

Comparison of Characteristics of Methamphetamine Versus Opiate Users in Tehran, Iran

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Abstract

Background: Amphetamine use is a new critical health concern in the Middle East region. However, few studies have focused on methamphetamine use in this region, including Iran.

Patients and Methods: This cross-sectional study was conducted in 2010 to determine the prevalence of stimulant use among the general population of Tehran, the capital of Iran. A total of 6027 participants were recruited from 22 areas of Tehran and asked about their use of opioids and amphetamine.

Results: Of all participants, 261 (4.3%) had used methamphetamines (alone or with opiates) and 144 (2.4%) had used opiates only. Over 90% of participants were male and there was no difference between the two drug-using groups in terms of sex. The mean age of methamphetamine users (29 ± 9 years) was significantly lower than opioids users (36 ± 11 years, $P < 0.001$). In addition, the majority of methamphetamine users were single, but the opiate users were not (77% vs. 43%, $P < 0.001$). More than half of the participants had a high school diploma or less, which did not differ between the two groups. A previous history of treatment was significantly lower among methamphetamine users than opiate users (61% vs. 82%, $P < 0.001$).

Conclusions: The findings of the study showed that, compared with the opiate users, methamphetamine users are younger, more likely to be single, and less likely to have received treatment. We recommend that policymakers should not only design preventive programs for improving the level of knowledge about stimulant use, but also prepare treatment plans and facilities for this newly emerged substance.

Keywords: Amphetamine, Methamphetamine, Opioids

1. Background

Amphetamine-type stimulants or ATS are a type of drug belonging to the class of stimulants that stimulate and speed up the central nervous system (CNS). The most common are amphetamines (including methamphetamine) and ecstasy. Although a small portion of these drugs are produced by pharmaceutical companies; the bulk of them are made in illegal laboratories for non-medical purposes. Methylphenidate (Ritalin®) is also a stimulant medication that is used to treat attention deficit hyperactivity disorder (ADHD); however, it is sometimes abused (1).

The abuse of stimulants will negatively affect the health of users. Some of the negative effects are weight loss (losing weight is one of the main reasons for using the drug among young people), anxiety, insomnia, violent behaviors with low impulsive threshold, agitation and confusion, paranoia, visual and auditory hallucinations, and other types of delusions. These symptoms are defined

as amphetamine or methamphetamine psychosis. Severe paranoia may result in violent behavior, including suicide or homicide (1, 2). On the other hand, the use of these substances leads individuals to high-risk sexual behaviors, injecting drugs, and using shared needles, which is one of the main causes of the transmission of hepatitis B, hepatitis C, and HIV (2, 3). In addition, cessation of the drug use may lead to signs and symptoms similar to withdrawal, which is common in the discontinuation of other types of substances as well (2).

Despite the above mentioned signs and symptoms, in recent years the pattern of drug abuse in different parts and regions of the world has changed, indicating a dramatic increase in the abuse of these substances. According to one study, the number of methamphetamine users in the United States increased from 164,000 people in 2002 to 364,000 in 2004 (4). In addition, according to another report in 2004, over 12 million people in the United States said that they had used stimulants in their lifetime (5). The

National Drug and Alcohol Research Centre of Australia reported that ecstasy was the third most common drug abused in Australia (6). The United Nations Office on Drugs and Crime (UNODC) estimated that of 200 million drug users worldwide, nearly 35 million used ATS, many more than cocaine (13 million) or opioids (16 million) (7). In addition, of all people referred to or entering substance abuse treatment programs in the United States, 8% are stimulant drug users (8).

In some studies in Iran, the prevalence of stimulant use, and ecstasy in particular, has been estimated. For example, the prevalence of ecstasy use among university students has been reported as 0.7% in Tehran (9) and 4.3% in Guilan (10), respectively. Our previous study found the prevalence of amphetamines and ecstasy was 3.7% and 0.4%, respectively (11). However, several studies have noted an increase in the use of stimulants among different groups of people, including individuals entering psychiatric hospitals' emergency ward (12), the youth population (13), patients presenting for opiate treatment (14), and PWIDs (15).

2. Objectives

Improved knowledge about the difference between methamphetamine and opioid users could help policy-makers to plan specific preventive and treatment programs.

As no studies have been done comparing the characteristics of these groups, the present study conducted in Tehran aimed to do this.

