

# Gender Difference in the Characteristics among Unintentional Methamphetamine Overdose Patients Referring to Poison Center-an Epidemiologic Survey

Khodabandeh F<sup>1\*</sup>

<sup>1</sup> Department of Forensic Medicine and Toxicology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

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## ABSTRACT

**Background:** Despite a significant increase in the number of persons using Methamphetamine, limited data exist concerning demographic characteristics non-fatal meth "Shisha" overdoses, seeking for treatment.

**Methods:** Gender differences in socio-demographic characteristics, drug use record and self-harm behaviors related to Methamphetamine "Shisha" overdose were examined among 263 patients (189males, 74 females) admitted to poison center, Loghman hospital.

**Results:** Of the 263 methamphetamine "Shisha" overdose included in this study, 189 (71.9%) were Male and 74 (28.1%) were female with mean of age of 34 years and standard deviation of 12.8. Male "Shisha" users were more likely to be married, middle school educated, and self-employed. History of drug abuse was positive in 73.5% mainly in male. "Shisha" was the main drug used by 24.6% male and 23.1% female subjects. Inhalation was main rout in 174 (66.2%) of cases.

**Conclusion:** There may be gender difference in the characteristics of participants with "Shisha" overdose. The findings suggest that interventional programs are necessary for specific risk reduction strategies.

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► *Implication for health policy/practice/research/medical education:*

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## 1. Introduction:

Methamphetamine popularity appears to

be growing worldwide. It is the most popular stimulant among drug users in many parts of the world (1). Methamphetamine comes in two forms: methamphetamine hydrochloride (crank) and dextro-methamphetamine crystal (ice). Methamphetamine hydrochloride comes in the form of powder, tablets and ampoules.

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*Corresponding author:* Khodabandeh F, MD.  
Department of Forensic Medicine and Toxicology,  
Shahid Beheshti University of Medical Sciences,  
Tehran, Iran.  
E-mail: tennessee\_kh@yahoo.com

Ice comes as a clear crystal, and is the only form of speed which is smoked. Methamphetamine can be swallowed, sniffed or injected, and when dextromethamphetamine is converted to crystal form (ice), it can be smoked (heated and inhaled) too. According to World Drug Report 2012, it is estimated globally that the annual prevalence for Amphetamine Like Substances ranged between 0.3% and 1.2% in 2010, or some 14 to 52 million people aged 15 years to 64 years who had used such substances at least once in 2010 (2).

Despite relatively recent appearance of Methamphetamine as a drug of choice among the Iranian population, it has been the object of concern for public health and law enforcement agencies. Crystal meth-a very addictive substance locally known as shisha, is the most common abused drugs among Iranian young addicts in recent years (3, 4). Estimating morbidity and mortality contributed to illegal drug use and overdose with most tangible adverse personal, familial and social adverse effects is necessary. The likelihood of overdose depends on a number of factors, including the user's sex, weight, tolerance and metabolism, and the drug itself-including how much is taken, how it is taken, and how pure it is, unknown purity of the substances, intentionally ingesting large quantities of drug, or taking a drug after a period of abstinence (5).

Methamphetamine "Shishe"-related hospitalizations in Iran rose sharply during recent years and has dramatically resulted in emerging methamphetamine-associated psychosis and intoxication, as can be seen in the hospital reports on drug-related Emergency Department visits (6-8). Many studies have addressed the physical and psychological harms of MA use (9, 10). International surveys indicate that methamphetamine prevalence is highest among young adults, but until now, few scientific papers have looked at the characteristics and behaviors associated with its use in this age group (11, 12). There are variations between countries

about the socio-demography of meth user and circumstances to cause overdose and its association with self-harm behaviors among gender. Demographic data may be important for understanding the real-life circumstances and potential clinical needs of the target population for meth overdose (13). Places great emphasis on helping patients not only to reduce their drug use but also to build and exploit their own social, physical, psychological, financial and cultural resources to sustain their recovery and reintegrate into society (14).

Crystal methamphetamine use is associated with multiple health and social risks, including a negative impact on families as well as straining emergency departments and law enforcement resources.

It is therefore useful to understand the educational, marital, employment status and other demographic characteristics of those who are recruited for meth overdose. It is also useful to understand and compare the true characteristics among gender of meth-overdose patients in order to challenge common stereotypes and stigma often linked between them (15).

