Research Paper: Prevalence of Mental Disorders Among Children and Teenagers in Sistan and Baluchestan Province, Iran

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ABSTRACT

Background: Paying attention to psychiatric disorder in childhood and adolescence is critical. It causes the occurrence of mental disorders in adulthood. The present study aimed to explore the frequency of mental disorders among children and adolescents in Zahedan City, Iran.

Materials & Methods: This was a descriptive and cross-sectional study. Individuals aged between 6 and 18 years were included in this investigation. In total, 1003 children and adolescents were selected by the random cluster sampling method. To collect the required information, in addition to demographic information, the Schedule for Affective Disorders and Schizophrenia (K-SADS-PL) for school-age Children-Present and Lifetime version was employed. The obtained data were analyzed using multivariate logistic regression method.

Results: A total of 1003 children and adolescents participated in the study; of them, 489 (48.8%) and 514(51.2%) were males and females, respectively. The Mean±SD age of study participants was 11.96±3.99 years. Moreover, 86.8% of the study subjects were from urban areas and 13.2% from rural areas. The highest prevalence of psychiatric disorders concerned behavioral disorders (6.8%); anxiety disorders (6.7%); The lowest prevalence were related to post-traumatic stress disorder (0.2%) and autism (0.1%). The overall prevalence of psychiatric disorder among children and adolescence was 14.4%.

Conclusion: This study found a high prevalence of psychiatric disorders similar to previous studies in the same age groups. The estimates played an important role in designing useful programs and interventions.

Keywords: Epidemiology, Psychiatric disorders, Children, Teenagers

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1. Introduction

An essential public health issue of the 21st century is mental health disorders among children and adolescents [1]. A growing number of children and adolescents develop mental health issues, according to news statistics. The increasing emphasis on mental health suggests that individuals are becoming more conscious of mental health issues and their impact on children and adolescents [2]. Furthermore, adolescents are often vulnerable to mental disorders due to experiencing maltreatment. Accordingly, the prevalence of mental disorder in children and adolescents is critical [3]. Lifelong prevalence rates indicate that most mental disorders in adults start before adulthood [4]. Even some studies suggested that children under 1.5 years of age may encounter mental disorders [5].

A large body of literature demonstrated that juvenile mental health issues may result in serious adult health complications. Epidemiological data on the frequency of psychiatric issues in children and adolescents can contribute to mental health management [6]. Additionally, due to the rapid socioeconomic changes in recent decades, there exists a need for gathering epidemiological information on mental health problems in children and adolescents [7].

Mental problems among children and adolescents in Sistan and Baluchestan Province, Iran, are not well understood. Thus, this research intended to address such data, as part of a national epidemiological evaluation of the prevalence of psychiatric disorders throughout Iranian children and teenagers [8]. Sistan and Baluchestan are located in the southeast of Iran. It is ranked the second largest province of Iran with an area of 187502 square kilometers (11% of the total area of Iran). According to the last census conducted in 2016, the population of the province equaled 2775014 subjects (3.3% of the total population of Iran); of them, 48.5% live in cities and 51.5% in villages. The total number of urban and rural census blocks was measured to be 500. In Iran's third development plan, a population growth rate of 3.15% was projected for the province. The province has a very young population; therefore, approximately 49% of the total population is aged under 15 years. In addition, there are 562220 students in the province; of whom 257325 and 304895 are girls and boys, respectively.

This research aimed to assess the prevalence rate and associated factors of mental disorders in children and adolescents in Zahedan, the capital city of Sistan and Baluchestan to provide information that can be used by healthcare policymakers.

