Evaluation of the Prevalence of Drug Abuse and Smoking in Parents of Children with Attention Deficit Hyperactivity Disorder

Nooshin Parvaresh MD\textsuperscript{1}, Shahrzad Mazhari MD\textsuperscript{2}, \textbf{Neda Mohamadi MD}\textsuperscript{3}, Najmeh Mohamadi DVM\textsuperscript{4}

Abstract

\textbf{Background:} Attention deficit hyperactivity disorder (ADHD) affects 5\% of children. In addition to pharmacotherapy, non-drug treatments such as appropriate parenting are also very important in the treatment of these children. Diagnosis and treatment of parents with psychiatric disorders and substance abuse and evaluation of the frequency of these disorders in parents is critical.

\textbf{Methods:} In this case-control study, 200 parents were studied. The target population included parents of 7 to 12 year-old children who referred to child and adolescent psychiatric clinics. The control group included parents of children who referred to child non-psychiatric clinics. The parents were evaluated via a demographic information form, and structured interviews based on the Diagnostic and Statistical Manual of Mental Disorders, 4\textsuperscript{th} Edition (DSM-IV) for nicotine and drug addiction. Then, the Hamilton Anxiety Rating Scale (HAM-A) and Hamilton Depression Rating Scale (HDRS) was used to assess their anxiety and depression.

\textbf{Findings:} Among the studied parents, the comparison of drug abuse, smoking, and stress showed significant differences between the two groups. In terms of depression and ADHD, the difference between the case and control groups was not statistically significant.

\textbf{Conclusion:} The higher prevalence of these disorders in parents of children with ADHD may indicate the possible role of this disorder in the etiology.

\textbf{Keywords:} Attention deficit hyperactivity disorder (ADHD); Parents; Substance abuse

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Introduction

Attention deficit hyperactivity disorder (ADHD) is a consistent pattern of inattention and hyperactivity and is one of the most common psychiatric disorders. It affects 3-5% of school-aged children. Some of these symptoms, such as attention problems may continue into adolescence or adulthood. On average, in 60 to 80% of children with ADHD, the symptoms persisted until adolescence, and in 10 to 50% of them, the symptoms persisted until adulthood. Several studies have examined the prevalence of psychiatric disorders in parents of children with ADHD and have shown a higher incidence of disorder among the first and second degree relatives compared to the control groups. These studies showed a prevalence of 25% in relatives of children with ADHD and 5% in relatives of children with other psychiatric disorders.

Few studies have been conducted in Iran and the world in the field of psychopathology of the parents of children with ADHD. There was a higher incidence of drug abuse, anti-social disorder, anxiety, and mood disorders among the relatives of children with ADHD. Substance abuse in parents is of paramount importance; however, studies have presented inconsistent results in this regard. For example, some studies did not show any relationship between parental alcohol dependency and ADHD development in children, while other studies reported a higher prevalence of alcohol dependency in these parents. In Iran, a study was conducted on 1000 families of primary school-aged children and showed a high incidence of drug abuse, and smoking in parents of children with ADHD.

The study by Farokhzadi et al. in Tehran, Iran, reported a 21% prevalence of substance abuse in parents of children with ADHD. In a study conducted in America, it was also noted that children of parents with substance abuse and ADHD disorders were at higher risk of developing ADHD. Regarding the incidence of depression and anxiety, studies have shown significantly higher prevalence of depression and anxiety disorder among parents of children with ADHD compared to parents of normal children. In the study by Ghanizadeh et al., the rate of depression in parents of children with ADHD was higher than the control group. In a study conducted by Parvaresh et al., 45 to 90% of the parents of children with ADHD had psychological disorders. Moreover, the family history of psychiatric disorders in ADHD remaining until adulthood was stronger among them than ADHD limited to childhood. In a study in Brazil, the prevalence of anxiety as a trait in mothers of children with ADHD was higher than the control group. Anxiety and depression have high comorbidities with ADHD and according to some assumptions they have a genetic link to ADHD, and this could explain the higher prevalence of these disorders in the parents of children with ADHD.

Anxiety, depression, and substance abuse influence the parent-child relationship of children with ADHD and have harmful impacts on the patterns of parenting. For example, anxious parents have more concerns regarding accidents, responses associated with greater vigilance, and less assertiveness in educating the children. These cases especially in situations in dealing with impulsive, irritable, and non-compliant children with ADHD will leave an impact on parenting. Furthermore, parents with depression are more likely to have obsessions regarding the incompetence and mistakes of their children with ADHD. Behavioral stability and supervision are the principles of parenting, and in cases of parental addiction, depression, or other psychiatric disorders, parents are not able to comply with these principles and create or aggravate behavioral problems. In some cases, the disorders will not be completely resolved and persist until teenage years and adolescence.