The aim of this study was to determinate demographic characteristics between methamphetamine use and rise of overdose, it also suggest the differences of perception for "Shisha" use, between genders.

## 2. Materials and Methods:

This study was conducted in the "Loghman Hakim Hospital", a university poisoning referral center, between December 2011 to January 2012, Tehran. A prospective, cross-sectional study was performed among 263 hospitalized patients on the unintentional overdose of Methamphetamine, demographic variables and comparing the prevalence of participant's characteristics between genders.

Eligible participants were  $\geq 18$  years of age, reported Methamphetamine (Shishe) use within few hours before entrance to the emergency Department with no simultaneous of prescription medications

and other drug use. The diagnosis of methamphetamine "Shisha" overdose is made after performing a thorough history, physical exam, and rapid urine drug screen testing. A person satisfying all of these criteria was asked for an interview following complete physical stabilization. An interviewer-administered questionnaire was used in data collection demographics characteristic (gender, age, marital status, education, residency and employment); perception of methamphetamine "Shisha" use and history of drug use and dependency. Each topic area was covered by several variables, each in the form of a question.

Data are presented as frequencies or means for the purposes of comparisons between male and female patients with methamphetamine overdose. Statistical comparisons were performed on categorical data by Pearson's chi-square. Significance was ascribed for  $P \leq 0.05$ .

### 3. Results:

#### Demographic information

As shown in Table 1, among the 263 participants, 189 (71.9%) were males and 74 (28.1%) were females, with predominate age range of 25-34 years in males and females (36.0% and 37.8% respectively). The mean age ( $\pm$ SD) of females was lower than males ( $31.1 \pm 11.9$  vs.  $36.4 \pm 12.9$  years old). There was not much difference in marital state between participant's gender (36.0% male, 37.8% female), while prevalence of single women was higher than men (32.4% vs. 19.6%). Males were more likely to be self-employed businessmen (54.0%) and middle school educated (46.6% vs. 36.5%) while females were more likely to be with no specific job (housewife) (83.7%) and mostly high school graduated (diploma) (40.0% vs. 22.8%). All of the differences between male and female "Shisha overdose" participants were statistically significant ( $P < 0.05$ ).

#### History of drug use behavior

Table 2 shows that history of drug dependency was mainly positive in male participants (73.5% vs., 17.6%), with preference of "Shisha" (24.0%) in male and "opium (69.2%) in female subjects. Duration of drug dependency with (mean $\pm$ SD), in female was longer than male respondents {>5 years ( $2.0 \pm 1.0$  years) vs. 6-12 months ( $1.1 \pm 1.0$  years)}. Relation between drug dependency and "Shisha" overdose was significant ( $P = 0.008$ ). Family history of drug use was positive in both genders (52.0% males and 46.0% females).

#### "Shisha" use behaviors among "Shisha" overdose participants.

Table 3 shows regular "Shisha" use with no significant co-relation to overdose ( $P = 0.1$ ), which reported by 26.5% male and 25.7% female participants. Mean ( $\pm$ SD) duration of "Shisha" use in female ( $0.8 \pm 0.3$  year) was significantly lower than male ( $1.8 \pm 0.5$  year) subjects, ( $P = 0.002$ ). Duration of "Shisha" use of Less than six months with higher Prevalence was reported by both genders (27.5% males and 21.6% females). Prevalence of "Shisha" overdose following first time use was much higher in male respondents (73.0% vs. 14.3%).

#### Perception of current "Shisha" use

Table 4 shows that, 71 (27.0%) of respondents believed that "Shisha" is a non-addictive substituent for opium. This perception was more acceptable in females than in males (33.8% vs. 24.3%). "Shisha" overdose in 57 (30.2%) male and 10 (13.5%) female subjects occurred following a period of abstinence. Frequent "Shisha" use besides of other drugs (poly drug user), were mostly in males (19.0% vs. 13.5%). No difference in habitual users by genders was seen (26.5% males and 25.7% females). All of the differences between male and female "Shisha overdose" participants were statistically significant ( $P = 0.001$ ).

