



Prevalence of Childhood Attention-Deficit/Hyperactivity Disorder (ADHD) in Methamphetamine Dependence: A Descriptive Study

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Abstract

Background: The high comorbidity of psychiatric disorders and substance dependence has been reported in children clinical and epidemiological as a study.

Objectives: The aim of this study was to determine the prevalence of childhood attention-deficit/hyperactivity disorder (ADHD) among methamphetamine dependence.

Methods: This study was a descriptive cross-sectional study that has been done in 2015-2016. The study population consisted of individuals referred with methamphetamine dependence to Kermanshah Farabi hospital. Among them, 960 patients were chosen through access selection to collect data the epidemiological characteristics questionnaire and the Wender Utah rating scale for ADHD children were used. Data were analyzed through SPSS 18 software descriptive statistical methods and chi-square test.

Results: The prevalence of childhood ADHD was 29.9%. In the study population 155 patients (16.17) had hyperactivity disorder, 402 patients (41.9%) had attention deficit disorder, and 141 patients (14.7%) had hyperactivity and attention deficit disorders simultaneously. In addition, data analysis reveals the meaningful relationship between childhood ADHD and gender marital status education as well as age range ($P < 0.001$). For participants, job and age of first methamphetamine use, which $P = 0.484$ and $P = 0.453$, respectively, no meaningful relationship was found to ADHD.

Conclusions: Behavioral disorders, especially ADHD, can make a background for methamphetamine dependence tendency. ADHD treatments may prevent this disposition towards methamphetamine dependence.

Keywords: Attention Deficit - Hyperactivity Disorder, Childhood, Substance - Related Disorders

1. Background

The pattern of substance abuse has changed considerably in recent years and has changed from opiate to opioid with newer forms and artificial substances such as methamphetamine (1-4). Nowadays, among addiction types, addiction to methamphetamine is highlighted and one of the basic problems has changed (5-7).

Methamphetamine is a phenyl ethylamine compound and is a psychoactive substance that acts on the various regions of the brain leading to dopamine disorder and has severe effects on the sympathetic system. The direct harm that can be caused by use of methamphetamine in the person and the accompanying psychiatric symptoms can lead to significant disability in people (8-10).

Researchers have suggested that some drug abusers tend to use drugs or alcohol to mitigate their unpleasant

emotional states (11). According to research reports, the relationship between the psychological state and drug abuse has been confirmed in most studies (12). The results of the current study show that both attention deficit hyperactivity disorder (ADHD) and drug abuse are the most common disorders in the general population and most often both appear simultaneously in one person. In addition, there is a close relationship between attention deficit hyperactivity disorder (ADHD) and drug use disorders (13). Attention deficit hyperactivity disorder (ADHD) is a kind of behavior that appears in ones childhood and progressively evolves with an inappropriate amount of lack of attention, impulsiveness, and aggressiveness (14). The prevalence of this disorder in children is 3% to 10%, of which 1/3 to 2/3 of them have a problem in adulthood and is estimated to be prevalent in the adult population from 1% to 6%. Contrary to the past, today it is believed that symptoms of this disorder

continue to occur after puberty (15). This disorder causes many problems for affected people and affects the social, educational, and emotional development of affected people (16). On the other hand, this disorder increases the risk of substance abuse, delinquency, imprisonment, job failure, divorce, and marital problems (17). Prevalence of attention deficit hyperactivity disorder (ADHD) is estimated as 0.2% - 20% in primary school students (18); the prevalence of substance abuse disorders in teenagers who have had ADHD was significantly higher than teenagers that have not had ADHD (41% vs. 0.16); furthermore, the ratio of adults with drug abuse disorders who had ADHD in their childhood to a healthy adult is 0.52 vs. 0.27 (19). Hence, attention deficit hyperactivity disorder (ADHD) is not considered a childhood disorder and people with this disorder have encountered some consequences such as academic failure, occupational problems, and more risk behaviors such as drug use at a cognitive, behavioral, and emotional level (20).

Studies have been conducted on the co-occurrence of psychiatric disorders with materials such as cocaine. However, no similar study has been done to comprehensively assess the prevalence of attention deficit hyperactivity disorder (ADHD) and its clinical and demographic characteristics in methamphetamine dependence. Of course, limited studies have been generally conducted on the prevalence of comorbidities in psychiatric disorders such as mood disorders, psychotic disorders, and anxiety disorders. The assessment of this issue is important in such a way that comorbidities in psychiatric disorders will lead to undesirable effects on prognosis, response to treatment, and discontinuation of methamphetamine, and will reduce the individual's adherence to treatment. The studies show that those patients who have mental health have better prognosis in the treatment process than those who have psychiatric problems. Therefore, the accurate diagnosis and description of abnormalities is the first step in the successful treatment of the drug abuser. Therefore, the present study was conducted to determine the prevalence of attention deficit hyperactivity disorder (ADHD) in methamphetamine dependence.

