

Substance Abuse Disorders in the Parents of ADHD Children, and Parents of Normal Children

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Abstract- The objective of the study was to compare the attention-deficit/ hyperactivity, and substance abuse disorders background in the parents of children with attention-deficit/ hyperactivity disorder (ADHD), and the parents of normal children. The available sampling method was used to choose 400 parents of children (200 parents of children with ADHD and 200 parents of normal children), the ages of children were 6-18 years old. The data were collected through the Schedule for Affective Disorders and Schizophrenia (SADS) for parents and the Kiddy Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (K-SADS-PL), Connors Adult ADHD Rating Scale (CAARS) and the Wender Utah Rating Scale (WURS) for adult ADHD. The results were analyzed by using SPSS-17 software, based on two-variable Chi-Square and t-tests and P value in all disorders were equals to $P < 0.05$. The results indicated that substance abuse in parents of children with ADHD is 21% more prevalent, and parents of children with ADHD compared to parents of normal children have 2% ADHD, 9% attention deficit disorder, and 1% hyperactivity disorder more in their background. Therefore, we conclude that there exists a significant difference between the above mentioned disorders in the parents of children with ADHD, and parents of normal children. The high prevalence rate of disorders and background of ADHD in families of individuals with ADHD shows the probability of effect of inheritance in the disorder. Also, it shows that parents of children with ADHD have more substance abuse and history of ADHD in their background.

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Introduction

Attention deficit hyperactivity disorder is the most prevalent behavioral disorder that affects children. The Diagnostic and Statistical Manual of Mental Disorders four edition-texts revised (DSM-IVTR) describes it as stable pattern of attention deficit and impulsiveness, in fact kind of severe chronic disorder in psychiatry evolution (1).

In general multiple factors are involved, although evidence confirming genetic influence on hyperactivity behavior is strong. It is admitted that a multiple track leads to transition and continuity of hyperactivity

symptoms (2). All findings support the idea that the complete assessment should include the accurate study of all signs, medical history of family and individual, the function of child at home, school, and in relation to children of the same age. The study of family genetics is one of psychiatric research methods from etiology point of view of the disorder (3). Most of controlled familial studies have reported the higher risk of ADHD in first and second class relatives of sufferers of this disorder (4-7). The morbidity rate in (3,8) studies in attention deficit disorder (ADD) were estimated at 25% as compared to 5% in the relatives in the Psychiatric witness group (3,8).

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Considering the ADHD frequency in the background of parents of ADHD children, the genetic factors could be involved in the etiology of disorder (4). The studies have shown that ADHD is an associated familial disorder correlated with the increase in the probability of other familial psychic disorders. The relatives of ADHD individuals showed more depressive symptoms and encountered more disobedience disorders than normal (9).

Conducted a research on the effect of candidate gene polymorphism on the course of ADHD (10). The analysis reveals that at the age of 25, 76% of repeated cases of DRD47 gene in comparison to 67% of unrepeated cases of DRB47 gene, the ADHD appearance is estimated to be more. In the contrary no significant relationship exists between ADHD cases and repeat of DAT110 gene and long gene HTTLPR. Findings indicate DRB47 gene is related to appearance prevalence of ADHD cases. The ADHD and anxiety disorders have independent genetic transference in the family (11,3). The occurrence of different psychiatric disorders in the family of ADHD sufferers may indicate the inheritance of ADHD.

On the basis of disorder frequency in the family, some subgroups of familial ADHD are predictable (3). The etiological and heritage studies may be indicative of familial clustering of symptoms and disruptive behavior in multiple familial with ADHD (12).

The study of the psychiatric disorders in the family of children with ADHD shows the high familial prevalence of ADHD, which is indicative of strong effect of heritage factor on the disorder (13,14) conducted a research on risk factors of ADHD. They concluded that the risk factors includes male gender, relatedness of the parents, the history of ADHD in parents or other relatives, history of psychiatric disorders in parents, and being the first or second class.

