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Original Article

Prevalence and Factors Associated with Methamphetamine Use among Adult Substance Abusers

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ARTICLE INFORMATION

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ABSTRACT

Background: The use of methamphetamine and other drugs among young adults has been a theme of growing interest and concern on the part of researchers and health associations. This paper reports recent use of methamphetamine and its relation with some demographic variables among substance users in west of Iran.

Methods: This cross-sectional study was carried out on 559 substance users of Hamadan, western Iran recruited through a snowball sampling method in 2012. The participants received a self-administered questionnaire contained questions regarding substance use, reasons of drug abuse and pattern of MA use. Data were analyzed using SPSS software using Chi-square, Fisher's exact tests and logistic regression methods.

Results: A number of 248 (44.4%) people reported a history of having ever used methamphetamine and the mean drug abuse initiation age was 17.8 (SD= 3.9). According to the history, reducing effect of previous drug and resurfacing of new drug were common reasons associated with the changes in previous drug to use of methamphetamine. In multivariate analysis, 'being single' and higher school were obtained as independent predictors of methamphetamine use (*P*<0.001).

Conclusions: Methamphetamine use is common among adult substance abusers in Iran. Demographic, behavioral and psychosocial correlates of methamphetamine use identified in this research may be helpful for the development of preventive interventions.

Introduction

Methamphetamine (MA) is a powerfully addictive stimulant that dramatically affects the central nervous system through an increase in the synaptic concentrations of monoamine neurotransmitters in the brain[1,2]. Use of MA is a problem of great concern because of its increasing prevalence, its relationship to Human Immunodeficiency Virus (HIV) risk behaviors and other health risks such as psychological and physical consequences[3].

In Iran, MA is called shisheh or crystal (literal translation 'Ice'), sold in powdered form and usually smoked. Data from drug control headquarters suggest rapidly increasing MA use among young adults[4]. In 2008, over six percent of substance abusers' ages 12+ yr in the Iran were current MA users; using was most prevalent among young adults[4,5]. From 2008 to 2012, studies of drug abuse in Iran have shown levels of illicit drug use which exceed those of the general population. For example, a study by Doaghoyan (2010) found that 25% of substance abusers reported using MA and the mean drug abuse initiation age was 18 year-old[6]. Another survey showed that 16% of addicts referred to addiction treatment centers had tried MA[7]. Use of MA and other stimulants has increased steadily over the past 10 years

in different areas of the world, particularly in the adolescent and adult population[8-10].

However, the use of MA can lead to social, legal, and emotional problems. Adverse health effects include memory loss, aggression, psychotic behavior, malnutrition, and severe dental problems[11,12]. MA abuse also contributes to increased transmission of infectious diseases, such as hepatitis and HIV, and can infuse whole communities with new waves of crime, child neglect or abuse, and other social ills[12]. In addition, use of MA causes tolerance and dependence and may result in a condition known as amphetamine psychosis, which is similar to paranoid schizophrenia[12].

Iran is situated between eastern and western countries, alcohol and drug abuse are forbidden because of religious and law reasons[13]. However, the reasons for the prevalence of MA use are ease of production, easy access, unawareness of negative consequences and lack of serious effort to designing and implementing preventive programs[11]. Nowadays, MA is occasionally prescribed for weight loss. Furthermore, MA has been taken by students, drivers and other groups to increase wakefulness and performance[14,15]. Despite

its becoming more prevalent in the country, there is limited information on MA use in the issue[5].

The worldwide magnitude of substances abuse as well as Iran indicates necessity of designing comprehensive interventions to prevent drug abuse among young adults[16]. To design more effective educational programs to reduce the incidence of substance use, it is important to understand the determinants of young people's decisions to engage in drug use[17].

In this study, we aimed at investigating the individual characteristics and MA use patterns in the substance abusers in West of Iran. Findings from this study have the potential to aid researchers, policy makers, and intervention specialists by generating data that can inform the development of prevention strategies.

