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Epidemiological Survey of Psychiatric Disorders in Children and Adolescents of Mashhad in 2009

Fatemeh Moharreri[1]; Parya Habrani[2]; Azamossadat Heidari Yazdi[3*]

[1] *Associate Professor of Psychiatry, Mashhad University of Medical Sciences, Mashhad, Iran*
[2] *Associate Professor of Psychiatry, Mashhad University of Medical Sciences, Mashhad, Iran*
[3] *Student of Child and Adolescent Psychiatry, Mashhad University of Medical Sciences, Mashhad, Iran*

Abstract

Introduction: Prevention and treatment of children' mental disorders are important, not just to reduce their present problems but to improve their performance in adulthood. The nation-wide epidemiological survey of psychiatric disorders in terms of lifetime prevalence is not adequately known in Iran. This study aimed to assess the mental health status of 6-18 year-old children and adolescents in Mashhad province using the Strengths and Difficulties Questionnaire (SDQ).

Materials and Methods: 2012 children and adolescent (6-18 years old) were selected from 10 cluster heads from different municipality areas of Mashhad, Iran. Parents and adolescents filled out the SDQ. The prevalence of symptoms and the relationship between the obtained scores and demographic factors were determined. In this study, a p-value less than 0.05 was considered significant for statistical analysis.

Results: Analyzing the self-report form of the SDQ indicated that 34% of the participants were abnormal. In other words, 34% of children had psychiatric problems. In the parent form of the SDQ, 67.7% of children had psychological problems. Determining the subscale score in the self-report form revealed that peer relationship problems (44.4%) was the most common problem in children and adolescents followed by conduct disorder (44.1%), impairment of prosocial behavior (26.8%), emotional problems (15.9%) and hyperactivity (5.8%). In the parent form, impairment in peer relationships (75%) was the most common problem followed by emotional problems (69.6%), conduct disorder (64.5%), impairment in prosocial behavior (52.7%) and hyperactivity (6.3%). In the parent form of the SDQ, the total difficulties score was higher in children and adolescents aged 14-18 and primary school children. There was a significant difference between different age groups and grades in terms of the total difficulties score. In the self-report form of the SDQ, no significant difference was observed between demographic features in terms of the total difficulties score.

Conclusion: Our findings showed that mental health of children in Mashhad, especially peer relationship problems, needs more attention.

Keywords: Children, Strengths and Difficulties Questionnaire, SDQ, Mental Health

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Introduction

Epidemiology of psychiatric disorders is a branch of behavioral sciences research that studies the distribution of these disorders in the society. Although various societies have confirmed the existence of psychiatric disorders since centuries ago, statistical methods have been used to estimate the frequency of these disorders in the twentieth century. In the past, epidemiological survey of psychiatric disorders was carried out by accessing medical records and obtaining information from key individuals. Today, the frequency of psychiatric disorders in the world is largely determined by developing screening questionnaires and standardized clinical interviews. However, this frequency varies due to the variety of screening and diagnostic tools, interview techniques, differences in sampling methods, and different classifications (1). Psychiatric disorders have a high prevalence in the world, representing a major disability and social burden. There are treatments for all these disorders, and these treatments are effective and implementable in both developing and developed countries (2).

National mental health policies in some countries,

***Corresponding Author:** Student of Child and Adolescent Psychiatry, Mashhad University of Medical Sciences, Mashhad, Iran
Heydaria921@mums.ac.ir
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especially in developing and low-income ones, is accompanied with problems. The resources for the implementation of mental health services are inadequate and unfairly distributed. The world of psychiatry focuses on the implementation of mental health services, fair distribution of services, destigmatization of patients, the relationship between mental and physical illnesses, and ethical issues in the provision of mental health services (3).

The World Health Organization (WHO) estimates that about 25% of the people around the world have encountered psychiatric problems at least once in their lives. This estimation has been confirmed by the World Mental Health statistics. Collecting statistics from societies through face-to-face interviews includes 17 countries in Africa, Asia, America, Europe, and Middle East. Overall, 85000 individuals participated in the study. Of 17 countries, the prevalence of mental disorders was reported 25% in 11 countries, and 15% in all countries, except for China and Nigeria (4).