2. Materials and Methods

This research was performed on a subset of a national project conducted by Mohammadi et al. to assess the prevalence. Using Multistage cluster sampling method, thee Psychiatric and Psychological Research Center in Tehran, collected the data of 1003 children and adolescents aged 6-18 years from Zahedan City, Sistan and Baluchestan Province, Iran, in 2017-2018. The inclusion criteria of the study were Iranian nationality, residing in Zahedan, and being aged 6-18 years. The exclusion criterion was having severe physical disorders. In total, 168 clusters were randomly selected from the existing blocks in the central post office, which included 147 urban clusters and 21 rural clusters. Each cluster was divided into 3 blocks; among which, one block was randomly selected. Six eligible subjects from each block were interviewed. The interviewers were then given the postal code and address of 6 houses in the selected block. Ethical considerations of the research were obtaining informed consent of the subjects and if necessary, their family; the possibility of leaving the research, as desired; as well as privacy and security of individuals. A minimum sample size of 900 subjects was calculated considering a 0.3 prevalence of mental disorders, a type 1 error of 0.05, and acceptable error of 0.03.

The interviews were conducted by 8 interviewers; 4 two-person teams, including a man and a woman fluent in Baluchi and Sistani languages. The interviewers were all undergraduate and graduate students of psychology. To apply the Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (K-SADS-PL), the research interviewers were trained by psychotherapists. Then, the trained interviewers visited children's houses and interviewed the participants at their homes using the K-SADS-PL. This plan lasted between 30 and 40 minutes. The recorded characteristics consisted of demographic data, such as gender, age, educational level, and socioeconomic status. The study children's parents were requested to simultaneously complete the screening questionnaire. Besides, the explored adolescents aged about ≥11 years were requested to complete the questionnaire. For children aged <11 years, the questionnaire was completed by their parents. The kappa values for impressive disorders, anguish disorders, precision-deficiency/hyperactivity, and factious manner disorders were estimated to be 0.93 0.9 for, 0.94, respectively by Polanczyk et al. [9] that evaluated the interrater consensus for K-SADS.

In accordance with the DSM-III-R and DSM-IV,1, the K-SADS-PL is a semi-structured instrument intended to evaluate current and future occurrences of mental disorders among children and adolescents. It may be employed to evaluate individuals aged 6-18 years. The psychometric properties of the Persian version of the questionnaire were validated in previous studies [10, 11]. MDD, dysthymia, infatuation, hypomania, cyclothymia, bipolar disorder, schizoaffective disorder, schizophrenia, schizophreniform disorder, concise mental disturbance, phobias, agoraphobia, dissociation anguish, avoidant character disturbance of infancy and adolescence, naive phobia, public phobia, GAD, Obsessive-Compulsive Disorder (OCD), ADHD, conduct disorder, ODD, bedwetting, incontinency, bulimia nervosa, anorexia nervosa, temporary tic disturbance, Tourette syndrome, chronic motor or vocal tic disturbance, alcohol and substance abuse, Post-Traumatic Stress Disorder (PTSD), and state disturbance are the basic diagnostic findings conducted by the K-SADS-PL.

The reliability of the Persian version of the K-SADS-PL was calculated by Ghanizadeh et al. [12], and reported to be 0.81; the reliability was computed as 0.69 using the test-retest method.

All statistical analysis was performed in SPSS version. 16. The prevalence of mental disorders among the study subjects at 95% Confidence Interval (CI) were reported using descriptive statistics. To estimate the Odds Ratio (OR) with 95%CI, the univariate and multivariate logistic regression model was employed. In this study, the significance level was set at 0.05.

3. Results

The research sample comprised 1003 children and adolescents, including 489(48.8%) males and 514(51.2%) females. The Mean±SD age of the study subjects was 11.96±3.99 years. The youngest and oldest research participants were 6 and 18 years, respectively.

Moreover, 86.8% of the explored participants were from urban areas and 13.2% were from rural areas. Concerning parental education, most fathers had middle school or high school education (26.7%), while most mothers had primary school education (28.2%). Furthermore, most fathers were self-employed (59.4%), and the majority of mothers were housewives (88.6%).