We conclude it is necessary that children with ADHD and their families to be considered as a problematic system in the macro and micro national planning of mental health (14). On the other hand, the sudden and eye-catching increase of substance use in early years of 1990 decade, the high percentage of the general population of United States (40%) using illegal drugs, and 15% of the population to substance use during the previous year have raised significant concerns in the health authorities of the western countries (15).

The study of Rapid Situation assessment (RAS), and Drug Control headquarters (DCHQ) indicates that 1.2 million to 2 million Iranian according to Diagnostic and Statistic Manual of Mental Disorders (DSM-IV) were

included in the criteria of substance abuse and dependency to drugs (16).

The medical and health development research studies in Tehran on 1000 families of children in primary schools show that smoking cigarettes and addiction to drugs, history of psychiatric references, and long absence of parents from the house will cause the hyperactivity / attention deficit disorder in primary school children. The behavior of parents such as a reduction in smoking cigarettes, not being addicted to narcotics, and increase of vocational stability is effective in reducing the incident of this disorder in children, and according to this study, physicians should pay maximum attention to diagnosis of hyperactivity families suffering from these problems (16). Studies indicate that relatives of children affected by ADHD are at risk of antisocial disorders, substance abuse, affective and anxiety disorders (2,3,11,17,18).

Some research shows that addiction of parents to alcohol is related to general problems in the infant's behavior, but the extent of relationship to alcohol is still questioned. In some samples of society, no relationship was found between alcoholism in parents and ADHD in children. expressed that alcohol consumption problems in families who have children with ADHD was less than the control group families compared sons whose fathers had alcoholism records to those who had no alcoholism background and concluded that the sons whose fathers had alcoholism background showed higher rates of aggression, attention deficit and impulsiveness, but were not different in hyperactivity came to the conclusion that parents whose children were affected by ADHD had reported higher rates of alcohol consumption compared to control group. Although Gafo and colleagues found out that the high rate of alcohol consumption occurred only in parent of children who are affected by a complex of ADHD subgroups. Research results showed that the probability of substance abuse risk in the relatives of children affected to ADHD associated with conduct disorder was more than children affected by ADHD together with oppositional Defiant Disorder (ODD). Sole ADHD and control groups were normal. The addiction of parents to alcohol is related to higher risk of ADHD and CD, but inappropriate parenting was only related with CD and not with ADHD.

In society samples the possibility exists that the correlation between the parent's alcoholism and the child affected by ADHD is weaker than its relation to behavioral problems in a study of young adults found that interaction with stress will increase alcohol consumption at least in the male population. The

findings were also repeated in the parents of children without any problems and especially in single fathers and mothers (2).

However, such results were found by these researchers in a sample including parents of children with ADHD and in parents with children having Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD).

The analysis showed that finding the effects of alcohol consumption was not due to the same illness problems in the child, but the reason was that the effects were under the influence of history of alcoholism in the family. Only parents with alcoholism history after interaction with child used alcohol. Also, these researchers studied the effects of alcohol on parenting behavior (2). The results of these studies showed that the effects of alcohol and parenting behavior are reciprocal, that is, having to constantly deal with behavioral issues of children with ADHD may increase the amount of alcohol consumption in the parents who are high risk for alcoholism. Conversely, alcoholism of parents can result in ineffective parenting behaviors, which can exacerbate hyperactivity, attention deficit, and impulsiveness in the infant.

Biederman *et al.* conducted a research on familial risks, ADHD disorder and substance abuse. The analysis of familial risks categorized first class relatives according to the presence or absence of attention deficit hyperactivity disorders, substance abuse and dependence to alcohol and pharmaceuticals. Results showed that attention deficit hyperactivity disorder in children had an obvious and stable relationship with the risk of attention deficit hyperactivity disorder in their relatives. Yet, alcoholism in relatives is predictable through individuals with ADHD but does not predict drug dependence in their relatives. However, substance dependence in individuals increases the risk of ADHD in their relatives.