Mohammadi et al. (2007) conducted a study in Shiraz to determine the reliability and validity of the Persian version of the SDQ. The data of this study were collected from the psychiatric clinic of Hafez hospital and 16 public schools in 4 districts of Shiraz using random sampling. Then 25 items of this questionnaire were filled out by 379 boys and 377 girls. The participants ranged in age from 3-18, who were divided into 3 age groups (3-4 year-old, 4-11 year-old, and 11-18 year-old). The SDQ was filled out by parents, teachers, and adult participants based on age, and clinical interviews were conducted with 155 children and adults referring to the psychiatric clinic. In this study, the average age of the children was 10.3. The self-report form of this questionnaire had good internal consistency. The teacher and parent forms of the SDQ had good internal consistency, too. The results indicated that the Persian version of the SDQ was acceptable and it had good psychometric properties. The parent form of this questionnaire showed more evidence about the effectiveness of the SDQ as a tool for epidemiological studies and clinical purposes. Finally, this paper concluded that the Persian version of the SDQ had adequate psychometric properties as a tool (5).

Arman et al. (2008) conducted a study in Isfahan to investigate the epidemiology of mental health in 6-18 year-old individuals using the SDQ. In this cross sectional study, 2000 parents of 6-18 year-old individuals filled out the questionnaire. The participants included 250 boys and 250 girls from 6-18, 10-12, 13-15, and 16-18 age groups, and the samples included 2000 individuals in total. Among the subjects, 513 (26%) had a total score above the cut-off point (17 for children and 20 for adults), which showed no significant difference in both males and females. Conduct problems (34.7%), peer problems (25.4%), emotional symptoms (24.5%), attention deficit hyperactivity disorder (23%), and impairment of prosocial behavior (5.7%) had the highest prevalence respectively. The total difficulties score was higher in 6-13 age group (both genders) than in 14-18 age group. There was a significant association between age and emotional problems subgroup in females, and emotional problems were more common in adult females ($p=0.003$). The relationship between age and attention deficit hyperactivity disorder subgroup was more common in both genders at young ages ($p=0.023$ in girls, $p=0.021$ in boys). There was a significant association between age and peer problems in 6-13 year-old girls, which was greater than in 14-17 year-old girls ($p=0.04$). The results showed that abnormal total difficulties score was associated with fathers' illiteracy or low level of literacy. Moreover, the risk of an abnormal total difficulties score was 2.44 times greater in those whose mothers were housewives than in those whose mothers were employed (6).

In a study conducted in Tehran, Tehranidoust et al. (2006) investigated the validity of the Persian version of the Strengths and Difficulties Questionnaire (SDQ). In this study, the validity of parent and teacher versions of the SDQ was investigated within a sample including 600 Iranian children aged 6-12. Then the SDQ results were compared with the results of examining children by a child and adolescent psychiatrist and the K-SADS diagnostic interview. After that, the data on standardization and cut-off points were calculated. In total, 275 male (45.83%) and 325 female students (54.16%) were included in the study. The mean total difficulties score in parent and teacher versions of the SDQ was 19.5 (standard deviation = 5.76) and 10.4 (standard deviation = 6.19) respectively. All indicators obtained from parent and teacher versions of the SDQ were positively correlated with each other ($p<0.01$). According to the parent version of the SDQ, there was a significant difference between conduct disorder and prosocial behavior in two genders, so that conduct disorder ($p<0.05$) and prosocial behavior ($p<0.01$) were reported more in boys and girls respectively. Moreover, in the teacher version of the SDQ, the total difficulties score ($p<0.05$) and peer relationship problems ($p<0.01$) were significantly higher in boys. Total difficulties

score and hyperactivity index were assessed based on the ROC curve in order to determine the cut-off point of the SDQ in the study sample. Considering 12 as the cut-off point, the scores of 197 individuals (32.8%) with a sensitivity of 74% and specificity of 95% were greater than or equal to 12. In the teacher version of the SDQ, the scores of 188 individuals (31.3%) with a sensitivity of 55% and specificity of 81% were greater than 12.5. Considering 5 as the cut-off point for hyperactivity score in the parent version of the SDQ, the scores of 226 individuals (37.6%) with a sensitivity of 70% and specificity of 76% were greater than or equal to 5. In the teacher version of the SDQ, the scores of 191 individuals (31.8%) with a sensitivity of 52% and specificity of 76% were greater than or equal to 5 (7).