Table 1 shows demographic characteristics and the prevalence of mental disorders among the study participants. The overall prevalence of psychiatric disor-

ders among the explored children and adolescents was 14.4% (95%CI:12.2-16.5%). children in urban places were more likely to have mental disroders than shildren from rural areas (P=0.001)

The prevalence different types of mental disorders among the examined volunteers is revealed in Table 2. Accordingly, the highest prevalence rates were behavioral (6.8%) and anxiety disorders (6.7%), followed by substance use disorder (5.9%), neurodevelopmental disorders (4.8%), and urinary incontinence (2.4%), respectively; the lowest prevalence rates respected autism (0.1%), panic disorder (0.1%), and PTSD (0.2), respectively.

Odds ratio (95%CI) of mental disorders by demographic factors are presented in Table 3. In the crude model, the odds of mental disorders in rural children was 55% lower than urban children (OR=0.45, 95%CI:0.23-0.88). However, the association of residential place with mental disorder was not significant after multivariate adjustment of the study variables. There were no significant association between other demographic variables and mental disorder.

4. Discussion

The present study provided updated information on the prevalence of psychological disorders in children and adolescents. These data can help in modification, classification, and evaluation processes; the inclusion of younger children in epidemiological assessments, the integration of psychiatric epidemiology of children and adults, and the examination of biopsychological disorders among children and adolescents [13].

Mental disorders affected 14.4% of children and adolescents aged 6 to 18 years. This finding was consistent with those of Kousha et al. [14] who found prevalence rates ranging from 16% to 22% for psychiatric disorders in this population.

Children and adolescents with mental disorders were found to have prevalence rate between 11.9% and 30.2% in previous Iranian epidemiological research [15]. For example, in line with our findings, Mohammadi et al. [15] found a prevalence of 10.5% for behavioral disorders in 1476 adolescents, aged 12-17 years, using the Child Behavior Checklist (CBCL) [16]. The frequency of mental disorders among children and adolescents in Sri Lanka was estimated as 13% using CBCL [17].

Lesinskiene et al. [7] conducted an epidemiological study on psychiatric disorders (based on ICD-10) in

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Table 1. The demographic characteristics of the study sample

Variables		No.(%)		95%CI
		Total	With Disorder	
Gender	Male	489(48.8)	78(16)	13-19.5
	Female	514(51.2)	66(12.8)	10.22-16.01
Age-group (y)	6-9	342(34.1)	47(13.7)	10.49-17.79
	10-14	333(33.2)	46(13.8)	10.52-17.93
	15-18	328(32.7)	51(15.5)	12.03-19.87
The place of residence	Urban	871(86.8)	134(15.4)	13.14-17.93
	Rural	132(13.2)	10(7.6)	4.17-13.39
Paternal educational level	Illiterate	146(14.7)	21(14.4)	9.6-20.99
	Primary school	221(22.2)	30(13.6)	9.67-18.71
	Guidance & high school	266(26.7)	43(16.2)	12.23-21.07
	Diploma	197(19.8)	29(14.7)	10.45-20.34
	Bachelor	132(13.3)	19(14.4)	9.41-21.38
	MSc or higher	34(3.4)	1(2.9)	0.5-14.91
	Missing	7	1	
Maternal educational level	Illiterate	214(21.5)	31(14.5)	10.4-19.83
	Primary school	281(28.2)	38(13.5)	10.01-18.01
	Guidance & high school	186(18.7)	32(17.2)	12.45-23.27
	Diploma	191(19.2)	26(13.6)	9.46-19.2
	Bachelor	108(10.9)	15(13.9)	8.6-21.66
	MSc or higher	15(1.5)	1(6.7)	1.19-29.82
	Missing	8	1	

CI, Confidence interval

children and adolescents in Lithuania; accordingly, they observed a prevalence rate of 13.1% in the total sample (14% in children & 12.1% in adults). In this study, the most prevalent psychiatric disorders included behavioral disorders (6.6% in the total sample, 7.1% in children, & 6% in adolescents), anxiety disorders (5% in the total sample, 5.9% in children, & 6% in adolescents), and hyperkinetic disorders (2% in the total sample, 2.7% in children, & 1.2% in adolescents) respectively.