Methods

Participants

This analytical study was performed cross-sectionally on the 15 to 49 yr age substance abusers in the Hamadan City, western Iran in 2012. Participants were 559 substance users, recruited from multiple sources (parks, streets, prisons, methadone maintenance therapy and drop in centers) based on snowball sampling method, which had used MA in their life. A snowball sample is a non-probability sampling technique that is appropriate to use in research when the members of a population are difficult to locate. In this research, we collected data from substance abuser can locate, and then asks those individuals to provide information needed to locate other substance abusers whom they know.

This study was conducted with approval from Hamadan University of Medical Sciences' Ethical Committee. Informed consent was obtained from all study participants before the project began. Researchers educated participants to ensure that they can reach a truly informed decision about whether or not to participate in the research. Next, participants completed questionnaires that contained questions regarding substance use, reasons of drug abuse and pattern of MA use in 25 minutes.

Measures

The self-administered questionnaire included closed questions and required approximately 30 min to complete. The questionnaire comprised three sections: (1) demographic and background factors: including age, gender, educational status (illiterate; elementary; secondary; high school; and academic level), marital status (single, married, separated), employment status (unemployed, homemaker, working, student) and occupation; (2) MA use: including initiation age of substance use, frequency of use (using MA over the past month, six months, 1 yr, and lifetime), years of use, place of use, reasons of drug abuse and to reasons of changes in previous drug to MA use, having friends who had experienced substance (never; occasionally; always), having friends who smoked (never; occasionally; always), having parents who smoked (never; occasionally; always); and (3) other substance use: which listed 9 substances each of which respondents indicated use and frequency of use and if they had used each substance before, after and during with MA. In order to assess the participants' history of substance abuse for each drug, participants were asked, for example "Have you ever drinking alcohol?" and response categories included "Never, sometimes or often".

Data analysis

All statistical analyses were performed using version 19.0 of the statistical software package SPSS (SPSS Inc., Chicago, IL, USA) and an alpha level of .05 for all statistical tests. A series of logistic regression, chi-square and fisher test and descriptive analysis were computed to determine pattern of MA use and predictive factors.

Results

From 559 participants, 95.7% were male, and 70.5% were single. Age of respondents ranged from 15 to 49 years, with a mean age of 30.4 years (SD=6.4). The frequency of the 21-30-years age group was the highest (52.8%). Regarding the educational status, 4.3% of respondents were illiterate, 20.9% elementary school, (41.9%) secondary school, 23.8% high school, and 9.1% academic level. In relation to housing, 47.2% of participants were living with biological parents, 23.3% one biological parent, 8.8% alone, and 20.8% with wife and children. The majority of participants were neither working (20.6%) nor studying (4.5%). Initiation age result for MA showed that one of the participants had begun his substance use since the age of ten and overall initiation age was 0.9% for age of 12 and younger, 11.8% for age 13, 68.5% for ages 14 to 20, and 18.8% for ages 21 to 29. The peak subgroup was ages 14 to 20 yr.

Table 1 presents the demographic characteristics of current (past 30 day) MA users, compared to lifetime (ever) MA users. No statistically significant differences were found in the ages of the different user groups, with a mean age of about 31 years, nor for the age of first drug use, with a mean age of 17.4 for current MA users and 18.3 years for lifetime MA users. We also found no statistically significant differences in the gender distribution of current MA use compared to lifetime MA use, with males comprising approximately three-quarters of the participants in each group. We found no differences in the employment and dwelling status of current and lifetime MA users. As shown in Table 1, we did, however, find significant differences in the marital status of current MA users compared to lifetime MA users. Current MA users were significantly more likely to be single than others. We also found significant differences in levels of education, with more than one-thirds of current MA users reporting having completed high school, while only slightly more than one-quarters of the lifetime MA users reported having completed a high school education or more.

From all the subjects a number of 311 persons (55.6%) had fathers who were always smoker and 456 (81.6%) subjects had friends who were always smoker (Table 2, in addition for other methamphetamine use related characteristics).