In Germany, Becker et al. (2006) conducted a study on the psychopathological screening of children with ADHD using the SDQ all over Europe. The participants included 1459 children with ADHD aged 6-18 who were from 10 European countries. In this study, the parent version of the SDQ was used. The results showed that total difficulties score, attention deficit hyperactivity disorder, and peer problems were higher in younger children (6-10 year-old) than in 11-18 year-old ones. The results also showed that emotional symptoms and prosocial behavior were significantly higher in girls than in boys. Country of residence had a significant effect on the score of prosocial behavior subgroup, and the lowest score was observed in the children living in England. In general, a large number of subgroups and total difficulties score were under the influence of various factors. A significant difference was observed between the country of residence in subgroups scores and total difficulties score (8).

Shahrivar et al. (2009) conducted a study in Tehran in order to assess the validity and psychometric properties of the SDQ (compared to the Child Behavior Checklist (CBCL) and psychological interviews). The study was carried out in two stages. In the first stage, 600 children aged 6-12 were assessed using the parent and teacher versions of the SDQ and CBCL. In the second stage, 25 children with scores above the cut-off point in the SDQ and 27 children with scores below the cut-off point were selected to have an interview with a child and adult psychologist based on DSM-IV and K-SADS-PL criteria. In this study, girls had higher scores in terms of prosocial behavior according to the parent and teacher versions of the SDQ and total difficulties score. Moreover, they had higher scores in terms of peer relationship problems according to the teacher version of the SDQ. According to the parent and teacher versions of the SDQ, conduct disorder score was significantly higher in boys. No significant relationship was observed between socioeconomic status and children's age and the average score of their subgroups. According to this study, the Cronbach's alpha coefficient for the parent and teacher versions of the SDQ was 0.73 and 0.69 respectively. In this study, all relationships between the SDQ and CBCL subgroups were highly significant. Conduct disorder and hyperactivity subgroups in the SDQ had a significant relationship with external symptoms and aggressive behavior subgroups. Moreover, there were significant relationships between attention problems in the CBCL and hyperactivity in the SDQ. There was also a significant relationship between emotional symptoms score in the SDQ and internal symptoms score in the CBCL. In general, this study concluded that the SDQ was a powerful tool for screening in clinical and epidemiological studies in Persian-speaking children and adults (9).

Materials and Methods

The samples of this cross sectional study included 250 boys and 250 girls from each age group (Group A: 7, 8, and 9 year-old. Group B: 10, 11, and 12 year-old. Group C: 13, 14, and 15 year-old. Group D: 16, 17, 18 year-old) who were selected using two-stage cluster sampling method so that the sample size was 2012 individuals. To perform the sampling, 10 cluster heads from the Census Bureau of Mashhad, which were scattered all over the city randomly and proportional to the population of the city, were obtained based on 10 municipality areas of Mashhad. Then their home addresses were checked. In a 2-member team (including one man and one woman), the interviewers went to the subjects' homes, and filled out the parent and self-report forms (for adolescents aged 11 and older) of the SDQ. These forms have already been translated into Persian. Moreover, back translation of these forms has been performed, their validity and reliability have been assessed, and the final result is available (21-22). These questionnaires investigate behavioral and emotional problems. Psychometric properties of the SDQ and its applicability in various cultures have been obtained (23-26). Furthermore, a separate questionnaire was filled out for parents, and further information about their individual and family characteristics, risk factors, socio-demographic characteristics, and physical health were collected.