It was discovered that 1 in 7 children and adolescents (560000 or 13.9%) aged between 4-17 years presented a psychiatric disorder in 12-month investigation conduct-

ed in Australia. In this study, the following disorders had the highest prevalence rates, in sequence: anxiety disorders (9.9%), Attention-Deficit/Hyperactivity Disorder (ADHD) (7.7%), Major Depressive Disorder (MDD) (2.8%), and Conduct Disorder (CD) (2.1%). In this study, a significant gender-wise difference was found in the prevalence of mental disorders; thus, 16% of boys and 11.5% of girls had suffered from a mental disorder in the past 12 months [18].

The prevalence of psychiatric disorders among adolescents in Tehran showed that Attention-Deficit/ Hyperactivity Disorder had the highest prevalence (8.4%)

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Table 2. Odds Ratios (95%CI) for overall mental disorders according to the demographic characteristics

Variables		OR (crude)	95%CI	P	Adjusted OR	95%CI	P
Gender	Male	Reference					
	Female	0.77	0.54-1.10	0.16	0.77	0.54-1.10	0.54
Age group, y	6-9	Reference					
	10-14	1.01	0.65-0.156	0.98	0.98	0.63-1.54	0.94
	15-18	1.16	0.75-1.77	0.51	1.07	0.68-1.68	0.77
The place of residence	Urban	Reference					
	Rural	0.45	0.23-0.88	0.02	0.44	0.21	0.92
Fathers' educational level	Illiterate	Reference					
	primary school	0.94	0.51-1.70	0.83	1.03	0.54-1.98	0.92
	High school	1.15	0.65-2.02	0.63	1.09	0.56-2.12	0.79
	Diploma	1.03	0.56-1.89	0.93	0.83	0.38-1.81	0.63
	Bachelor	1.001	0.51-1.96	0.99	0.64	0.25-1.67	0.36
	MSc or higher	0.180	0.023-1.39	0.10	0.10	0.01-1.01	0.052
Mothers' educational level	Illiterate	Reference					
	primary school	0.92	0.55-1.54	0.76	0.99	0.56-1.73	0.96
	High school	1.23	0.71-2.10	0.46	1.20	0.64-2.27	0.57
	Diploma	0.93	0.53-1.63	0.80	0.88	0.43-1.80	0.74
	Bachelor	0.95	0.49-1.85	0.88	1.29	0.52-3.23	0.58
	Msc or higher	0.42	0.05-3.32	0.41	1.44	0.13-16.37	0.77
Father's occupational status	Public sector	Reference					
	Private sector	0.80	0.52-1.22	0.31	0.60	0.35-1.05	0.074
	Unemployed	0.81	0.47-1.41	0.47	0.75	0.36-1.54	0.43
Mothers' occupational status	Public sector	Reference					
	Private sector	0.46	0.12-1.79	0.26	0.66	0.15-2.86	0.58
	Unemployed (Housewife)	1.14	0.55-2.35	0.73	1.25	0.48-3.28	0.65

CI, Confidence interval; OR, Odds ratio interval

and there was no substantial age difference in any of the examined abnormalities [19].

A population-based survey (IRCAP) of 30,532 children and adolescents aged between 6 and 18 years across all provinces of Iran reported that 22.31% of the participants had at least one mental disorder. In this study, the anxiety disorders (14.13%) and behavioral disorders (8.3%) had the highest prevalence, while eating disorders (0.13%) and psychotic symptoms (0.26%) had the lowest [20].