The existing psychiatric disorders in families of children with ADHD may indicate a genetic relationship among the disorders. The high prevalence of ADHD in parents of children reflects the strong influence of genetic factors in the development of this disorder. Studying the prevalence of psychiatric disorders in parents of children with ADHD is of paramount importance. The few studies that have been conducted in this field in Iran were not based on psychiatric interviews. This study aimed to investigate the prevalence of substance abuse, smoking, and the risk of anxiety and depression in parents of children with ADHD and compare it with parents of normal children. This study could be a prelude for future interventions based on psychological...
problems of parents for more effective treatments to help suffering children.

Methods

This was a case-control study. The target population included parents of 7-12 year-old children who referred to child and adolescent psychiatric clinics. The study was conducted in the fall and winter of 2013 in Kerman, Iran. In this study, children who referred to child and adolescent psychiatric clinics were examined by a psychiatrist and children who were diagnosed with ADHD were introduced to a psychiatric assistant. Then, the parents of children with ADHD as case group were justified to participate in the research. To select the control group, convenient sampling was performed on parents of children who referred to child non-psychiatric clinics and had never visited psychiatric clinics.

After explanation of the method and the research purpose for all the parents by the research assistant, the demographic information form was completed. Parents were interviewed using a structured clinical interview based on the Diagnostic and Statistical Manual of Psychiatric Disorders, 4th Edition (DSM-IV) by the psychiatric assistant. Diagnosis of substance dependence and smoking were made on this basis. The Hamilton Depression Rating Scale (HDRS), Hamilton Anxiety Rating Scale (HAM-A), and the ADHD adult evaluation form were completed by a psychiatric assistant. The HDRS contains 21 items with a score of 0 to 63 and cut-off point of 7. It is divided into 5 categories of without depression, mild depression, moderate depression, severe depression, and extreme depression.\textsuperscript{13,14} The HAM-A contains 31 items with a score of 0 to 52 and cut-off point of 14.\textsuperscript{15} The ADHD adult assessment form was conducted by Childhood Autism Rating Scale (CARS) questionnaire. It contains 30 items and its cut-off point is 55.\textsuperscript{16} This questionnaire has been validated in Iran. All the questionnaires were completed in 1 session.

In cases that the mother or the father was the only one referring in each group, after explanation of the method and purpose of the study, their contact number was obtained. Meetings with the parents (father and mother) were arranged to complete the forms. After data collection, t-test was used in order to achieve results regarding description of the underlying variables and analysis of quantitative data and chi-square test was conducted for analyzing the qualitative data.

Results

In this research, the case group included 92 individuals (43 fathers and 49 mothers). The control group consisted of 96 individuals (43 fathers and 53 mothers). Among the participants, 87 (94.6%) lived together and 5 (5.4%) lived separately. In the control group, all parents (father and mother) lived together and they were not separated or divorced.

In this study, 20 case group participants (21.7%) had secondary school education, 42 (45.7%) had high school education, and 30 (32.6%) had university education. In the control group, 5 individuals (5.2%) had secondary school education, 24 (25.0%) had high school education, and 67 (69.7%) had university education. Regarding occupation, in the case group, 26 individuals (28.3%) were employed, 25 (27.2%) were self-employed, and 41 (44.6%) were unemployed. In the control group, 76 individuals (79.2%) were employed, 15 (15.6%) were self-employed, and 5 (5.2%) were unemployed. In terms of history of psychiatric disorders in parents in the case group, 11 patients (12.0%) reported a history of psychiatric disorders. In the control group, 6 patients (6.3%) had a history of psychiatric disorders. This difference between the two groups was not statistically significant ($P = 0.17$).

In terms of the risk of substance abuse, about 14 participants (15.2%) in the case group and 4 (4.2%) in the control group were substance dependent. This difference was statistically significant ($P = 0.01$). In the case group, 15 individuals (16.3%) smoked, and in the control group, 5 individuals (5.2%) smoked and this difference was statistically significant ($P = 0.01$) (Table 1). In terms of anxiety, 36 cases (39.1%) in the case group and 23 cases (24.0%) in the control group met the criteria for anxiety based on the HAM-A. This difference was statistically significant ($P = 0.02$) (Table 1).

Based on the HDRS, 57 cases (62.0%) in the case group did not have the depression criteria, and 26 cases (28.3%) met the criteria for mild depression, 6 cases (6.5%) for moderate depression, 2 cases (2.2%) for major depression,
and 1 case (1.1%) for severe depression. In the control group, based on the HDRS, 62 cases (64.6%) did not have depression, 21 (21.9%) had mild depression, 7 (7.3%) had moderate depression, and 6 (6.3%) had severe depression. In total, 35 case group participants (38.0%) were diagnosed with depression and 34 control group participants (35.4%) were suffering from depression. This difference was not statistically significant (P = 0.07) (Table 1).

