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The Prevalence of Mental Health Problems and the Associated Familial Factors in Adolescents in the South of Iran

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Abstract

Background

Mental health problems are common among adolescents. Proper screening and rehabilitation could improve adolescents' function at the present time and in the future. This study aimed to assess the prevalence of psychiatric disorders and the associated familial factors among high school students.

Materials and Methods

The present cross-sectional study was conducted on 630 high school students (315 boys and 315 girls) aged 13-17 years in Jahrom, Iran. The participants were selected using random cluster sampling. The data were collected using the self-report version of strength and difficulties questionnaire (SDQ), and were analyzed using the SPSS statistical software, version 16.0.

Results: The results showed that 22.38% of the students had total difficulty (14.9% of boys, and 29.8% of girls). The highest prevalence was related to peer relationship problems (23%) followed by conduct problems (18.1%), hyperactivity (11.1%), pro-social behaviors (6.3%), and emotional problems (5.7%). The results of multivariate logistic regression analysis revealed that female gender (odds ratio [OR]: 2.52, 95% confidence interval [CI]: 1.68-3.66) increased the odds; while grade 9 (OR=0.52, 95% CI: 0.32-0.83), and number of siblings (OR: 0.88, 95% CI: 0.78-0.99) decreased the odds of mental health problems ($p<0.05$).

Conclusion

According to the results, the prevalence of behavioral disorders was relatively high among the students. The number of sibling, being girl and being in nine grade significantly contributed to the prevalence of behavioral disorders. In order to reduce these disorders, familial intervention and educational programs are recommended to be designed and implemented to prevent and treat behavioral disorders among students.

Key Words: Adolescent, Iran, Mental health, Prevalence, SDQ, Students.

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1- INTRODUCTION

Mental disorder is a common health problem worldwide (1). Nearly 450 million people suffer from mental and behavioral disorders around the world. Indeed, one out of every four people has one or more disruptions during their lives (2). Prevention and treatment of mental disorders among the youth is important to reduce the existing problems and to improve their performance in adulthood (3). In order to reduce health, social, and economic problems associated with mental disorders, countries and regions have to pay more attention to preventing and promoting mental health at the level of policy-making, decision-making, and resource allocation within the overall healthcare system (2). Psychiatric disorders are highly prevalent among the youth (3), and could be accompanied with other problems, including poor performance at school, chronic health problems (4), intensified medical problems (5), substance abuse, and suicide attempts (4). In fact, development of adolescence is usually transient with mental health problems, such as emotional and behavioral problems and the associated compatibility problems (6).

Several tools have been developed for screening behavioral problems in children and adolescents. Up to now, different studies have been conducted on the prevalence of behavioral problems in different parts of the world. This measure has been reported to be 15% in Bangladesh, 10% in the U.K, 7% in Norway, 18.6% in Nepal, and 8.7% in India (7-10). In Iran also, several studies have been carried out on the frequency of psychological problems among adolescents. In a study in Mashhad, 44.1% of children were diagnosed with conduct problems, and 5.8% with hyperactivity problems (11). Moreover, 15% and 40% of teenagers in Tehran had hyperactivity and conduct problems, respectively (12). Furthermore, the prevalence of all psychiatric disorders was 16.6% in Rafsenjan (13), and 15.5% in Isfahan (14). Another study conducted in five provinces in Iran (Tehran, Khorasan Razavi, Isfahan, East Azerbaijan, and Fars), showed that the prevalence of conduct problems was 24% (15). Given the fact that students are the futurists of the society, any community's success depends on their health. Early diagnosis and treatment of behavioral problems in students can prevent more serious problems that they might face in future. The present study aimed to determine the prevalence of behavioral problems among high school students in Jahrom, Iran.

2- MATERIALS AND METHODS

2-1. Study design and population

The present cross-sectional study aimed to assess mental health problems and their association with familial factors. The study was conducted among high school students living in Jahrom, in the South of Iran, in 2015. Equally, 105 students were selected from each of the six schools through simple random sampling method. The sample size was calculated based on the prevalence of total difficulty among students, 24.9% (P) (16), ($Z=1.96$, and $d=0.05$), the sample size was obtained $n=300$ per each gender. Finally, a total of 630 students (315 per each gender, and considering attrition rate), were estimated for sample size. The inclusion criteria were age 13-17 years. The students who did not want to participate in the study were excluded.

2-2. Measuring tools

The questionnaires used in this study consisted of two parts. The first part of the study questionnaire consisted of baseline characteristics, familial, and economic questions, including gender, age, and number of siblings, parents' separation, parents' education levels, and occupations.