3. Patients and Methods

This study is a sub-report of a cross-sectional general survey conducted in Tehran, from July to September 2010. Previously (16), the prevalence of substance use among the general population of Iran (people over 15 years) was 2%, and the prevalence of stimulant use among substance users reported as 15%. Therefore, assuming a prevalence of 1% for stimulant users in Tehran with its population of around 12 million (statistical center of Iran (16)), the population size of the main study was estimated at about 6,000 people. Then the sample size for each region was calculated based on the regional population and sampling locations of each region. A clustered non-probability (convenient) sampling method used for selecting participants from 22 urban areas of Tehran and participants were recruited in community settings, such as street, parks, homes, etc. Inclusion criteria were being between 15–64

years of age and residing in Tehran. Declining to be interviewed or being less than 16 were exclusion criteria. Participation in the study was voluntary and anonymous.

A checklist was used to collect data about demographic information (age, sex, education, and marital status), residential location, substance(s) currently used, awareness of the symptoms, side effects and positive physical, psychological and behavioral effects of stimulants, awareness of the possibility to treat dependency to stimulants, and information about previous attempts to treat stimulant abuse. Thirty-five research assistants were trained (thirty-three females and two males). Interviewers completed the checklist over 3-month periods by visiting designated areas. In this study, 405 people (stimulants and opioids users) were studied. A substance user was considered a person who regularly used substances at the time of the study. The interval of use could be daily, weekly, bi-weekly, or monthly. The study received ethical approval from the University of Welfare and Rehabilitation Sciences and was funded by the United Nations Office on Drugs and Crime (UNODC) in Tehran.

SPSS software version 22 was used for data analysis. Qualitative variables were described using frequencies and percentages and quantitative variables using means and standard deviations. The chi-square test was used to compare qualitative variables and the independent t-test and ANOVA (Tukey's HSD as the post-hoc test) were used for quantitative variables at different levels of qualitative variables. P values less than 0.05 were considered significant.

4. Results

Of the 6,027 participants, 261 people (4.3%) reported using stimulants, including ecstasy, methamphetamine, Ritalin® tablet, or cocaine and 144 people (2.4%) reported the use of opioids. In the case of concurrent use of both substances, due to more pronounced symptoms of stimulants, the user was placed in the group of stimulant users. Therefore, in this group 96 participants (37%) used opioids as well.

Table 1 presents the demographic characteristics of the two groups that used opioids and stimulants. In total, 381 participants (94%) were male and there was no significant difference between the groups in terms of sex. The range and mean age (SD) of participants was 16 - 60 years and 32 ± 11 years, respectively; stimulant users were significantly younger than opioid users ($P < 0.001$). Two hundred eighteen participants (54%) were educated up to a high school diploma and there was no significant difference between the two groups. In addition, 264 people (65%) were living alone (single, separated, divorced, or widowed); living alone was significantly more common among people who

use stimulants than opioid users ($P < 0.001$). In terms of residential location, 102 participants (25%) were living at their own home, 80 (20%) in a rented house, 188 (46%) with their parents, and 35 (9%) were homeless. A comparison between the two groups showed that opioid users were more commonly living in their own house while stimulant users were living at their parents' home ($P < 0.001$).

Table 2 presents the demographic characteristics of the three groups. As can be seen, in females, stimulant use is more common than opioids or concurrent use of opioids and stimulants ($P = 0.008$). Stimulant users are significantly younger than other groups (< 0.001). Eighty-four percent of them were single and 63% lived with their parents, which were significantly higher than other groups ($P < 0.001$). However, there was no significant difference among groups in terms of their education level ($P = 0.208$).

Table 3 presents users' awareness of the symptoms, side effects, and positive physical, psychological, and behavioral effects of stimulants. As shown, more than half of the participants were aware of the physical and psychological symptoms and side effects of stimulants; the level of awareness of psychological symptoms of stimulants was significantly higher than that among the opioid users ($P < 0.001$). Overall, nearly a third of study participants were aware of the behavioral symptoms and side effects of stimulants. Moreover, more stimulant users than opiate users believed that stimulants had positive physical and psychological effects ($P < 0.001$).

Table 4 presents the opinions of stimulant and opioid users about the possibility to treat stimulant abuse. As shown, most participants considered the use of all stimulants treatable. Finally, 63% had a history of treatment, which was significantly lower among stimulant users (61%) than among opioid users (82%, $P = 0.018$).

5. Discussion

The findings of this study showed that 4.3% of the general population in Tehran has used stimulants and more than one-third of them were using opioids concurrently. The majority of stimulant users were single young men who lived with their parents. Most users had a high school diploma. Overall, more than half of the subjects were aware of physical, psychological, and behavioral symptoms and side effects of stimulants and one-third of them said that the stimulants have positive physical and psychological effects. Most participants believed that stimulant abuse, in any form, is treatable and more than half of stimulant users had a previous history of treatment, which was significantly lower than that in opioid users.