After the data were recorded in SPSS v16, they

were processed and the results were obtained. Moreover, where necessary, Chi-square test was used to compare and analyze data where necessary. It is noteworthy that in all of the tests performed in this study, $p<0.05$ was considered as the significance level. Written informed consent was obtained from those who were asked to fill out the questionnaires, and all data remained confidential. The need for treatment was explained to the parents of the children suspected of having psychiatric disorders during the study, and their children were introduced to academic medical centers for evaluation and treatment.

Results

This study included 2012 subjects, among whom 920 (49.6%) and 935 (50.4%) were males and females respectively. The subjects ranged in age from 6-18 with a mean age of 12.51 and standard deviation of 3.45. The subjects were divided into three age groups (group I: 6-10 year-old, group II: 11-13 year-old, and group III: 14-18 year-old). There were 626 (33.7%), 472 (25.4%), and 759 (40.9%) individuals in groups I, II, and III respectively. The participants included 724 (40.4%) primary school children, 493 (27.5%) secondary school children, and 574 (32.0%) high school children. Father's level of education in 519 (28.6%), 456 (25.1%), 603 (33.2%), and 239 (13.2%) of the cases was primary and lower level, secondary and high school, high school diploma, and bachelor's degree or higher respectively. Mother's level of education in 658 (35.7%), 426 (23.1%), 605 (32.8%), and 154 (8.4%) of the cases was primary or lower level, secondary or high school, high school diploma, and bachelor's degree or higher respectively. In 1607 (79.9%) of the cases, the mother was a housewife and in 405 (20.1%) of the cases, the mother was employed. In this study, the self-report and parent versions of the SDQ were filled out by the participants. Then the total score and subgroup score of the participants were classified into three normal, borderline, and abnormal groups. Tables 1 and 2 show the frequency distribution of individuals with normal, borderline, and abnormal scores in each subgroup and total score of the self-report and parent forms.

Table 1. Frequency distribution of individuals with normal, borderline, and abnormal scores in each subgroup and total score of the self-report and parent forms of the SDQ in Mashhad

Criteria	Normal		Borderline		Abnormal		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Emotional Symptoms	566	64.1	177	20.0	140	15.9	883	100
Conduct Disorder	279	32.2	206	23.8	382	44.1	867	100
Hyperactivity	715	82.6	101	11.7	50	5.8	866	100
Peer Problems	190	22.0	290	33.6	383	44.4	863	100
Socialization	435	51.6	182	21.6	226	26.8	843	100
Total Difficulties Score	191	23.6	342	42.3	275	34.0	808	100

Table 2. Frequency distribution of individuals with normal, borderline, and abnormal scores in each subgroup and total score of the parent form of the SDQ in Mashhad

Criteria	Normal		Borderline		Abnormal		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Emotional Symptoms	170	9.8	356	20.6	1206	69.6	1732	100
Conduct Disorder	312	17.4	323	18.0	1156	64.5	1791	100
Hyperactivity	1489	83.9	175	9.9	111	6.3	1775	100
Peer Problems	163	9.2	279	15.8	1327	75.0	1769	100
Socialization	398	22.7	433	24.7	925	52.7	1756	100
Total Difficulties Score	130	8.1	389	24.2	1086	67.7	1605	100

Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores in subgroups and total score in male and female individuals. No significant difference was observed in any of the cases.

Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores in the subgroups and total score of parent form in male and female individuals. No significant difference was observed in any of the cases.

The subjects were then divided into three age groups (6-10 year-old, 11-13 year-old, and 14-18 year-old). Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores in the subgroups and total score in individuals with different age groups. A significant difference was observed only in the peer problems subgroup.

Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores in the subgroups and total score of the parent form of the SDQ in individuals with different age groups. A significant difference was observed only in the conduct disorder ($p=0.001$) and total difficulties score ($p=0.040$) subgroups.

Then Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores in the subgroups and total score of the self-report form in students from different educational levels. A significant difference was observed only in the peer problems and socialization subgroups ($p<0.05$).

After that, Chi-square test was conducted to investigate the distribution of normal, borderline, and abnormal scores and total score of the parent form in students from different educational levels. A significant difference was observed in the conduct disorder ($p<0.001$), hyperactivity ($p=0.002$), and total difficulties score ($p=0.011$) subgroups.