There were also two items about the family's economic status; i.e., monthly pocket money, and economic status. The second part was the Persian version of The Strengths and Difficulties Questionnaire (SDQ) (17, 18), which was validated in Iran. In the study by Ghanizadeh et al. (19), the reliability of SDQ was approved by Cronbach's alpha = 0.74. Additionally, its sensitivity, and specificity were reported to be 90% and 67%, respectively. Overall, they showed that the Persian version of SDQ had acceptable to good psychometric properties (17).

SDQ is one of the most commonly used instruments for screening psychopathologies in children and adolescents (20). It has been used as a screening tool for mental disorders in children and adolescents in many countries (21-25). This scale included 25 questions divided into five dimensions; i.e., emotional symptoms, hyperactivity, peer relationship problems, conduct problems, and prosocial behaviors. Each dimension contained five items. Each item was scored from 0-2, with 0, 1, and 2 representing "not true", "somewhat true", and "definitely true", respectively (26).

Hence, the total score of each subscale could range from 0 to 10, and was classified into normal, borderline, and abnormal categories. The cut-off points published in literature available on www.sdqinfo.com were used to define "normal", "borderline", and "abnormal" categories. For scoring hyperactivity subscale, scores of zero to 5, 6, and greater than 6 were considered normal, borderline, and abnormal, respectively.

For scoring the conduct problems and peer problems, zero to 2, 3, and greater than 3 were considered normal, borderline, and abnormal, respectively. We categorized emotional problems score in normal = 0 to 3, borderline = 4, and abnormal=greater than 4. For pro-social behavior, zero to 4 are abnormal, 5 are borderline, and greater than 5 are normal. For the total scale was categorized as normal (zero to 13), borderline (14 to 16), and abnormal (17-40) (27). The total difficulty score was calculated by summing up the scores of the first four subscales, which could range from 0 to 40 (17, 28). SDQ is currently one of the acceptable tools for measuring behavioral and emotional problems in children. It has special editions for parents (4-17 years old), special educators (4-17 years old), and self-reporters (11-17 years old). To assess mental health difficulties and psychological strengths of children and adolescents, different versions of SDQ for parents, teachers, and adolescents (self-reports) contain similar items. Indeed, various versions of SDQ have reported similar problems in children and adolescents (17). The self-report version of SDQ was used in this study.

2-3. Ethical considerations

This study was approved by the Ethics Committee of Jahrom University of Medical Sciences (ID-JUMS.REC.1393.030). The questionnaires were completed anonymously, and informed consents were obtained from the participants.

2-4. Data analyses

The data were analyzed using the SPSS statistical software, version 16.0. Descriptive statistics, such as mean and Standard Deviation (SD), were used. Chi-square, t- test, and multiple logistic regression analysis were also used to analyze the data. Regression models was estimated by dividing all children into two main groups: abnormal (scores 17-40), and borderline/normal (scores 0-16) based on total difficulties score that was entered to the model as outcome (binomial dependent) (29). The level of significance was set at 0.05.

3- RESULTS

This study was conducted on 630 participants, 315 of whom were female (50%). The participants were aged from 13 to 17 years, with the mean age of 15.68±0.94 years. The mean age of boys, and girls was 15.76±0.94 and 15.60±0.94 years, respectively, and the difference was statistically significant (p=0.03). According to **Table.1**, 141 out of the 630 participants (22.38%) gained higher than cut-off point scores in total difficulties. In this regard, a significant difference was observed between the two sexes (p<0.001). The highest prevalence in both sexes was related to peer relationship problems followed by conduct problems (18.10%), hyperactivity (11.11%), prosocial behaviors (6.35%), and emotional problems (5.71%). Differences in the prevalence of psychiatric disorders based on gender have been shown in **Table.1**. Considering most subscales and total difficulties, girls were more abnormal compared to boys. Nonetheless, abnormality in prosocial behaviors subscale was higher among boys in comparison to girls. On the other hand, boys and girls were equally abnormal in hyperactivity subscale. There was a significant difference between the two sexes regarding emotional problems (p<0.001), peer relationship problems (p=0.02), and total difficulties (p<0.001). Based on the results of multivariate logistic regression analysis (**Table.3**), grade 9 (odds ratio [OR]: 0.52, 95% confidence interval [CI]: 0.32-0.83), and number of siblings (OR: 0.88, 95%CI: 0.78-0.99) decreased the odds of abnormality related to the total difficulties score. On the other hand, female gender (OR: 2.52, 95%CI: 1.68-3.77) increased the odds of abnormality related to the total difficulties score. The risks and protective factors of abnormality related to the total difficulties have been presented in **Table.3**.