2. Objectives

Given the significant prevalence of childhood ADHD in methamphetamine dependents and the continuation of this disorder until adulthood, also the likelihood of its impact on treatment outcomes, the diagnosis of this disorder is important in these patients.

3. Patients and Methods

This analytical cross-sectional study took nearly one year (2015-2016). The population of this study included all methamphetamine dependence individuals that referred to the Farabi Hospital in the city of Kermanshah, of them, 960 people were selected accessibly. The criteria to enter the study are: (a) aged between 15 and 75, and (b) taking methamphetamine in the form of drug dependency or drug abuse. The criterion for determining the dependence of methamphetamine was hospitalization and treatment due to methamphetamine use. The inclusion criteria for this study included (a) psychotic disorders (diagnosis of psychotic symptoms was done by a psychiatrist and based on clinical interview), (b) mental retardation, (c) signs and symptoms of toxicity and delirium due to methamphetamine, (d) co-dependency on several substances, and (e) those who have not been taking substance for more than one month.

3.1. Tools

3.1.1. Wender - Utah Test

In 1993, in the U.S., at Utah University, Wender et al., provided a questionnaire by which an adult can assess their condition in terms of attention deficit hyperactivity disorder (ADHD) during childhood. This questionnaire included 61 items in a Likert scale (rarely to very high). The studies that are conducted in various countries showed that the Wender - Utah test had a good validity and reliability and was suitable tool for examining attention deficit hyperactivity disorder in childhood. This test has been translated to different languages up to now (21). In Iran, this test is translated by Sarami Foroushani and its validity and reliability is examined by him (2000). The coefficient of test validity in Sarami Foroushani is reported 0.96 in the research. Then, in the stage of determining structural validity, the average score of the test was estimated as 25.62 in patients and average score of the test was estimated 8 in healthy subjects. There is significant difference between average scores of two groups in the test. In other words, this test has a suitable criterion validity (22).

3.1.2. Demographic Information Questionnaire

A demographic questionnaire was used to measure individual, social, and economic indicators.

3.2. Ethical Considerations

This study has been approved by the Ethics Committee of Kermanshah University of Medical Sciences, Kermanshah, Iran (Ethical code is 143).

The complete and clear information on the purpose of the research was given to all participants and they were assured that the questionnaires would be anonymous. Furthermore, we told them, "if they do not want to continue the project, they can leave the project at each stage".

3.3. Statistical Analysis

The data were analyzed by SPSS software (version 18) using the statistical data of 2%. In order to summarize the data, two - dimensional tables are used to show the number and the percent.

4. Results

In this study, 960 methamphetamine dependence were studied in order to evaluate the frequency of attention deficit hyperactivity disorder (ADHD). The demographic and clinical features of the methamphetamine dependence are shown in Table 1.

There was a significant relationship between gender and prevalence of hyperactivity in childhood ($P < 0.001$), thus, the childhood hyperactivity in males was much higher than females. There was a significant relationship between marital status and hyperactivity in childhood ($P < 0.001$). The relationship between the levels of education and the prevalence of hyperactivity in childhood was significant, in the other word, those with a childhood hyperactivity were less successful in their educations. The results of the association showed that people who had a positive history of childhood hyperactivity took methamphetamine up to older ages. However, there was no significant statistical relationship between the prevalence of childhood hyperactivity and the onset of methamphetamine use ($P = 0.453$).

In addition, there was no significant relationship between the prevalence of childhood hyperactivity and occupational status ($P = 0.484$).

5. Discussion

In the current study, the comorbidity of attention deficit hyperactivity disorder (ADHD) with meth was studied. The prevalence of attention deficit hyperactivity disorder (ADHD) in adults and children in the drug-abuse population is estimated to be three times of the general population (23). Adults with a history of attention deficit hyperactivity disorder (ADHD) are exposed to more risk of substance use disorder than adults with no attention deficit hyperactivity disorder (24). Comorbidity of attention deficit hyperactivity disorder and drug abuse are associated with early onset, more severe period of drug -

Table 1. Demographic and Clinical Features of Methamphetamine Dependence

Variable	Frequency	Percent
Sex		
Male	751	78.2
Female	194	20.00
Marital Status		
Single	389	40.5
Married	416	43.5
Divorced	107	11.1
Widowed	32	3.3
Unknown	16	1.7
Education		
Primary	211	21.10
Under diploma	367	38.2
Diploma and higher	349	36.4
Unknown	33	3.4
Occupation		
Jobless	407	42.4
Employed	437	49.27
Age group		
12 - 20	95	9.9
21 - 30	340	35.4
31 - 40	289	30.1
41 - 50	156	16.3
51 - 60	36	3.8
61 - 70	9	0.9
Unknown	35	3.6
Disease pattern		
Hyperactivity	155	61.1
Attention deficit	402	41.9
Hyper activity + Attention deficit	141	14.7
Unknown	262	27.3
Childhood ADHD		
Yes	287	29.9
No	673	70.1

use disorder, weaker admission of treatment, very hard achievement to treatment goals, poor progression in treatment, and high rates of recurrence (25).