**Discussion**

Based on the findings of the study, there was a significantly higher rate of anxiety disorders, smoking, and substance abuse among the parents of children with ADHD compared to the control group parents. The results of this study regarding the prevalence of drug abuse among parents of young children were consistent with other studies. The study by Farokhzadi et al. in Tehran showed that the frequency of substance abuse in parents of children with ADHD compared to parents of normal children was 21.0% higher. Moreover, the children of substance dependent parents had poorer standards of skills, and 55.0% of these children showed remarkably significant psychopathology. In a study conducted by Wilens et al., the prevalence of ADHD among children of parents with substance use disorder, parents with ADHD, and parents with both substance use disorder and ADHD were compared. It was found that the prevalence of ADHD in children of parents with substance abuse was 13.0%, in children of parents with ADHD was 25.0%, and in children of parents with both substance abuse and ADHD was 50.0%. The results of this study showed that the children of parents with substance abuse disorder or ADHD were at increased risk of ADHD, but children of parents with both disorders were at the highest risk of developing ADHD.

As mentioned above, in most of the studies a significantly higher prevalence of substance abuse was observed among parents of children with ADHD than parents with healthy children. This finding can be partly related to the psychological problems and mental stressed that children with ADHD impose on their parents. ADHD in children is accompanied by behavioral disorders; thus, impairing the functioning of families, disrupting the relationship between parents and child, reducing the role of parents, and increasing levels of stress and other psychiatric problems in the family. Parental substance abuse during childhood and even pregnancy can be a risk factor for the development of ADHD in the child. Button et al. reported that the symptoms of ADHD and anti-social behavior in children were affected by the smoking of the mother during pregnancy and had increased in children of mothers who smoked. The study by Linnet et al. compared three groups of mothers who smoked during pregnancy, used alcohol, and used caffeine, and concluded that the children of the mothers who smoked compared to the other two groups were at higher risk of developing ADHD. In general, it appears that the children of substance dependent parents are at increased risk of psychopathology, including impaired conduct, ADHD, major depressive disorder (MDD), and anxiety disorders. Furthermore, many of the mental disorders of children were quite similar to their parents’ disorders.

In the present study, the frequency of anxiety disorders of parents of children with ADHD was greater than the parents of healthy children. This finding confirms the results of the study by Hebrani et al. who reported that the rate of anxiety disorders is higher in relatives of children with ADHD.

In a study conducted by Mirzaaghas et al. in Iran, it was found that there was a positive

| Item            | Case group (n = 92) | Control group (n = 96) | P   |
|-----------------|---------------------|------------------------|-----|
| Drug abuse      | 14 (15.2)           | 4 (4.2)                | 0.01|
| Smoking         | 15 (16.3)           | 5 (5.2)                | 0.01|
| Anxiety         | 36 (39.1)           | 23 (24.0)              | 0.02|
| Depression      | 35 (38.0)           | 34 (35.4)              | 0.07|
| Adult ADHD      | 3 (3.3)             | 1 (1.0)                | -   |

ADHD: Attention deficit hyperactivity disorder
association between parental anxiety and hyperactivity in children, and that the excessive anxiety of the parents caused problems such as hyperactivity in children. In addition to the higher frequency of anxiety in parents of children with ADHD, the relationship between the severity of anxiety and depression in parents was measured through the severity of ADHD in some studies. For example, in a study conducted by Soltanifar et al. in Iran, a positive association was found between the severity of anxiety and depression in mothers and the severity of ADHD in children. The genetic relationship between anxiety and ADHD has been suggested in some studies.

Regarding the frequency of depression, in the study by McCormick, the frequency of major and minor depression in patients with children without hyperactivity was 4-6% and 6-14%, respectively. Nevertheless, its frequency in mothers with children with hyperactivity and inattention was 17.9% for major depression and 20.5% for minor depression. In the study by Ghanizadeh et al., mood disorders were the most common psychiatric disorders in parents of children with ADHD and there was a 48.1% and 43.0% frequency of major depression in mothers and fathers, respectively. In another study in Thailand, 30.0% moderate depression and 4.0% severe depression were reported in mothers of children with ADHD. In another study in Brazil, the frequency of depression, based on the Beck Depression Inventory (BDI), and anxiety, based on State-Trait Anxiety Inventory (STAI), in mothers of children with ADHD were higher than the control group. This difference was not significant among the fathers of the case and control groups. In the present study, although the incidence of depression was higher in the case group, there was no significant difference between the two groups. This might be due to the depression assessment method used in this study. Unlike most studies that have been based on structured interviews, the present study was based on the HDRS and HAM-A with 21 questions. The use of self-report questionnaires, compared with the structured interviews, could cause over diagnosis due to the over reporting of the symptoms by the individual. In the present study, in the investigated sample, both in the case and control groups more than 30.0% rate of depression was reported and this amount was very considerable. Therefore, in future studies different results might be achieved by using structured interviews and larger sample sizes.

