

Prevalence of attention deficit hyperactivity disorder in elementary school students in Hamadan

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ABSTRACT

Background and aims: Attention Deficit Hyperactivity Disorder (ADHD) is the most prevalent disorder in children. Due to the importance of the disorder in children and its complications, this study aimed to assess the relation of the disorder with demographic factors in students of schools located in the Hamadan city, west of Iran.

Methods: In this study, 1000 students were selected through randomized cluster sampling from Hamadan elementary schools in 2014. Data were gathered using Conners questionnaire. Conners questionnaire completed by teachers and parents. Results were analyzed using SPSS statistical software through Chi-square, Pierson correlation coefficient, and T-test.

Results: The overall ADHD prevalence rate in this sample was determined to be 11.3%. For boys, this prevalence rate of ADHD was 19.4% and had significant difference with girls ($P < 0.01$). The prevalence of ADHD in families with 1-3 children was 8.7% while it was 15.8% in families with 4 children and more. The difference was statistically significant ($P = 0.003$). There was also higher prevalence among children of parents with lower level of education.

Conclusion: ADHD is prevalent in community of Iran. Results indicated that diagnosis must be based on exact and persistent psychological symptoms. It is necessary that schools authorities in region 1 and 2 of Hamadan city take steps to find the cases and manage them.

Keywords: Hyperactivity, Attention Deficit, Children, Education and Training.

INTRODUCTION

Children are among most vulnerable human beings. Normal physical growth of the children as well as their cognitive, emotional, social and ethical development takes place provided that they have a safe environment filled with compassion. Any negative change to these factors can negatively affect the psychological and

behavioral health of children. Family can play a remarkable role in this regard.¹ Hyperactive children are too hectic and cannot stay calm. They are uneasy and have a compulsion to destroy things. They show intensive curiosity and destroy home appliances. They like dangerous activities and are never scared of the consequences.

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This may cause some people think they are courageous, but these are all because of their disorder.^{2,3}

This disorder is demonstrated by hyperactivity, impulsivity and attention deficit (American Association of Psychology, 1994); symptoms which leave irrecoverable effects on the affected child in school, society, and home, and leads to problems in education, and communication with peers and parents.³ These children have difficulty with their education since they cannot concentrate. They are easily distracted and respond to very little stimulations. Communication with peers is an increasing problem. They mostly make a negative image of themselves in the eyes of others because of their unruly behavior and aggressiveness.⁴

Researchers have found that hyperactivity together with attention deficit would be an adequate predictor for negative consequences in the future of the child. The disorder interferes with normal growth in childhood. Without a complete treatment, the mental impairments would be greater in adulthood. Therefore, early diagnosis and treatment are the key components of the management of ADHD.

Regarding the importance of health in childhood which ensures the proper process of growth and development and since a complete understanding of the prevalence of the disease in Iran is needed to accomplish any preventive measure, it was decided to determine the prevalence of the disease in one of Iranian provinces as a sample of Iran's population. This study was aimed to assess ADHD in students with different demographic status in number 1 and 2 educational regions in Hamadan city.

METHODS

This cross-sectional study was conducted in Hamadan, Iran in 2014. Study

was approved by ethics committee of the Hamadan University of Medical Sciences. Informed consent was sought from parents/caregivers of potential subjects before enrolling them into the study.

A random sampling was used among all students from grade 1 to 5 in all elementary schools in number 1 and 2 educational regions in Hamadan city. From each region, 500 students (250 boys and 250 girls) were selected (1000 students in total).

Data were gathered using Conners questionnaire for teachers and parents.⁵ ADHD was considered based on the analysis of both teacher and parents' questionnaires. If the total mark from both questionnaires was less than 60, between 60 and 65, and above 65 results were considered as healthy, suspicious or patient respectively. In the latter case, parents were referred to health centers for more specific interventions. This Conners questionnaire evaluates five factors of conduct, psychosomatic-impulsivity, hyperactivity, anxiety, and learning problems and has four choices scored from zero (never) to three (very high). Previous study in Iranian context reported 90.3% sensitivity and 81.2% specificity for this questioner.⁶

Data were analyzed using SPSS statistical software through T-test, Chi-square and Pearson correlation coefficient. The threshold of statistical significance was set at $P < 0.05$.