Table-1: The frequency distribution of the five subscales of SDQ based on gender

Gender	Mental health status	Number of boys (%)	Number of girls (%)	Total (%)	P- value†
Conduct problems	Normal	264(83.81)	252(80)	516(81.90)	0.21
	Borderline	-	-	-	
	Abnormal	51(16.19)	63(20)	114(18.10)	
Emotional problems	Normal	286(90.79)	231(73.33)	517(82.06)	<0.001
	Borderline	21(6.67)	56(17.78)	77(12.22)	
	Abnormal	8(2.54)	28(8.89)	36(5.71)	
Hyperactivity	Normal	211(66.98)	204(64.76)	415(65.87)	0.79
	Borderline	69(21.90)	76(24.13)	145(23.02)	
	Abnormal	35(11.11)	35(11.11)	70(11.11)	
Prosocial behaviors	Normal	250(79.37)	255(80.95)	505(80.16)	0.61
	Borderline	42(13.33)	43(13.65)	85(13.49)	
	Abnormal	23(7.30)	17(5.40)	40(6.35)	
Peer relationship problems	Normal	177(56.19)	142(45.08)	319(50.63)	0.02
	Borderline	75(23.81)	91(28.89)	166(26.35)	
	Abnormal	63(20)	82(26.03)	145(23.02)	
Total difficulties	Normal	217(68.89)	160(50.79)	377(59.84)	<0.001
	Borderline	51(16.19)	61(19.37)	112(17.78)	
	Abnormal	47(14.92)	94(29.84)	141(22.38)	

† Chi-square test.

Table-2: The relationship between independent variables and total difficulties score in multivariate logistic regression model

Baseline characteristics		Normal Number (%)	Abnormal Number (%)	Odds Ratio (95% CI)	P- value
Gender	Boy	268(85.08)	47(14.92)	-	<0.001
	Girl	221(70.16)	94(29.84)	2.42(1.63-3.59)	
High school grade	Eight	162(73.30)	59(26.70)	-	-
	Nine	207(84.15)	39(15.85)	0.51(0.33-0.81)	0.04
	Ten	92(73.02)	34(26.98)	1.01(0.62-1.66)	0.95
	Eleven	28(75.68)	9(24.32)	0.88(0.39-1.98)	0.76
Father's education level	< Diploma	92(77.99)	127(22.01)	-	-
	≥ Diploma	39(73.58)	14(26.42)	0.78(0.41-1.49)	0.46
Mother's education level	< Diploma	445(77.39)	130(22.61)	-	-
	≥ Diploma	44(80)	11(28)	1.16(0.58-2.32)	0.65
Father's occupation	Self-employed	405(77.29)	119(22.71)	-	-
	Unemployed	26(76.47)	8(23.53)	1.04(0.46-2.37)	0.91
	Employee	58(80.56)	14(19.44)	0.82(0.44-1.52)	0.53
Mother's occupation	Homemaker	453(78.24)	126(21.76)	-	-
	Other	36((70.59)	15(29.41)	0.66(0.35-1.25)	0.2
Monthly pocket money (Rials)	< 500000	355(78.71)	96(21.29)	-	-
	≥ 500000	134(74.86)	45(25.14)	0.8(0.53-1.2)	0.2
Economic status	Good	154(80.63)	37(19.37)	-	-
	Medium	282(76.84)	85(23.16)	0.65(0.34-1.23)	0.19
	Bad	53(73.62)	19(26.38)	0.82(0.46-1.47)	0.51
Living with both parents	Yes	439(77.70)	126(22.30)	-	0.88
	No	50(76.92)	15(23.08)	0.95(0.52-1.76)	
Parents separation	Yes	13(61.90)	8(38.10)	0.45(0.18-1.11)	0.08
	No	476(78.16)	133(21.84)	-	-
Number of siblings	Mean ± SD	5.40±1.73	5.04±1.06	0.88(0.79-0.99)	0.04†

Normal/ Borderline (scores 0-16), and Abnormal (scores 17-40); 95% CI: 95% Confidence Interval; SD: Standard Deviation; †Estimate of OR was based on the continuous

Table-3: The relationship between the independent variables and total difficulties score in the multivariate mode

Characteristics	Sub-group	Odds Ratio (95% CI)	P-value
Gender	Boy	-	-
	Girl	2.52(1.68-3.77)	<0.001
High school grade	Eight	-	-
	Nine	0.52(0.32-0.83)	0.007
	Ten	1.13(0.68-1.89)	0.61
	Eleven	0.85(0.37-1.96)	0.70
Economic status	Medium	-	-
	Good	0.73(0.46-1.14)	0.17
	Bad	1.36(0.74-2.51)	0.31
Parents separation	No	-	-
	Yes	1.73(0.68-4.24)	0.24
Number of siblings	Mean ± SD	0.88(0.78-0.99)	0.03†

OR: Odds Ratio; 95% CI: 95% Confidence Interval; SD: Standard Deviation; †Estimate of OR was based on the continuous form of the variable.