In addition, the presence of ADHD in some parents may have an increasing impact on other psychopathology of the parents. In a study conducted in Switzerland, parents of children with ADHD, who currently had ADHD themselves or from their childhood, had significantly higher anxiety and depressive symptoms than parents of children with ADHD who did not have the disorder themselves and the control group [(based on Symptom Checklist-90 (SCL-90)]. However, the two latter groups were not significantly different in this respect.

In terms of developing adult ADHD, the differences were not statistically significant. Thus, the frequency of adult ADHD in parents of children with ADHD was not higher than the control group. This finding does not approve the results of Sadri Kermani et al. stating that the rate of history of ADHD in parents of children with ADHD was higher. This difference might be due to the different sample sizes of the two studies. The study by Sadri Kermani et al. had a larger sample size than the present study. Another reason was that most of the participating fathers and mothers were cooperative in the research, and these parents were less likely to have psychiatric disorders, and therefore, there were inconsistencies with previous studies. The third reason is that the children in the control group did not undergo psychiatric examination and not visiting a psychiatrist was the criteria of entering the study as the control group subjects. It is possible that they had disorders and had not visited a psychiatrist.

Limitations of this study included small sample size and the lack of using structured interviews for the diagnosis of depression and anxiety. It was also preferable to assess the relationship between adult ADHD in parents of children with ADHD and other psychiatric disorders. With regard to the parents' information of the goals of the study, the probability of over-reporting the symptoms of mental disorder in case of having a child with ADHD was not excluded. On the other hand, for the diagnosis of drug abuse, screening tests or blood serum was
not used and only parents’ reports were considered. Therefore, there was a possibility of them not reporting due to the stigma of substance abuse. Due to the high frequency of drug abuse disorder, nicotine abuse disorder, and anxiety disorder in parents of children with ADHD in this study, assessment and management of substance abuse and anxiety in parents may have an important role in the treatment of these children. In other words, with the early diagnosis of substance abuse and anxiety, the incidence of further problems and behavioral disorders in children could be prevented.

**Conclusion**

In this study, a higher frequency of substance abuse, smoking, and anxiety disorders was observed among parents of children suffering from ADHD than the parents of children who did not have ADHD. However, there was no difference regarding depression among parents of children with ADHD and parents of children without ADHD.

**Conflict of Interests**

The Authors have no conflict of interest.

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بررسی فراوانی سوء مصرف مواد و مصرف سیگار در والدین کودکان مبتلا به اختلال نقص توجه و بیش فعالی

دکتر نوشین پرورش، دکتر شهروز مظفری، دکتر ندا مقدمی، دکتر نجمه محمدی

مقاله پژوهشی

چکیده

مقدمه: اختلال نقص توجه و بیش فعالی (ADHD) یا Attention deficit hyperactivity disorder مربوط به عواملی از جمله روش‌های فرزندپروری مناسب، والدین، نیز در درمان بیمار به کمک است، تشخیص درمانی مبتلا به اختلال روانی و مصرف کننده مواد و بررسی فراوانی این اختلالات در جنین والدی، همچنین فراوانی دارد.

روش ها: در مطالعه مورد - شاهدی حاضر، 200 نفر از والدین تحت مطالعه قرار گرفتند. گروه مداخله والدین 4-12 ساله مراجعه کننده به درمان‌گاه روانی و مبتلا به اختلال ADHD و گروه مقایسه غیر درمان‌گاهی مبتلا به اختلال ADHD و مبتلا به اختلال سیگاری در اطفال با سابقه از میان بیماران مورد این مطالعه انتخاب شدند. روش بررسی موضوع این مطالعه دانشگاهی با استفاده از Question بینی، افزایش اضافی و افزایش اضافی ای اختلالات اضافه و در افسردگی مورد ارزیابی قرار گرفتند.

یافته ها: در مجموع والدین بررسی شده، آنالیز مقایسه سوء مصرف مواد، مصرف سیگار و مواد افراطی و تفاوت معنی‌داری بین دو گروه مشاهده شد و از نظر ابتلا به افسردگی و ADHD نماینده دارای بین دو گروه مورد و شاهد وجود نداشت.

نتیجه‌گیری: بررسی بیشتر اختلالات روانی و بیش‌فعالی در والدین کودکان مبتلا به ADHD می‌تواند نشان دهد نتایج این اختلالات ای بیان شود.

واژگان کلیدی: اختلال نقص توجه و بیش فعالی؛ والدین؛ سوء مصرف مواد

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Email: neda_mo2251@yahoo.com

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