Disney *et al.* reported a direct relationship between ADHD in adults and their substance abuse, ADHD accompanied by behavior disorder, or ADHD separated from other psychiatric disorders is considered as a risk factor for substance abuse.

Biederman *et al.* reported that, the risk of substance use in children with ADHD is same as the risk in witness group of their study, but the risk of substance abuse in adults with ADHD was higher than the healthy group. Also, Wilens *et al.* has considered ADHD as a medium risk for substance use.

Wilens *et al.* conducted a study on the relationship between smoking cigarettes and attention deficit/

hyperactivity disorder. The study showed that female male smokers with ADHD have strong dependency to smoking cigarettes compared to smokers without attention deficit hyperactivity disorder. Environment factors such as smoker parents, smoker couples, and living with a smoker person are all factors that increase the risk of smoking for people with ADHD as compared to those who are not affected.

Monuteaux *et al.* In studying the relationship between familial relatedness and smoking cigarettes in young girls with and without ADHD, concluded that those with ADHD will have a greater probability of affecting disorder in their relatives disregarding the cigarette smoking. Smoking cigarettes disregarding attention deficit/ hyperactivity in the individual will elevate the probability of cigarette smoking in their relatives. In a related study, (25) showed that smoking cigarettes during pregnancy is highly related to ADHD in Swedish populations, but mostly this risk has been explained through genetics and socio-economical anxieties.

As a result, these two disorders will transfer themselves through familial relatedness more than what we expect from statistic chance. These findings support the hypothesis that the combination of ADHD and smoking cigarettes caused through familial relatedness is observable in the samples of girls with ADHD.

In recent years there have been great studies in the etiology of this disorder. Molecular and behavioral studies indicate that genes have a role in this disorder (2,17). Considering the shortcomings in recognition of this disorder, several theories have been presented. Although there have been some achievements in understanding the cognitive and biological etiology of this disorder, no systemic and effective research and theory about social and interpersonal aspects has been presented (2).

Although the families of children with ADHD have been studied for more than a quarter of century (2), recently attention to this subject has been reduced, and many questions related to families of children with ADHD have remained without answer. Also, at the descriptive level, the magnitude of problems is unspecific. Inconsistency in results of studies indicated that several tracks about the relationship between ADHD and parent-child interaction are effective and that the explanation of particularity of children and families that are affected by different tracks still is a challenge (2). Considering the point that little research has been conducted on prevalence rate of ADHD and

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accompanied disorders and on substance use in Iranian families, the present research will focus on the relative frequency of the disorder background and on substance use in the parents of children with ADHD compared to parents of healthy children.

Materials and Methods

The research method is a descriptive study. The subjects of the research were 400 parents of children (200 parents of children with ADHD and 200 parents of normal children, the ages of children were 6-18 years old). The data were collected through the Schedule for Affective Disorders and Schizophrenia (SADS) for parents and the Kiddy Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (K-SADS-PL). Connor's Adult ADHD Rating Scale (CAARS) and the Wender Utah Rating Scale (WURS) for adult ADHD.

Data were chosen through available sampling among clients of Roozbeh hospital, private clinic of one of the authors, and healthy children from the schools located at regions 3 and 5 of Tehran educational ministry. The ADHD children were diagnosed based on psychiatric opinion, diagnostic criteria of DSM-IV-TR.

Instruments

On the whole, following instruments were used for the research data gathering.

K-SADS-PL

This instrument is a diagnostic semi-structured interview that makes assessment of the disorder existence during life period and present attack of disorder, and will be used for children and adolescents of 6-18 years old.

The measures are based on DSM-III and DSM-IV for disorders and are conducted by clinical psychologists.

The range of the disorders in the measurement includes: mood disorders, psychosis, anxiety disorders, eating disorders, elimination disorders, behavioral disorders, Tic disorders, substance use, and post traumatic stress Disorders (PTSD).