According to Shamshiri Milani et al.'s study, the prevalence of ecstasy use among high school girls in Tehran

was reported to be 2.3% (17). The prevalence of ecstasy use among students in Tehran and Guilan universities was 0.7% (9) and 4.3% (10), respectively. A previous study by the same authors has also shown that the prevalence of amphetamines and ecstasy was 3.7% and 0.4%, respectively (11). In the present study, the prevalence of stimulant use was 4.3%, which was similar to previous studies. However, Hamdieh et al. reported a high prevalence (7.2%) of psychostimulant use in people 15 to 35 years old in Tehran (18). In addition, the previous history of amphetamine use in body-builders was reported as 13.3% (19). Lashkaripour and Torbati reported an increasing prevalence of methamphetamine abuse in people who referred to a methadone maintenance therapy clinic from 6% in 2009 to 20% in 2011 (20). Furthermore, the easy process of production and low cost of illegal laboratories on the one hand, and the strong potential for dependency on the other hand (21) have led to the high prevalence of substance abuse and have made the drugs a serious health challenge for the community (12).

According to a US report, most methamphetamine users are 18- to 25-year-old men (22). In a study in Sweden conducted on people who died due to the adverse effects of amphetamines, it was observed that the patients were 33 to 39 years old (23). In a study by Hamdieh et al. the mean age of the patients taking psychostimulants in Tehran was 21 years (18). Barati et al. reported that the most common age group of stimulant users in Hamedan (the center of Hamedan province, Iran) was between 21 to 30 years. In that study, more than 90% of the patients had a high school diploma or less, and more than 80% of them were single or divorced (24). Our study also showed that, compared with opioids users, stimulant use was more common among young men who were living alone. Few studies have compared the characteristics of opioid and stimulant users. Taghaddosinejad et al. conducted a study on the characteristics of patients with drug overdose between opioid and non-opioid users and found that non-opioids are more commonly used by women, a high percentage of whom had an academic educational degree. In terms of marital status, the percentage of singles in this group was significantly higher than the opioid groups. Most patients in the group were under 30 years old (25). However, in our study most people taking drugs (stimulants or opioids) were individuals with low levels of education.

Based on results of this study, most stimulant and opioid users were aware of the physical and psychological signs and symptoms and side effects of stimulants; however, a smaller percentage of them were aware of the behavioral side effects of these substances. In addition, more stimulant users believed in the positive effects of stimulants than opioid users. This can be important in psychosocial therapies for this group of patients; in addition, it can

Table 1. Demographic Characteristics of Stimulant and Opioid Users^a

	Stimulant Users	Opioid Users	P Value
Sex			0.120 ^b
Male	242 (93)	139 (97)	
Female	19 (7)	5 (3)	
Age	29 ± 9	36 ± 11	< 0.001 ^c
Education level			0.753 ^b
Under diploma	142 (54)	76 (53)	
Diploma and Upper	119 (46)	68 (47)	
Marital status			< 0.001 ^b
Single ^d	202 (77)	62 (43)	
Married	59 (23)	82 (57)	
Residential location			< 0.001 ^b
Own home	50 (19)	52 (36)	
Rented house	39 (15)	41 (28)	
Parents' home	144 (55)	44 (31)	
Homeless	28 (11)	7 (5)	

^aValues are expressed as No. (%) or mean ± SD.^bChi-square test.^cIndependent-samples t-test.^dIncluding single, separated, divorced, or widowed.**Table 2.** Demographic Characteristics of Stimulant, Opioid, Concurrent Stimulant and Opioid Users^a

	Stimulant Users	Opioid users	Stimulant and Opioid Users	P Value
Sex				0.008 ^b
Male	148 (90)	139 (97)	94 (98)	
Female	17 (10)	5 (3)	2 (2)	
Age	29 ± 10	36 ± 11	32 ± 9	< 0.001 ^c
Education level				0.208 ^b
Under diploma	83 (50)	76 (53)	59 (62)	
Diploma and Upper	82 (50)	68 (47)	37 (38)	
Marital status				< 0.001 ^b
Single ^d	139 (84)	62 (43)	63 (66)	
Married	26 (16)	82 (57)	33 (34)	
Residential location				< 0.001 ^b
Own home	26 (15)	52 (36)	24 (25)	
Rented house	19 (11)	41 (28)	20 (21)	
Parents' home	102 (63)	44 (31)	42 (44)	
Homeless	18 (11)	7 (5)	10 (10)	

^aValues are expressed as No. (%) or mean ± SD.^bChi-square test^cOne-way ANOVA. There were differences between all groups.^dIncluding single, separated, divorced, or widowed.