Xiaoli et al. [21] conducted a cross-sectional study among 9806 Chinese children. Following the screening, a total of 8848 children (90.23%) along with their mothers and teachers were interviewed using the Strengths and Difficulties Questionnaire (SDQ). The prevalence

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Table 3. The prevalence of psychological disorders in the study subjects

Psychiatric Disorders		No.(%)	95%CI
Mood disorders	Depressive disorders	5(0.5)	0.21-1.16
	Mania	2(0.2)	0.05-0.7
	Hypomania	2(0.2)	0.05-0.7
	Total mood disorder	6(0.6)	0.3-1.3
Psychotic disorders		7(0.7)	0.3-1.4
Anxiety disorders	Panic	1(0.1)	0.02-0.56
	Separation anxiety disorder	38(3.8)	2.77-5.16
	Social phobia	15(1.5)	0.9-2.46
	Specific phobias	8(0.8)	0.4-1.57
	Agoraphobia	7(0.7)	0.34-1.44
	Generalized anxiety	13(1.3)	0.8-2.21
	Obsessive compulsatory disorder	13(1.3)	0.8-2.21
	Post-Traumatic Stress Disorder	2(0.2)	0.05-0.7
	Total anxiety disorders	67(6.7)	5.29-8.4
Behavioral disorders	Attention deficiency hyperactivity disorder	28(2.8)	1.94-4
	Oppositional defiant disorder	39(3.9)	2.86-5.27
	Conduct disorder	5(0.5)	0.21-1.16
	Tic disorder	4(0.4)	0.16-1.02
	Total Behavioral disorders	68(6.8)	5.38-8.51
Neurodevelopmental disorders	Mental retardation	26(2.6)	1.77-3.77
	Autism	1(0.1)	0.02-0.56
	Epilepsy	25(2.5)	1.69-3.65
	Total neurodevelopmental disorders	48(4.8)	3.63-6.29
Substance abuse disorders	Tobacco use	58(5.8)	4.5-7.4
	Alcohol abuse	3(0.3)	0.1-0.9
	Total Substance abuse disorders	59(5.9)	4.59-7.51
Enuresis		24(2.4)	1.61-3.53
Total psychiatric disorders		144(14.4)	

of psychiatric disorders (according to the DSM-IV) was estimated to be 9.49%; the highest prevalence rates were for anguish disorders (6.06%), depression (1.32%), Oppositional Defiant Disorder (ODD) (1.21%), and ADHD (0.84%). Among 805 children with a mental disorder, 15.2% had ≥2 comorbid disorders. In this study, approximately 1 child in each Chinese school presented a psychiatric disorder leading to functional or social impairment requiring treatment. Therefore, the authors concluded that the early diagnosis and treatment of psychiatric disorders in children and adolescents was an urgent and serious challenge.

Using the Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI Kid), Al-Modayfer and Alatiq [6] examined the prevalence of mental health issues among children and adolescents in Riyadh, Saudi Arabia. They found the prevalence rates of 36.3%, 39.2%, and 34.1% for psychiatric disorders among the total sample, children, and adolescents, respectively. In the total sample, behavioral disorders (25.7%) were more prevalent than affective disorders (21.7%). Furthermore, the most prevalent disorders were ODD (15.9%), ADHD (8.4%), Generalized Anxiety Disorder (GAD) (7.8%), and separation anxiety (7.8%), orderly. A broad variety of mental disorders in Saudi children and adolescents was linked to particular social determinants.

Mohammadi et al. performed cross-sectional research in 2017 to examine the prevalence of mental disorder among Iranian children and cross-sectional research. Moreover, they aimed to evaluate its associations with the social support, lifestyles, and abnormalities of the characteristics of parents. A guideline for an epidemiological evaluation of the initial estimations of mental disorder frequency among children and adolescents in Iran was performed. The relevant findings signified that the majority of Iranian children and youth may possess behavioral or emotional problems with substantial effects on the healthcare system, owing to fast socio-economic development in Iran [8].

Bakhshani et al. (2007) examined the prevalence of risky behaviors related to intentional harms in 1855 high school students in Sistan and Baluchestan Province. They found that 42.6% of the explored participants had ridden a motorcycle during the past months; of which, 78% had never worn a helmet; 22.1% had carried a cold or warm weapon at least for one day in their lives; 19.6% had attempted to commit suicide, and 69% had experienced several sad days in their lives. These findings were in line with those of the present study regarding the high-

er prevalence of behavioral disorders, compared to other psychiatric disorders [22].