In the current study, the average age of meth abusers with ADHD is about 32.79 and average age of first meth abuse is 25.01. These findings are in line with studies conducted by Faraone et al., (26). Other research findings of the current study are that 35.4% of meth abusers who have

Table 2. Relationship Between Demographic Characteristics and Clinical Records of Methamphetamine Dependence with Childhood Attention Deficit Hyperactivity Disorder (ADHD)

Variable	ADHD, No. (%)		Total	K - Square Statistic	Significance Level
	Yes \geq 46	No < 46			
Sex				55.71	< 0.0001
Male	266 (35.4)	485 (64.6)	751 (100)		
Female	15 (7.8)	177 (92.2)	192 (100)		
Marital status				56.27	< 0.0001
Single	110 (28.3)	279 (71.7)	389 (100)		
Married	162 (38.9)	254 (61.1)	416 (100)		
Divorced	8 (7.5)	99 (92.5)	107 (100)		
Widowed	0 (0.0)	32 (100)	32 (100)		
Education				26.41	< 0.0001
Primary	92 (43.6)	119 (56.4)	211 (100)		
Under diploma	91 (24.8)	276 (75.2)	367 (100)		
Diploma and higher	90 (25.8)	259 (74.2)	349 (100)		
Occupation				0.012	0.485
Jobless	121 (29.7)	286 (70.3)	407 (100)		
Employed	139 (29.4)	334 (70.6)	473 (100)		
Age group				54.79	< 0.0001
15 - 20	7 (7.4)	88 (92.6)	95 (100)		
21 - 30	83 (24.4)	257 (75.6)	340 (100)		
31 - 40	97 (33.6)	192 (66.4)	289 (100)		
41 - 50	65 (41.7)	91 (58.3)	156 (100)		
51 - 60	19 (52.8)	17 (47.2)	36 (100)		
61 - 70	6 (66.7)	3 (33.3)	9 (100)		
Age of first Meth use				0.453	4.71
15 - 20	105 (30.4)	240 (69.6)	345 (100)		
21 - 25	47 (23.4)	154 (76.6)	201 (100)		
26 - 30	45 (27.4)	119 (72.6)	164 (100)		
31 - 35	12 (21.1)	45 (78.9)	57 (100)		
36 - 40	17 (24.3)	53 (75.7)	70 (100)		
> 40	9 (26.5)	25 (73.5)	34 (100)		

ADHD are male and 78% are female. This finding is in line with study conducted by Biederman et al., (27-29).

Furthermore, there is significant difference between single subjects and married subjects in terms of ADHD. Approximately 38.9% of meth abusers who have ADHA are married and 61.1% of meth abusers are single, divorced, and widowed. This finding is not in line with the study of Sadeghi - Movahed (30). In regards to education, 38.2% of meth abusers with ADHS have an education lower than diploma and we cannot find a similar study in this respect. In the current study, we found out that 31% of meth abusers

with ADHD are under 30 years old and this is in line with studies conducted by Wilens et al., (27).

Other findings of this research are that comorbidity between meth use and childhood ADHD disorder is 29.9%, this finding is in line with the study conducted by Biederman et al., (27, 28). Furthermore, this is in line with the research finding of Faraone et al., (26). The current study shows a relatively high prevalence of ADHD in the study population indicating a higher ratio than the study of Arabgol et al., (31). Wilens et al., shows that comorbidity between the drug use disorder and ADHD is strong (32).

With regard to the high prevalence of meth use and its increasing trend in the society, and according to the results of study in which the prevalence of childhood ADHA reaches high, we can say that ADHD can be seriously addressed as accompanying disorder with the meth abuse. If the ADHD is diagnosed in children very soon, it is possible to prevent them from meth abuse.

Regarding the high prevalence of psychiatric disorders in people taking meth in society, its financial costs, and its psychological consequences for the patients, their families, and the community, it is natural that the study of disorders in meth abusers is of great importance.

Some of the most important limitations of this research are (a) its cross-sectional nature, (b) the use of non-random and available samples, and (c) the possibility of unrealistic responses due to the use of self-report questionnaires.

The research findings of the current study can be used for treatment and prevention interventions. The results of the study have useful applications for therapists who work in the area of meth abuse treatment.

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Footnotes

Authors' Contribution: Vahid Farnia, Faezeh Tatari and Safora Salemi designed the study. Seyyed Bagher Mousavi and Sara Hookari performed the analyses. Seyyed Bagher Mousavi and Mostafa Alikhani collected the data. Sanobar Golshani and Shima Heydari prepared the draft of the manuscript. All of the authors read and made the necessary changes in the final manuscript.

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