4- DISCUSSION

The present study assessed SDQ data set obtained from 630 high school students aged 13-17 years. The findings revealed that 22.38% of the adolescents were at a high risk, and 17.78% were at a borderline risk of mental health problems. Female gender increased, while grade 9 and number of siblings decreased the odds of total difficulties among the adolescents. Based on the self-reported results of SDQ, 22.38% of the adolescents had abnormal total scores. This measure was considerably higher than that of a similar Iranian study conducted in Semnan (29), but lower than that reported in Isfahan (30). Another study in Tehran also showed that 13.7% of adolescents had abnormal total difficulties scores (16). Similar studies in other countries have also come to somewhat similar findings. For instance, 25% of 11-17 year-old adolescents in Nepal obtained abnormal total difficulties scores (10). This measure was reported to be 18.7% among Brazilian adolescents (31). In the current study, the most frequent difficulty was peer relationship problems (23%) followed by conduct problems (18.10%).

These results coincided with those of the study performed by Hashemi et al. in Semnan. However, Rimal et al. reported that the most prevalent abnormality was emotional problems followed by peer relationship problems (10). The results of a survey conducted in the Gaza Strip also revealed that 34% of the participants had abnormal emotional problems, 22.7% had abnormal conduct problems, and 8.5% were abnormally hyperactive (32). In the same line, Cury et al. demonstrated that 30.8% of Brazilian youths had abnormal emotional problems, 17.7% had abnormal conduct problems, and 6.8% had abnormal hyperactivity (30). In the study by Banerjee et al. also, the highest frequency of difficulties was related to conduct problems (33). Differences among the results could be attributed to various sociocultural features of the statistical populations studied in different regions. The present study findings showed a statistically significant difference between girls and boys regarding emotional problems, peer relationship problems, and total difficulties. Accordingly, the prevalence of conduct problems, emotional problems, and peer relationship problems was higher in girls than in boys. On the other hand, the prevalence of prosocial behaviors was higher in boys in comparison to girls. The results of a similar survey also revealed a significant difference between the two sexes with respect to emotional problems (10). In the same line, the results of a study conducted in Finland indicated that girl students in the 7^{th} and 9^{th} grades of high school obtained higher emotional problems scores compared to boys (34). Other studies showed that girl students had significantly more abnormal emotional problems in comparison to boys (34, 35). Consistently, a study in Iran revealed a significant difference between the two sexes concerning the total difficulties score (29).

A similar study in southern European countries also revealed a statistically significant difference between Italian girls and boys regarding prosocial behaviors (35, 36). The results of univariate analysis presented in Table.2 along with those of multivariate analysis presented in Table.3 indicated that female gender (OR: 2.52, 95%CI: 1.68-3.77), grade 9 (OR: 0.52, 95%CI: 0.32-0.83), and number of siblings (OR: 0.88, 95%CI: 0.78-0.99) were significantly associated with mental health problems. Another study showed that gender was associated with mental health problems, but the prevalence of these problems was higher among males compared to females (29). In the present study, number of siblings and grade 9 were protective factors and female gender was the risk factor. Considering the

observational nature of the study, the cause and effect relationships between the variables were not reported. The results presented in Tables 2 and 3 showed that parents separation was nearly significant in univariate analysis (p=0.08), but was not significant in multivariate analysis (p=0.24). Another study demonstrated that parents separation was associated with children's behavioral-emotional problems (37). However, the current study findings indicated no significant associations between mental health problems and parents' education levels and occupations. In contrast, a previous study demonstrated that father's education level was significantly related to total difficulties (29). The current study findings revealed that grade 9 was significantly associated with total difficulties, while no such associations were observed in grades 10 and 11. Considering the fact that grade might indicate age, it could be claimed that age was significantly correlated to total difficulties. Another study showed that the odds of total difficulties was high in younger children (29).

In the present study, the results of univariate and multivariate analyses showed a significant association between the number of siblings and total difficulties. A prior study also reported that larger number of siblings had a protective role in prevention of mental health problems (29). Overall, the findings of the present study showed that individual and familial factors could increase the risk of mental health problems in adolescents.

4-1. Limitations of the study

The limitations of this study included the relatively small sample size and lack of comparison between urban and rural areas as well as among different ethnicities. Another study limitation was not using the teacher and parents versions of SDQ, which might interfere with the reliability of the results.

5- CONCLUSION

The prevalence of behavioral disorders was relatively high among the students. The number of sibling, being girl and being in nine grade significantly contributed to the prevalence of behavioral disorders. The prevalence of conduct problems, emotional problems, and peer relationship problems was higher in girls than boys. Also, the prevalence of prosocial behaviors was higher in males compared to females. In order to reduce behavioral disorders, educational programs are recommended to be designed and implemented to prevent and treat behavioral disorders among students.

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGEMENT

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