Nyusha, Ganji, and Khadem Adel (2012) examined the prevalence of behavioral disorders in 327 primary school children [23]. Accordingly, they found a prevalence of 8.9% for behavioral disorders; this finding was consistent with those of the present study.

Sistan and Baluchestan is the poorest province in Iran. It also has a very young population, where about 49% of its population is aged 15 years or younger. Furthermore, adolescents with lower socioeconomic status are more vulnerable to psychiatric disorders. However, as a result of different factors, including the shortage of healthcare providers, the stigma surrounding seeking mental health treatment, budget deficits, organizational constraints in public health systems, and different insurance benefits, only 2% of children and adolescents around the world benefit from mental health services [24].

Investigations indicated the high frequency of behavioral problems among children and youth; a greater frequency in those with a lower socioeconomic level of 30% to 40% require mental health care [23].

Concerning children's psychiatric disorderes, behavioral problems are among the most common conditions. They are also among the most significant mental health concerns. This group of disorders presents a destructive effect on individuals' social interactions, education, personality, and behavior during childhood and adulthood [25].

Children who live in poverty are more exposed to experience psychological disorders or more severe symptoms. Of 1.3 million children who received disability benefits from the Supplemental Security Income (SSI) program in the USA in 2013, about 50% encountered a mental disorder. The significant increase in the number of children qualified for receiving SSI disability benefits is attributed to mental disorders. Childhood behavioral and affective disorders can lead to psychiatric disorders in adulthood; therefore, they warrant special attention [26].

Given the increasing vulnerability of at-risk children and adolescents to behavioral disorders, depression, anxiety, delinquency, substance abuse, etc., as well as the high priority of health issues, especially mental health conditions within Iran's health development program, the examination of the prevalence of mental disorders among children and adolescents can help in designing proper strategies to address this issue in Sistan and Baluchestan Province, and if possible, throughout Iran.

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Two limitations of the present study included the low educational level of the parents and their inability to speak and understand Persian and the lack of safety in some of the remote villages selected by the post agency. The first limitation was overcome by recruiting 4 raters fluent in the Sistani dialect and 4 other raters fluent in the Balochi language, who translated the items for the research participants. To overcome the second limitation, the assistance and cooperation of the police and local elders were sought. In addition, Sistan and Baluchestan is a very large Province with a diverse culture; however, the present study was conducted in Zahedan; therefore, caution must be taken in generalizing the study results.

5. Conclusion

The overall frequency of psychological disorders in children and adolescents of Zahedan was high similar to previous studies in the same age-groups in Iran. These findings played an important role in designing useful programs and interventions.

Ethical Considerations

Compliance with ethical guidelines

Funding

Authors' contributions

Conceptualization and Supervision: Azizollah Mojahed and Mohammad Reza Mohammadi; Methodology: Azizollah Mojahed and Mohammad Reza Mohammadi and Behzad Rigi Kooteh and, Rahim Shahbakhsh; Investigation, Writing – original draft, and Writing – review & editing: Azizollah Mojahed, Behzad Rigi Kooteh, Jafar Sarani Yaztappeh, and Rahim Shahbakhsh; Data collection: Seyed Salman Alavi, Nastaran Ahmadi, Rahim Shahbakhsh, Jafar Sarani Yaztappeh, Sadegh Shahbakhsh, Naim Mohamadhasani, Ahmad Saljooghi Falizak, and Sakineh Shaghouzaei; Data analysis: Azizollah Mojahed and Mohammad Reza Mohammadi; Funding acquisition and Resources: Azizollah Mojahed and Behzad Rigi Kooteh and Jafar Sarani Yaztappeh, and Rahim Shahbakhsh.

Conflict of interest

The authors declared no conflict of interest.

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