RESULTS

The overall ADHD prevalence rate in this sample was determined to be 11.3%. The relation between some demographic factors of the children and ADHD such as the family income and number of boys and girls in the family were assessed in this study. Results showed that the majority of samples (63%) had a family income between 150-250 USD per month. Majority of samples (56%) were in grade 1 to 3, and 53.4% were male (Table 1).

Majority of fathers (55.3%) were government employees or simple workers and majority of mothers (81.9%) were

housewives. In terms of the number of children in family, 91.8% had 0-2 boys, and 89% had 0-2 girls.

Table 1: Demographic characteristics of samples

Factors			Numbers	Percent
Age		7-8	350	36.5
		9-11	347	36.2
		12-13	261	27.3
Gender		Female	463	46.6
		Male	530	53.4
Boys		0-2	746	91.8
		3-5	47	8.2
Girls		0-2	739	89
		3-5	91	11
Parents' Job	father	Unemployed	22	3
		Gov./Simple jobs	509	52.7
		Self-Employed	423	44.3
	Mother	Housewife	873	83
		employed	173	17
Accommodation		Personal	632	66.1
		Rent	324	33.9
Education level		1-3	534	56
		4-5	420	44
Family income		Less than 200 USD	352	37
		More than 200 USD	602	63

Also, majority of samples (64.1%) lived in personal houses; majority of mothers (30.7%) and fathers (31.4%) had a high school diploma or under diploma (Table 2).

Table 2: Distribution of samples based on parents' education level

Level		Number	Percent
Uneducated	Father	20	2.1
	Mother	49	5.1
Elementary	Father	210	22
	Mother	210	22
Unfinished high school	Father	240	25.1
	Mother	283	29.6
High school diploma or associate degree	Father	300	31.4
	Mother	293	30.7
Bachelor or higher	Father	185	19.4
	Mother	120	12.6

In relation with hyperactivity and attention deficit in two educational zones, results indicated that there were 2.6% and 2.41% in zones 1 and 2 respectively with no significant difference (Table 3). This is probably because the environmental factors in the two zones have been similar. Prevalence of the disease has been higher in zone one. Among boys, 19.2% had hyperactivity (Table 4) and a significant difference was observed ($P=0.01$). There was no significant difference between the education grade and health level. Also 88.7% of samples had not hyperactivity (Table 5). Majority of samples (73.7%) had no family history of hyperactivity, but in 20.1% of samples there was a history of hyperactivity or attention deficit in their parents and 19.4% were in age 9 to 11 (Table 6).

Table 3: Distribution of samples based on gender and education zones

Gender	Zone 1	Zone 2
Male	250	278
Female	203	262
Total	453	540

Table 4: Distribution of samples based on gender and educational grade

Gender/Grade	Condition	Number	Percent
Male	Healthy	426	80.8
	Suspicious/Patient	101	19.2
Female	Healthy	451	97.6
	Suspicious/Patient	11	2.4
Grade 1	Healthy	150	88.2
	Suspicious/Patient	20	11.8
Grade 2	Healthy	171	91.9
	Suspicious/Patient	15	8.1
Grade 3	Healthy	154	88
	Suspicious/Patient	21	12
Grade 4	Healthy	163	86.7
	Suspicious/Patient	25	13.3
Grade 5	Healthy	204	88.3
	Suspicious/Patient	27	11.7

Table 5: Distribution of samples based on hyperactivity

Condition	Number	Percent	
Hyperactivity	No	877	88.7
	Suspicious	95	9.6
	Yes	17	1.7

Table 6: Distribution of samples based on family history of hyperactivity

	Number	Percent	
Family history of hyperactivity	Yes	252	26.3
	No	706	73.7
Father	52	19.3	
Mother	31	11.5	
Both parents	54	20.1	
Brother and sister	52	19.3	
Uncles and aunts	43	16	
Others	35	13	
Total	267	100	

DISCUSSION

The aim of present study was to examine prevalence of ADHD relation of the disorder with demographic factors in students of schools located in the Hamadan city, west of Iran. According to finding, prevalence was high among students in our city. Factors such as, sex, number of children in family, parent level of education, and family income increased this rate.