be used for substance abuse prevention programs. Most drug users believed that substance abuse was treatable; there was no difference between the two groups of stimulant and opioid users. In spite of this, there is no appropriate medical treatment for dependency on stimulant drugs, and most treatment methods are long-term and

non-pharmaceutical (26), Drug users' idea that stimulant abuse is treatable can trigger the use of these substances and consequently may result in a delay to seek treatment. Hence it is necessary to consider this issue in drug abuse prevention and control programs. Given the severe dependency of stimulant users and the subsequent harms (26),

Table 3. Awareness of the Symptoms, Side Effects, and Positive Physical, Psychological, and Behavioral Effects of Stimulants^a

Awareness of	All(n :405)	Stimulant Users (n : 261)	Opioid Users (n: 144)	P Value
Stimulants' symptoms				
Physical	237 (59)	153 (59)	84 (58%)	0.955 ^b
Psychological	237 (59)	169 (63)	68 (47)	0.001 ^b
Behavioral	115 (28)	71 (27)	44 (31)	0.474 ^b
Stimulants' side effects				
Physical	236 (58)	154 (59)	82 (57)	0.687 ^b
Psychological	217 (54)	136 (52)	81 (56)	0.424 ^b
Behavioral	122 (30)	79 (30)	43 (30)	0.932 ^b
Stimulants' positive effects				
Physical	139 (34)	110 (43)	29 (20)	< 0.001 ^b
Psychological	110 (27)	87 (33)	23 (16)	< 0.001 ^b
Behavioral	26 (6)	19 (7)	7 (5)	0.342 ^b

^aValues are expressed as No. (%).^bChi-square test.**Table 4.** The Opinions of Stimulant and Opioid Users About the Possibility to Treat Stimulant Abuse^a

	All	Stimulant Users	Opioid Users	P Value
Shisheh^b				
Yes	288 (71)	188 (72)	100 (69)	0.729 ^c
No	76 (19)	46 (18)	30 (21)	
Don't know	41 (10)	27 (10)	14 (10)	
Ecstasy				
Yes	275 (68)	183 (70)	92 (64)	0.219 ^c
No	58 (14)	38 (15)	20 (14)	
Don't know	72 (18)	40 (15)	32 (22)	
Ritalin[®]				
Yes	202 (50)	137 (53)	65 (45)	0.149 ^c
No	43 (11)	30 (11)	13 (9)	
Don't know	160 (39)	94 (36)	66 (46)	
Cocaine				
Yes	263 (65)	178 (68)	85 (59)	0.062 ^c
No	48 (12)	32 (12)	16 (11)	
Don't know	94 (23)	51 (20)	43 (30)	

^aValues are expressed as No. (%).^bCommon terms of methamphetamine in Iran.^cChi-square test.

and the increasing prevalence of using such substances and the greater tendency of these people to seek out treatment on the other hand, it is necessary for health policymakers to pay special attention to the formulation of appropriate treatment plans and providing required staff and facilities.

One of the strengths of this study is the estimation of the prevalence of stimulant use in large population of Tehran and the comparison of their characteristics with opioid users, which could be helpful for policymakers to

detect the differences as well as the health needs of traditional and newly emerged substance users. However, the prevalence of substance use was measured by self reports from individuals, which could reduce estimates for various reasons, such as people's unawareness about the addictive effects of some substances such as stimulants tablets and their fear of expression. On the other hand, the patterns of substance use may change over time. So conducting regular studies to assess the trends of substance use could be helpful in policymaking for improving the awareness

of the general population about the side-effects of substances, especially stimulants, as well as improving health services.

The findings of this study showed that 4.2% of the general population in Tehran are stimulant users, of whom one-third use opioids concurrently. The majority of users were single young men who were living alone. Given the increasing importance of stimulant use in our country and the need to treat these patients, policymakers should not only design preventive programs, but also prepare treatment facilities for this newly emerged substance.

Footnotes

Authors' Contribution: Study concept and design: Roya Noori, Ali Farhoudian, Hooman Naranjiha, Mohammad Hassan Farhadi, Kate Dolan; acquisition of the data: Roya Noori, Ali Farhoudian, Hooman Naranjiha, Mohammad Hassan Farhadi; analysis and interpretation of the data: Roya Noori, Hooman Naranjiha, Hamid-Reza Khoddami-Vishteh; drafting of the manuscript: Roya Noori, Kate Dolan, Hamid-Reza Khoddami-Vishteh; critical revision of the manuscript for important intellectual content: Roya Noori, Hooman Naranjiha, Kate Dolan, Hamid-Reza Khoddami-Vishteh; statistical analysis: Hamid-Reza Khoddami-Vishteh; administrative, technical, and material support: Roya Noori, Ali Farhoudian, Hooman Naranjiha, Mohammad Hassan Farhadi; study supervision: Roya Noori, Ali Farhoudian, Hooman Naranjiha, Mohammad Hassan Farhadi, Kate Dolan.

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