No significant difference was observed between the variables in terms of the multinomial logistic regression obtained from the factors affecting total difficulties score of the self-report version of the SDQ ($p>0.05$).

The multinomial logistic regression obtained from the factors affecting total difficulties score of the parent version of the SDQ was significant only in those with a normal prosocial behavior score.

Discussion And Conclusion

Currently, Iran is undergoing major social, economic, and cultural changes. The country's population is about 70 million, and according to the previous census (1996), 25% of this population have been below the age of 25, and 19 million of them have been 7-18 year-old. According to the census conducted in 2008 in Mashhad, 937422 out of 2760882 population are below the age of 18. A large number of children and adolescents may suffer from behavioral and emotional problems, which requires health services to be provided.

Unfortunately, there is no accurate statistics on the prevalence of psychological problems among children and adolescents in Iran, and current data are limited to urban and regional studies. Child and adolescent psychiatry is a new major in Iran. Epidemiological survey of psychiatric disorders is one of the main concerns of this major in various provinces of Iran. Therefore, this study aimed to investigate the epidemiology of psychiatric problems in Mashhad, to assess the frequency of psychological problems in the society and their risk factors, and to assess the needs for mental health services. This project was simultaneously implemented in Tehran, Isfahan, Fars, and East Azerbaijan Provinces, whose results have been recently published. The results of this study will be further discussed later.

There were 2012 participants in our study, among whom 49.6% were male and 50.4% were female. In the self-report form of the SDQ, the abnormal score in peer problems (44.4%), conduct disorder (44.1%), socialization problems (26.8%), abnormal emotional symptoms (15.9%), and hyperactivity (5.8%) had the highest prevalence respectively. The total difficulties score was abnormal in 34% of the participants. In the parent form of the SDQ, peer problems (75%), abnormal emotional symptoms (69.6%), conduct disorder (64.5%), socialization problems (52.7%), and hyperactivity had the highest prevalence respectively. The total difficulties score was abnormal in 67.7% of the participants. No significant difference was observed between the two genders in self-report and parent forms in terms of the total difficulties score and the score of each subgroup. In terms of the distribution of various age groups, a significant difference was observed only in peer problems ($p=0.044$) subgroup of the self-report form and conduct disorder ($p=0.001$) and total difficulties score ($p=0.040$) subgroups of the parent form. A significant difference was observed in the parent form between individuals with different grades (primary, secondary, and high school) in terms of total difficulties score ($p=0.011$), however, no significant difference was observed in the self-report form ($p=0.931$). In our study, father's level of education had no significant effect on the total score and the subgroups score of the self-report

version of the SDQ. Moreover, in the parent version, a significant difference was observed only in the level of the socialization subgroup score (p=0.018), and the difference was not significant in other cases. Subgroups score and total score showed no significant difference in individuals whose mothers were housewives and employed.