The 10 most frequently recorded reasons of drug abuse in the life time are shown in Table 3. Pleasure and curiosity were common reasons of drug abuse in the life time. Nonetheless, the likelihood of lifetime MA use was greater among those who engaged in emotional and social problems, including psychological problems, educational failure, family dispute, and tendency compared with their counterparts who did not engage in such problems.

Table 1: Demographic characteristics of current (past 30 days) and lifetime (ever) Methamphetamine (MA) use

Variables	Current MA use (n=311)		Lifetime MA use (n=248)		OR (95% CI)	*P* value
	Number	Percent	Number	Percent		
Age (yr)						0.105
<20	17	5.5	7	2.8	1.00	
21-30	176	56.6	119	48	2.294 (0.76, 6.90)	
31-40	100	32.1	105	42.3	1.397 (0.69, 2.82)	
41-50	18	5.8	17	6.9	0.899 (0.43, 1.84)	
Age of first drug abuse						0.268
10-15	104	33.4	66	26.6	1.00	
16-20	155	49.9	129	52	1.768 (0.83, 3.81)	
21-25	37	11.9	36	14.5	1.362 (0.65, 2.83)	
26-30	15	4.8	17	6.9	1.165 (0.50, 2.67)	
Gender						0.490
Female	15	4.8	9	3.6	1.00	
Male	296	95.2	239	96.4	0.743 (0.32, 1.72)	
Education						0.008
<High school	194	62.4	181	73.1	1.00	
≥High school	117	37.6	67	26.9	0.614 (0.42, 0.88)	
Marital status						0.031
Single	230	74	164	66.1	1.00	
Married	52	16.7	64	25.8	0.767 (0.62, 0.96)	
Separated	29	9.3	20	8.1	0.560 (0.28, 1.11)	
Region						0.989
Urban	272	87.5	217	87.5	1.00	
Rural	39	12.5	31	12.5	0.996 (0.60, 1.65)	
Employment						0.132
Unemployed	119	38.3	79	31.9	1.00	
Homemaker	14	4.5	14	5.6	0.782 (0.52, 1.17)	
Working	61	19.6	64	25.8	1.179 (0.53, 2.61)	
Student	18	5.8	7	2.8	1.273 (0.78, 1.95)	
Other	99	31.8	84	33.9	0.458 (0.18, 1.15)	

In relation to the factors associated with the changes in previous drug to use of MA (Table 4), reducing effect of previous drug and resurfacing of new drug showed as risk factors in relation to current MA use. Factors associated with the recent use of MA were established by logistic regression.

Table 2: Summary statistics for Methamphetamine use related characteristics

Variables	Number	Percent
Smoker Father		
Always	311	55.6
Occasionally	57	10.2
Never	191	34.2
Smoker Mother		
Always	17	3.0
Occasionally	19	3.4
Never	523	93.6
Smoker Friend		
Always	456	81.6
Occasionally	89	15.9
Never	14	2.5
Substance–User Friend		
Always	401	71.7
Occasionally	124	22.2
Never	34	6.1
Place of first MA use		
Home	112	20.0
Friends home	194	34.6
Party	25	4.5
Military institutions	35	6.3
Park & Street	106	19.0
Dormitory	15	2.7
University	6	1.1
others	66	11.8
Access in first MA use		
Very easy	291	52.1
Easy	114	20.4
Difficult	95	17.0
Very Difficult	59	10.5

None of the respondents were 'pure' MA users, as all respondents (N = 544) indicated having tried at least one other substance. Tobacco smoking was the most commonly (95.3%) and frequently used substance. Over half of the sample had tried opium (87.7%), alcohol (81.9%), crack heroin (80%), cannabis (70.3%), heroin (68.7%), and approximately a third reported using methadone (321.6%) or tramadol (29.1%) at least once per month. All respondents had used at least one substance concomitantly with MA (before, during or after MA use). The three most common substances used prior to and while under the influence of MA were tobacco, opium and alcohol. Smoking, opium and crack were the most commonly used substance following MA use (Table 5).