The measurement has high specification but probably low sensitivity (13).

Connors questionnaire

The diagnostic questionnaire for hyperactivity together with attention deficit which have been

used in three forms in this research (adults, adolescent's self-assessment form (1-16 years of age, report form of the parents of children between 4-16 years of age). The Connor's questionnaire is sensitive to therapeutically changes. The repeat of the measurement has no effect on efficiency of the subjects and reliability and validity of the test is confirmed (26).

Wender Utah rating scale (WURS)

The WURS is a self-report questionnaire which is performed to diagnose in age group 18 years and higher and confirms the occurrence of attention deficiency hyperactivity disorder in childhood. The mentioned questionnaire will be filled out by each of the parents, and the collected data will be used to complete the findings of the direct interviews in order to most accurately diagnose ADHD in parents (7). This measurement has been applied vastly in various studies, and its reliability and reactivity has been reported to be favorable (27,28) have reported the sensitivity of this tool to be 85% and the specificity at 76%. Cronbach 91% and correlation coefficient was reported to be 0.85.

Results

In this research 400 parents of healthy and attention deficit/hyperactivity disorder (ADHD) children were studied through SADS, Connor's and Wender Utah Rating Scale and their parents were compared from background of hyper activity disorder and substance abuse. The results are as follows:

Substance abuse of parents in SADS questionnaire

In this section we provide the gathered data about substance abuse in parents of our statistic sample in table 1 as follows:

The results of table 1 show that the percentage of substance abuse in parents of hyperactive children is higher than parents of normal children.

CARRS questionnaire for adults

Chart 2 provides the mean and standard deviations of the CARRS questionnaire for adults. The statistical indexes for hyperactivity only, attention-deficit only and hyperactivity/ attention deficit combined for normal children and hyperactive children separately are presented in table 2.

Table 1. Frequency distribution and percentage of substance abuse in parents of normal and attention deficit/hyperactivity disorder (ADHD).

The situation of parents substance abuse		Index	Group		Total
			Parents of normal children	Parents of ADHD children	
Station	With consumption	Number	361	347	708
	Without consumption	Percent	51.0	49.0	100.0
		N	34	86	96
		P	39.5	100.0	100.0
Total		N	395	794	794
		P	49.7	50.3	100.0

Table 2. The statistic indexes of hyperactivity, attention deficit hyperactivity disorders in Connor's questionnaire and the parents of normal and hyperactive children.

Variable	Parents of normal children				Parents of hyperactive children			
	Mean	Standard deviation	Number	Percent	Mean	Standard deviation	No.	percent
Hyperactivity	3.42	4.23	12	3%	4.00	4.64	15	4%
Attention deficit	4.70	6.68	31	8%	7.65	9.39	66	17%
Medium ADHD	9.57	11.54	7	2%	13.93	15.02	14	4%
Server ADHD			94	24%			127	33%

The results of table 2 shows that in all disorders, the mean related to parents of children with ADHD is a slightly larger than the mean of disorders in the parents of normal children. Based on the data in table 2, there is not much difference in the number of parents of ordinary children affected to hyperactivity with the number of parents of children affected to hyperactivity disorder, but there exists a larger difference between the number of parents of ordinary children affected by attention deficit with the number of children affected by hyperactivity disorder. The number of the parents of hyperactive children is greater.

Also, less difference is observed between the number of the parents of ordinary children affected by attention-deficit-hyperactivity (ADHD) at medium level and the number of the parents of hyperactive children who were affected by this disorder at a low level. On the contrary, parents of hyperactive children with ADHD at a high level are greater than the number of the parents of normal children.

Wender Utah rating scale

The Wender Utah Rating Scale was used for assessing the adults affected by attention deficiency and hyperactivity disorders.

The data in Chart 3 shows that among parents of normal group, the mean of attention deficit hyperactivity was 16.9 with the standard deviation of 11.8, and among parents of hyperactive group the mean obtained for attention deficit hyperactivity disorder was 25.3 and the standard deviation was 16.1.