ADHD is one of the most common psychiatric disorders in child and adolescent psychiatry that negatively affect children's quality of life.^{7,8} ADHD is an illness that not received enough attention in Iran. Similar to our finding, results of previous Iranian studies from various regions and large cities showed that prevalence of ADHD is high. In one study in this regards in 2007, Hebrani, et al. examined the prevalence of ADHD in preschool-age children in Mashhad, North East of Iran. About 12% of participants in Hebrani, et al. study showed the sign and symptom of ADHD.⁹ In another study in this regards among Iranian school aged children's, Alizadeh et al. reported prevalence of ADHD as 7.2% that is lower than finding of present study.¹⁰ This difference could be related to different in sample of two study, because in our study we surveyed children in Hamadan city and Alizadeh et al. examined prevalence of ADHD among children who live in rural area.¹⁰ Study among other country showed different finding.^{11,12} In one study in 2015, Aboul-Ata and Amin examined the prevalence of ADHD in school-age children in Egypt.¹¹ They reported prevalence of ADHD about 21% that is higher from finding of present study. This difference can be related to difference in social and cultural difference between samples of two studies. Also, instruments that used in two studies are different. For managing ADHD, detecting in earlier stage is crucial. For this reason, parents and teachers should be aware of this. However studies in this regards showed that they have

not enough knowledge. In one study in this regards in 2006, Ghanizadeh et al. examined the knowledge and attitudes towards ADHD among elementary school teachers. Ghanizadeh et al. showed that knowledge of teachers about ADHD was relatively low. The main sources of knowledge about ADHD teachers in Ghanizadeh et al. were television and radio, friends and relatives, newspapers and magazines.⁸

With regards to risk factors, most previous studies showed similar finding. Shahigavad et al. assessed the disorder in primary school students in Shiraz-Iran. They found a significant difference between the prevalence of the disease in boys and girls with higher prevalence in boys.¹³ Results also indicate that there is no significant relation between the prevalence of ADHD and the grade of samples. The same result was found in the study accomplished by Tavangar in primary schools of Yazd-Iran.¹⁴

Another finding showed that there was a significant relation between health statuses of samples with the existence of a family history of the disease since 15.5% of patients had a positive family history. The study of Hebrani et al. concluded that higher prevalence in patients' families indicates a strong genetic factor for the disorder. They added that the presence of accompanied disorders in patients and the high prevalence of mood and anxiety disorders in the family of these patients can indicate a common genetic background between these disorders and some of their subgroups.⁹

Results also showed that there is a significant relation between hyperactivity disorder and job of mother. In this study, majority of mothers (12.8%) were housewives. Brandi found the same relation in his study. He found that the highest prevalence was seen in the children of mothers with non-governmental jobs (6.5%), and the lowest were in those with governmental jobs.¹⁵

Another finding was a significant relation between the disorder and the number of children in the family with highest rate in families having four children and more. Burger et al. found that families with four or more children (47.1%) show highest rate of the disease.¹⁶ Findings indicate that there is no relation between the number of female children in the family and the birth order and the incidence of the disorder. In the study of Miller such a relation was not observed similarly.¹⁴ This study showed no significant relation between the kind of dwelling of the samples and the disorder. In the same way, Ballsterino et al. did not find any relation between the mentioned factor and the disorder.¹⁷ Results also showed that there is no relation between the number of male children in the family and the incidence of the disease, but there was a significant relation between parents' level of education and the prevalence of the disorder where families with parents of lower educational level (high school and lower levels) showed more prevalence rate.

CONCLUSION

This study showed that prevalence of ADHD in primary school students in Hamadan is high. Factors such as, sex, number of children in family, parent level of education, and family income increased this rate. A close collaboration between schools' authorities and parents is recommendable, and the early diagnosis is crucial.

CONFLICT OF INTEREST

There is no Conflict of interest in this study.

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