tehran	5	0.21%	0.001	0.003
	Shiraz	0	0.00%	-	-
	Isfahan	1	0.04%	0.000	0.000
	Tabriz	0	0.00%	-	-
	Mashhad	1	0.04%	0.000	0.000
Anorexia Nervosa	Tehran	14	0.57%	0.004	0.007
	Shiraz	0	0.00%	-	-
	Isfahan	1	0.04%	0.000	0.000
	Tabriz	0	0.00%	-	-
	Mashhad	0	0.00%	-	-
Bulimia Nervosa	Tehran	2	0.06%	0.000	0.001
	Shiraz	0	0.00%	-	-
	Isfahan	0	0.00%	-	-
	Tabriz	0	0.00%	-	-
	Mashhad	0	0.00%	-	-
Attention Deficit Hyperactivity Disorder	Tehran	69	2.81%	0.024	0.031
	Shiraz	61	5.13%	0.046	0.055
	Isfahan	49	2.08%	0.018	0.023
	Tabriz	84	6.86%	0.063	0.073
	Mashhad	118	4.90%	0.044	0.053



Table 4 (Continue). Prevalence and Confidence Interval of Psychiatric Disorders in the K-SADS in the Total Population in Terms of Province of Residence

Psychiatric Disorders		Number	Percent	Confidence Interval	
				Min	Max
Oppositional Defiant Disorder	Tehran	141	5.75%	0.052	0.062
	Shiraz	58	4.88%	0.044	0.053
	Isfahan	34	1.44%	0.012	0.016
	Tabriz	48	3.92%	0.035	0.043
	Mashhad	148	6.14%	0.056	0.066
Conduct Disorder	Tehran	15	0.61%	0.004	0.007
	Shiraz	3	0.25%	0.001	0.003
	Isfahan	0	0.00%	-	-
	Tabriz	3	0.23%	0.001	0.003
	Mashhad	11	0.44%	0.003	0.005
Tic Disorder	Tehran	14	0.57%	0.004	0.007
	Shiraz	3	0.25%	0.001	0.003
	Isfahan	1	0.04%	0.000	0.000
	Tabriz	8	0.66%	0.004	0.008
	Mashhad	3	0.12%	0.000	0.001
Cigarette Use	Tehran	0	0.00%	-	-
	Shiraz	0	0.00%	-	-
	Isfahan	1	0.04%	0.000	0.000
	Tabriz	2	0.17%	0.000	0.002
	Mashhad	0	0.00%	-	-
Post-Traumatic Stress Disorder	Tehran	1	0.04%	0.000	0.000
	Shiraz	6	0.51%	0.003	0.006
	Isfahan	16	0.68%	0.005	0.008
	Tabriz	9	0.72%	0.005	0.008
	Mashhad	53	2.19%	0.019	0.024
Total	Tehran	222	9.04%	0.084	0.096
	Shiraz	115	9.70%	0.091	0.102
	Isfahan	146	6.20%	0.057	0.066
	Tabriz	192	15.69%	0.149	0.164
	Mashhad	341	14.17%	0.134	0.148

Comparison of 95% confidence interval of prevalence of psychiatric disorders between the three groups suggested a significant difference in depression, mania, GAD, enuresis, and ADHD of K-SADS between the three age groups (Table 3).

### 3. The Prevalence of Psychiatric Disorders in Terms of Province of Residence:

Among the five provinces, Tehran (5.75%) and Mashhad (6.14%) allocated the highest rates of ODD; Tabriz (8.33%) had the highest rates of social phobia; and Isfahan (2.08) and Shiraz (5.13) had the highest rates of ADHD (Table 4).

Comparison of 95% confidence interval of prevalence of psychiatric disorders in the K-SADS revealed a significant difference in all disorders between five

cities except for OCD, encopresis, cigarette, alcohol and substance uses (Table 4).

Moreover, alcohol abuse and substance abuse were 0% in the five provinces.

## Discussion

This was the first study conducted in five Iranian provinces addressing the frequency of different psychiatric disorders on children and adolescents. This is especially important in a large country like Iran where socio-economic and demographic differences vary greatly between the provinces of the country. The rapid pace of cultural changes in Iran as a developing country and the ongoing shifts in the socio-cultural behaviors are factors that may produce some problematic behaviors.