A significant difference was observed only in emotional symptoms (p=0.038) and hyperactivity (p=0.024) subgroups in parent form of the SDQ. Our studies using multinomial logistic regression showed that, compared to females, the risk of an abnormal total difficulties score in males in the self-report and parent forms of the SDQ was 0.871 and 0.850 respectively, which showed no significant difference. The risk of an abnormal total difficulties score in showed no significant difference in the age groups of the self-report and parent forms. Our study showed that in the self-report form, the risk of an abnormal total difficulties score was 0.756 times greater in the children and adolescents whose fathers' level of education was primary or lower than in those whose fathers had a bachelor's or higher degree. In the parent form, the risk of an abnormal total difficulties score was 1.242 times greater in the children and adolescents whose fathers' level of education was primary or lower than in those whose fathers had a bachelor's or higher degree. No significant difference was observed between the two forms. Compared to those whose mothers had a bachelor's or higher degree, the risk of an abnormal total difficulties score in the children and adolescents whose mothers' level of education was primary or lower was 0.747 and 0.886 in the self-report and parents form respectively. No significant difference was observed between the two forms. According to the self-report form, the risk of an abnormal total difficulties score in the self-report and parent forms was respectively 1.218 and 1.423 times greater in the children and adolescents whose mothers were housewives than in those whose mothers were employed. No significant difference was observed between the two forms. In the parent form, the risk of an abnormal total difficulties score was 1.987 times greater in the children and adolescents with a normal socialization score than in those with an abnormal socialization score, and the difference was significant ($p<0.05$). In the self-report form, the risk of an abnormal total difficulties score was 0.809 times greater in the children and adolescents with a normal socialization score than in those with an abnormal socialization score, which showed no significant difference. Unlike our study, the study by Arman et al., the risk of an abnormal total difficulties score showed no significant difference in those with different age groups and father's level of education. It seems that the above-mentioned differences between our study and the study by Arman et al. are associated with different epidemiological dispersion of psychological problems in different parts of Iran. It is also noteworthy that Arman et al. used only the parent version of the SDQ in their study. Since their study population was slightly different, the differences between the results obtained from the self-report and parent forms of the SDQ are justifiable. About father's level of education, it seems that further studies should be conducted on the differences between father-child relationships among people with different levels of education. In the study by Arman et al., the risk of an abnormal total difficulties score was 0.17 times greater in the children and adolescents with a normal socialization score than in those with an abnormal socialization score, which, unlike our study, showed no significant difference.

In a study conducted in Tehran, Tehranidoust et al. (2006) investigated the validity of the Persian version of the Strengths and Difficulties Questionnaire (SDQ). The study population included 600 children aged 6-12. The parent and teacher versions of the SDQ were used in this study. In total, 275 male (45.83%) and 325 female students (54.16%) were included in the study. The mean total difficulties score in parent and teacher versions of the SDQ was 19.5 (standard deviation = 5.76) and 10.4 (standard deviation = 6.19) respectively. According to the parent version of the SDQ, there was a significant difference between conduct disorder and prosocial behavior in two genders, so that conduct disorder ($p<0.05$) and prosocial behavior ($p<0.01$) were reported more in boys and girls respectively. Moreover, in the teacher version of the SDQ, the total difficulties score ($p<0.05$) and peer relationship problems ($p<0.01$) were significantly higher in boys (17). Unlike this study, out study showed no significant difference between the two genders in terms of the total difficulties score and subgroups score in the parent and self-report versions of the SDQ ($p>0.05$). These different results indicate that the prevalence of psychological problems in different parts of Iran is also different among different genders. Moreover, unlike Mashhad, the prevalence of psychological problems in some parts of the country is higher in only one gender.

Roning et al. (2004) conducted a study in Norway. The study population included 4167 individuals

aged 11-16 who were students at 66 elementary and secondary schools in the north of Norway. In this study, the self-report version of the SDQ was used, and cut-off points similar to other studies in Scandinavia were used to analyze the results. Unlike our study, in the study by Roning et al., there was a significant difference in all subgroups between male and female participants, except for the total difficulties score. Girls showed higher levels of emotional symptoms and prosocial behavior, while boys showed higher levels of attention deficit hyperactivity disorder, conduct disorder, and peer problems. In all subgroups, except for emotional symptoms, the effect of grade was significant. However, in our study, the effect of grade in the self-report version of the SDQ in peer problems ($p=0.041$) and socialization ($p=0.41$) subgroups and in the parent version of the SDQ in conduct disorder ($p<0.001$), hyperactivity ($p=0.002$), and total difficulties score ($p=0.011$) subgroups was significant. No significant difference was observed between other subgroups (10). In the above-mentioned study, the effect of grade was significant in all subgroups. These differences might be due to the different social roles and behaviors of Scandinavian girls, compared to Iranian girls. Different cut-off points and prevalence of psychological problems in different countries and areas are also effective.

Using only one type of questionnaire is one of the limitations of our study. Epidemiological studies of societies in terms of psychological problems around the world with no unified approach in interviews and diagnosis of problems was another limitation that prevented us from comparing the results of our study with other studies in other countries. The findings of our study indicated that in Mashhad, more attention should be given to child and adolescent mental health, especially peer relationship problems.

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