Table 3: Reasons of drug abuse in the lifetime (n=559)

Causes of drug abuse	Number	Percent
Pleasure		
Yes	209	37.4
No	350	62.6
Curiosity		
Yes	193	34.5
No	366	65.5
Personal preference		
Yes	125	22.4
No	434	77.6
Insist friend		
Yes	123	22.0
No	436	78.0
Availability of drugs		
Yes	69	12.3
No	490	87.7
Location		
Yes	63	11.3
No	496	88.7
Family dispute		
Yes	108	19.3
No	451	80.7
Educational failure		
Yes	70	12.5
No	489	87.5
Break problems		
Yes	154	27.5
No	405	72.5
Psychological problems		
Yes	143	25.6
No	416	74.4

Regarding frequency of use, all of the subjects used MA at some stage in their lives (life-time). The percentage of past year MA use was 61.5% (352 participants) and 62.6% (358 participants) had used MA within the previous 6-month while others (311 participants) had used MA within the past month (Figure 1). Among current users("past 30 day"), six percent of participants were using substances once a month, 7.1% once a week, 9.7% two to 3 times a week, 32.8% four times or more a week.

Discussion

The current study was conducted to evaluate MA use as an introduction to design effective strategies in preventing drug abuse; the present study has effective results that can play a significant role in preventing drug abuse. Regarding the prevalence of MA use, 55.6% of the participants had experienced MA within the past month, which is higher than the findings of similar studies[4,18,19]. The difference between the results of this study and other studies might be due to different research methods, sampling, and assessment tools on the one hand, and lapse of time, changing patterns of drug use, easy access to drugs, and demographic and geographic differences on the other hand[20,21]. It seems that the rate presented in this study is a more accurate estimate of the prevalence of MA use among the substance abusers in Hamadan. The results confirm the changing patterns and trends of drug abuse from traditional drugs to industrial ones. Therefore, further similar studies in this field are recommended.

Table 4: Response to reasons of changes in previous drug to Methamphetamine use

Variables	Current MA use (n=311)		Lifetime MA use (n=248)		OR (95% CI)	P value
	Number	Percent	Number	Percent		
Reduce the effect of previous drug						0.012
No	138	44.4	84	33.9	1.00	
Yes	173	55.6	164	66.1	1.557 (1.11, 2.21)	
Curiosity for MA						0.140
No	217	69.8	187	75.4	1.00	
Yes	94	30.2	61	24.6	0.753 (0.51, 1.09)	
Attractive of MA						0.550
No	225	72.3	185	74.6	1.00	
Yes	86	27.7	63	25.4	0.891 (0.61, 1.31)	
Resurfacing of MA						0.024
No	244	78.5	213	85.9	1.00	
Yes	67	21.5	35	14.1	0.598 (0.38, 0.94)	
Willingness friend						0.669
No	243	78.1	190	76.6	1.00	
Yes	68	21.9	58	23.4	1.091 (0.73, 1.63)	
Cheap MA						0.218
No	280	90.0	215	86.7	1.00	
Yes	31	10.0	33	13.3	1.386 (0.83, 2.33)	
Expensive previous drugs						0.138
No	305	98.1	238	96.0	1.00	
Yes	6	1.9	10	4.0	2.136 (0.76, 5.96)	
Easy access to MA						0.481
No	246	79.1	190	76.6	1.00	
Yes	65	20.9	58	23.4	1.155 (0.77, 1.73)	
Convenient way to take a MA						0.915
No	207	66.6	164	66.1	1.00	
Yes	104	33.4	84	33.9	1.019 (0.71, 1.45)	
Advertise MA						0.349
No	242	77.8	201	81.0	1.00	
Yes	69	22.2	47	19.0	0.820 (0.54, 1.24)	

Table 5: Substances used before, during and after Methamphetamine use (n=559)

Substances	Used before		Used during		Used after	
	Number	Percent	Number	Percent	Number	Percent
Tobacco Smoking	533	95.3	396	70.8	394	70.5
Alcohol	455	81.3	105	18.8	44	7.9
Cannabis	408	73.0	79	14.0	47	8.3
Opium	504	90.1	268	47.9	185	33.1
Heroin	358	64.0	207	37.0	120	21.4
Crack Heroin	270	48.2	194	34.7	146	26.0
Methadone	13	2.3	165	29.5	133	23.8
Ecstasy	36	6.3	8	1.5	4	0.6
Cocaine	43	7.7	12	2.0	3	0.4