Based on the manual of categorizing individuals with the disorder, from levels of very low to very high, frequency and percentage of statistic sample subjects was drawn out and reported in table 3.

According to the table 3, the number of the parents of the normal children at the level of very low is greater than the number of parents of hyperactive children at the same level, and on the contrary, the number of the parents of normal children at high and very high levels is less than the number of parents of hyperactive children at the same level.

In assessment scale of Wender Utah according to the cutoff point (number 46), in individuals at two groups, the results shows that the number of the parents of normal children at very low and low levels of 0-46 is more than the number of parents of hyperactive children at these levels.

Table 3. Frequency distribution and percentage of attention deficit and hyperactivity disorders in assessment scale of Wender Utah based on levels of a number.

Section	Level	Parents of normal children		Parents of hyperactive children	
		Frequency	Percentage	Frequency	Percentage
0-20	Very low	278	70%	176	44%
21-40	Low	99	25%	157	39%
41-60	High	18	4.5%	50	13%
61-100	Very high	2	0.5%	17	4%
Total		397	100%	400	100%

Analysis section

The statistical results of two variable chi-square test were significant at $p < .05$, therefore we can conclude that there exists a meaningful (significant) difference between the number of the parents of hyperactive children with substance abuse. That is according to frequency distributions, the number of parents of hyperactive children who are addicted to drugs is greater than the number of parents of normal children.

The evidence included in table 5 shows that the p value (significance level at two domains) related to attention deficit hyperactivity disorder is less than 0.05, and the t-test was also significant at the 0.05 level. Therefore we could conclude that in the parents of children we observe a significant difference between attention deficit hyperactivity disorder in parents of hyperactive children and parents of normal children.

Table 4. Two variables chi-square test for substance abuse of parents of normal and hyperactive children.

Statistics	Amount	df	P
Pearson Chi-square	4.024 (b)	1	0.04
Continuity Co.	3.579	1	0.06
Likelihood Ratio	4.052	1	0.04
Fisher's Exact Test			
Linear-by-linear Association	4.019	1	

That is, the mean of attention deficit hyperactivity disorder in the parents of hyperactive children in the statistical sample is greater than the mean of attention deficit hyperactivity disorder among the parents of normal children.

Table 5. The results of independent t-test in Connor's questionnaire for adults (parents) for attention deficit hyperactivity disorder.

Disorders	Pre-assessment (assumption)	F	Significant lever of P	Ratio	Freedom degree	Significance level of P	Difference in means
Hyperactivity	Variation equality	3.98	0.05	-1.83	797.00	0.07	-1.20 0.04
	Variation inequality			-1.83	790.59	0.07	-1.20 0.04
Attention deficit	Variation inequality	42.62	0.00	-5.12	797.00	0.00	-4.08 -1.82
	Variation inequality			-5.13	725.20	0.00	-4.08 -1.82
Attention deficit hyperactivity	Variation equality	22.92	0.00	-4.60	797.00	0.00	-6.29 -2.50
	Variation inequality			-4.61	751.70	0.00	-6.22 -2.50

Table 6. Results of independent t-test obtained from Wender Utah questionnaire for attention deficit hyperactivity disorder of parents in normal children with hyperactivity.

Disorder	Pre-assumptions	F	Significance level P	"t" Ratio	Freedom degree	Significant level P	Difference in means
Attention deficit hyperactivity	Variance equality	34.103	000	-8.38	795.00	0.00	-6.44 -10.37
	Variance inequality			-8.37	727.69	0.00	-6.43 -10.38

The data included in table 6 shows that p (significance level at two domains) related to attention deficit hyperactivity disorder is less than 0.05 and the t-test was also significant at the 0.05 level. Therefore, we can judge that such a significant difference between the aforementioned disorders in parents of children with little attention disorder hyperactivity parents and child are normal.