This study revealed that the overall frequency of psychiatric disorders was 10.55%. Also, in this study, ODD (4.45%) and ADHD (3.96%) had the highest prevalence of psychiatric disorders in five provinces of the country, and substance abuse and alcohol abuse (0%) had the lowest prevalence. Among the five provinces, Tehran and Mashhad allocated the highest rates of ODD; Isfahan and Shiraz had the highest rates of ADHD; and Tabriz had the highest rates of social phobia. Moreover, the prevalence of the total psychiatric disorders in Tabriz (15.69%) was the highest among other provinces and Isfahan (6.2%) had the lowest prevalence of disorders.

The overall frequency of psychiatric disorders in this study was lower than the similar study conducted in Tehran and Isfahan (10, 25).

Child and adolescent Mental Health (MH) reported that approximately 10 to 20% of children and adolescents are affected by psychiatric problems (23, 24). In Iran, one prevalence study indicated that approximately 17.9% of 6-11 year-old children in Tehran suffer from psychological disorders (10) and one epidemiological study on the adolescents' mental health that was conducted in Isfahan revealed that 26% of the adolescents (6-18 year olds) had psychiatric problems (25).

In Australia, 14 % of children and adolescents had mental health problems and only 25% of those with mental health problems had attended a professional service during the six months prior to the survey (26). The overall frequency of psychological disorders was 21.8% and 15.0% in Finland and Nigeria (27, 28). Similar to our study, results of Finland showed that ODD and ADHD had the most prevalent diagnosis (27). In the study of Pearce in Nottingham, the rate of child psychiatric disorders was 10% in the general population (29).

In another study by Costello et al., 36.7% of the participants had at least one psychological disorder. Some disorders such as depression, mania, GAD, OCD, social anxiety and panic increased in frequency with increase in age, whereas others, including separation anxiety disorder, ADHD and ODD

decreased (30). The results of this study support this idea.

In a study conducted in Ireland by Lynch et al., they found that about 19.4% of 723 (12-17 year old) adolescents were at risk of psychiatric problems; and among them, 15.6% met the criteria for a psychiatric problem (31). In a study conducted in the UAE, the prevalence of psychiatric problems in a population of 3,278 adolescents studying in Roy Aleyh high school was 23.9% (32). In a longitudinal study conducted in the USA on 1,420 (9 to 16 year old) adolescents, the point prevalence of psychiatric problems was equal to 13.3%, and the prevalence of problems during the study was equal to 36.7% (33). In another study in the USA, the prevalence of psychiatric problems in 9 to 17 year old children was about 21% in rural areas (34). In a study conducted in Taiwan on high school students in three consecutive years, the prevalence of psychiatric problems was 14.8 to 22.7%; and the most frequent problems were hyperactivity problems and substance abuse problems (35).

In addition, Gosden et al. performed a study on 15- 17-year-old male adolescent remand prisoners in Denmark and found that the past year prevalence of any mental problems was 69% and the prevalence of substance use problems was 41%. Furthermore, among them, 2% had schizophrenia, 2% schizotypal problems and 36% had probable personality problems. Conduct problems were found in 31% and 1% had hyperkinetic problems (36).

Few studies have reported the higher rates of psychiatric problems in their studied group's compared to our study. Such a study was conducted in Russia following the changes due to the collapse of the Soviet Union, and it found that the prevalence of psychiatric problems in 7 to 14 year old children was 70% (37).

## Limitations

This study had a number of limitations, of which the following worth mentioning. First, this study focused on five of Iran's urban population that may not be representative of the total population of the five provinces. Second, lack of rural population was also a limitation. Third, the method of referring to participants' residences to pick up the answers could be another limitation of this study and this was due to the response rate. The response rate increased by referring to children's home; however, problems such as displacement, going on trips or lack of cooperation remained.

## Conclusion

In this study, the prevalence of psychiatric disorders based on Kiddie-Sads-Present and Lifetime Version (K-SADS-PL) was 10.55% in the total population. Thus, in general, this percentage of children and adolescents in the five selected provinces of Iran had psychiatric disorders; and therefore, we highly recommend that consultation and mental health services be provided to them.

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## Conflict of interest

None declared.

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