The results of this study also indicate that there is a relationship between MA use and demographic variables such as marital status and level of education. The prevalence of MA use was significantly higher in singles than in married couples, which is consistent with the findings of similar studies[13,22]. In this regard, Jalilian et al. reported that singles are under the influence of several physical and mental problems such as depression and anxiety, which can lead to their tendency toward drug abuse[23]. Moreover, people with higher education used MA more than other people. These results are consistent with the findings of the studies of Amiri et al.[22] and Degenhardt et al[24].
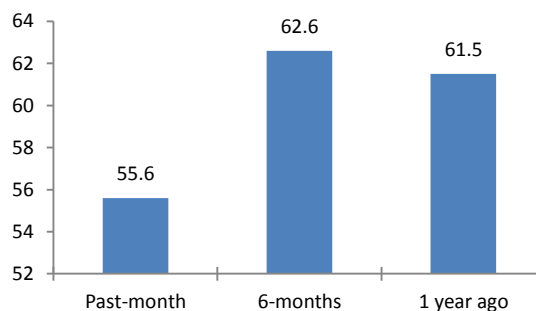

Figure 1: The frequency distribution of Methamphetamine use by the subjects during addiction period

One of the most important topics on drug abuse is the primary drug. Alcohol and marijuana have always been considered as the most common primary drug. The findings of the present study also showed that alcohol drinking, opium, and cannabis are considered as the first used drugs. In the study of Farhadinasab et al.[18] on the substance abusers in Hamedan, alcohol, cannabis, and opium were reported as the primary drugs. The results of other studies also indicate that alcohol drinking and marijuana have been the first used drugs[25,26]. This requires further interventions and studies.

The findings of the study showed that sense of curiosity and seeking pleasure are the most important reasons for MA use, which are consistent with the results of similar studies. Narenjiha et al.[4] showed that sense of curiosity and seeking pleasure are the most important reasons of tendency toward drug abuse among substance abusers. Similar results have also been reported by Shams Alizadeh et al.[27]. It seems that other reasons such as love failure, sexual problems, bankruptcy, and unemployment, previously considered as the main reasons for addiction, are completely 'lacking/inexistent'. Today, the beginning of addiction among substance abusers might be attributed to the sense of curiosity and seeking pleasure. Considering these factors, designing and implementing prevention programs seems necessary.

Another finding of the study was investigating the reasons for replacing the drug with a new one among the substance abusers participating in the study. The results indicated the role of factors such as less efficacious previous drugs and resurfacing of new drugs. The same results were also obtained by Farhadinasab et al.[18]. Moreover, Doagouyan et al.[6], reported that the most important factors for the changing pattern of drug use from light ones into heavy ones included: low price of new drugs, imitating others, interest in trying different things, and sense of curiosity. Other studies also reported the same results [28,29]. Using multi-dimensional approaches and focusing attention on various factors in designing prevention programs could yield valuable results[30].

Results from this study must be viewed with some limitations. First, all of the data were collected through self-report questionnaire and it may raise the possibility of information bias, but as with any drug-related research, the illegal nature of the area of interest makes prospective research with participants who are identified more problematic and may reduce recruitment opportunities. Second, these analyses are cross-sectional; it is not possible to determine whether there is a causal relationship between the measures of MA use and the covariates or the direction of those relationships. In addition, understanding the trends in the prevalence of MA use among adult substance abusers enables policy makers to target prevention resources more effectively. Longitudinal studies are needed to encompass this aim.

Conclusions

The over half of the adult substance abusers had used MA within the past month. Therefore, harm reduction strategies should be seriously considered. Findings indicate the need for tailored interventions targeting specific psychological factors such as pleasure, curiosity, and tendency as well as social factors such as educational failure, family dispute, and availability of drugs.

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