Discussion

Most controlled familial studies have reported the higher relative risk of ADHD in first and second class relatives of sufferers from this disorder(4-6,29). In studies(8), the morbidity rate of attention deficit disorder (ADD) 25% compared to risk of 5% in relatives in witness group of psychiatrics has been estimated (106).

Biederman *et al.* conducted a familial study of attention deficit disorder in which data was gathered from first class families of 22 children affected by attention deficit hyperactivity disorder and 20 normal children. The probability prevalence of attention deficit disorder in the first group was 31.5% which was considerably larger than the 5.7% in the normal group. Also, the probability of depressive and manic disorders in families of ADD group was greater.

These findings indicate that attention deficit disorder (ADD) is an associated familial disorder and is related to increase in probability of other associated psychiatric disorders.

Their results were similar to those obtained from previous studies and therefore confirm previous findings. Studies indicate that the relatives of children affected by ADHD are at the risk of anti social personality disorders, substance abuse, anxiety and mood disorders (3,17,18,19).

Johnston *et al.* the sons of fathers with or without alcoholism background were compared, and it was concluded that the sons of alcoholic fathers were high in aggression, attention deficit and impulsiveness, but there was no difference in hyperactivity. Johnston *et al.* concluded that the parents of children affected by ADHD have reported higher rates of alcohol

consumption than the parents in the control group. Although these researchers found that the higher rate of alcoholism was only in parents of children affected by a combination of ADHD subgroups (2).

Monuteaux *et al.* conducted research on familial association between cigarette smoking and ADHD. The objective of the study was the relationship in familial association between cigarette smoking and ADHD in referred girls and their families. The result showed that these two disorders transfer each other through familial association more than what was expected from statistic indexes. These findings support the hypothesis of combining attention deficit hyperactivity and smoking cigarette through familial association diagnosed in referred girls with attention deficit hyperactivity disorder.

Biederman *et al.* conducted research on the familial risk between ADHD and psychoactive substance use disorder in female adolescents. In the analysis the familial risk factors, class one relatives according to the presence or absence of disorders, attention deficit hyperactivity, and substance abuse, alcoholism and drug dependence were classified. The results showed that the presence of attention deficit hyperactivity disorder in individuals will increase the risk of attention deficit hyperactivity disorder in relatives without accompanying substance abuse. On the other hand, the substance abuse separated from attention deficit hyperactivity will increase the risk of substance abuse in their families. There was no evidence of separation in families of individuals with attention deficit hyperactivity and substance abuse.

Lindblad *et al.* conducted research in which the results showed that smoking during pregnancy is very much related with attention deficit hyperactivity disorder in Swedish populations; however, this risk has been mostly explained by genetics and socio-economic anxieties.

The results of the present research show that substance abuse in the parents of ADHD children is 21% more prevalent than normals, which is very consistent with findings of primary studies.

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Khoshabi *et al.* conducted a research on frequency of hyperactivity attention deficit disorder in the record of parents of these children. The research showed the 76% of parents had the disorder in their record 20% of cases both parents, 56% of cases one of them, had the positive record. Disorder frequency in the background of fathers (56%) was more than Biederman *et al.* conducted a research on familial risk analysis of attention deficit hyperactivity disorder and substance use disorders. In their study, the familial risk analysis classified the class one relatives according to presences absence of disorders, attention deficit hyperactivity and substance abuse, alcoholism and drug dependence. The results showed that attention deficit hyperactivity in children was related clearly and stable to the risk of mentioned disorder in their relatives. In conclusion, the evidence included in our study showed that parents of children with ADHD compared to parents of normal children in their record have 2% more attention deficit hyperactivity, 9% attention deficit disorder, and 1% more hyperactivity prevalence. Also parents of ADHD children have more substance use than normal's parents which confirms previous studies.

Considering the high prevalence of psychiatric disorders in families of children with ADHD, the probability of a common genetic background between these disorders may be possible.

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