**Table 1:** It showing time interval between fire arm injuries and death.

Variable		Frequency	Male Percent	Mean±SD	Frequency	Female Percent	Mean±SD	P value
		(No)	(%)		(No)	(%)		
<b>sex</b>		189	71.9		74	28.1		
<b>Age group</b>	15-24	37	19.6	36.4±12.9	24	32.4	31.1±11.9	0.003
	25-34	68	36.0		28	37.8		
	35-44	40	21.2		13	17.6		
	45-60	26	13.8		3	4.1		
	>60	18	9.5		6	8.1		
<b>Education</b>	Uned/Prim	53	28.0		11	14.9		0.002
	Middle school	88	46.6		27	36.5		
	Diploma	43	22.8		30	40.0		
<b>Occupation</b>	University	5	2.6		6	8.1		0.001
	Student	5	2.6		3	4.1		
	Housewife	0	0.0		62	83.7		
	Jobless	35	18.5		0	.0		
	Labor	31	16.4		9	12.2		
	Gov-employed	16	8.5		0	0.0		
<b>Marital state</b>	Self-employed	102	54.0		0	0.0		0.05
	Single	37	19.6		24	32.4		
	Married	68	36.0		28	37.8		
	separate	18	9.5		6	8.1		
	Divorced	40	21.2		13	17.6		
	Widow	26	13.8		3	4.1		

**4. Discussion:**

In Iran, Methamphetamine crystal “Shisha” is the most popular drug among addicts and Illicit drug overdose attributed to Methamphetamine crystal “Shisha” is very likely (16, 17).

The purpose of this study was to explore to what extent crystal meth “Shisha” is a factor in non-fatal overdoses on the basis of records of hospital admission, to what extent this varies across gender, and to investigate whether crystal meth “Shisha” use is associated with the risk of recurrent overdoses and if so, whether such an association varies across gender.

Our findings show significant differences between the demographic characteristics of male and female “Shisha” related overdose patients, and some new findings in this study differed from those in other studies. Most male crystal meth “Shisha” overdose respondents in this study were ,middle school educated, married and local or self-employed businessmen; have never been married, and with no specific job- same as other studies. Despite universal studies, in

our study male gender involved in overdose was in excess and females had higher educational level (diploma) (18-20). As to age totally, the average age for non-fatal “Shisha” overdose fell between 25-34 years old for both male and female patients but female patients in age group 15-24 years old, were more likely than males (32.4% females vs. 19.6% males). This finding was not the same as other studies, (21, 22).

Gender differences were observed in terms of methamphetamine use behaviors. Most female experience “shisha” overdose following the first time use (73.0%). Male and female Regular “shisha” users in less than previous six months were more predispose to overdose (27.5%), as other studies (23, 24).

Furthermore, individual history of other substance use disorder and differential tolerance toward drug effects has been identified as predictors for overdose. ”Shisha” overdose may attribute by strongly influence of, concomitant use of other drugs, route of administration, and

**Table 2:** Illegal drug use profile in 263 “Shisha” overdose responders by gender.

Variable		Frequency (No)	Male Percent (%)	Mean±SD	Frequency (No)	Female Percent (%)	Mean±SD	P value
<b>History of drug abuse</b>	Yes	139	73.5		13	17.6		0.001
	no	50	26.5		61	82.4		
<b>Type of drug abused</b>	Alcohol	6	3.2		0	0.0		0.001
	Opioids	31	16.6		9	69.2		
	Crystal meth ”Shisha”	46	24.6		3	23.1		
	tramadol	37	19.8		1	7.7		
	hashish	35	19.4		0	0.0		
	multiple drugs	25	13.9		0	0.0		
<b>Duration of drug use</b>	6-12 months	61	33.9		1	7.7		0.008
	1-3 yrs	57	31.7	1.1±1.0	3	23.1	2.0±1.0	
	3-5 yrs	39	21.7		3	23.1		
	>5 yrs	23	12.8		6	46.2		
<b>H/O family addiction</b>	Yes	87	46.0		39	52.7		0.06
	No	102	54.0		35	47.3		

**Table 3:** Behaviors of “Shisha” use; comparison among 263 patients by gender with “Shisha” overdose.

Variable		Frequency (No)	Male Percent (%)	Mean±SD	Frequency (No)	Female Percent (%)	Mean±SD	P value
<b>Regular “Shisha” user</b>	Yes	50	26.5		19	25.7		0.1
	No	139	73.5		55	74.3		
<b>Duration of “Shisha” use</b>	1 <sup>st</sup> time	27	14.3		54	73.0		0.002
	<6 months	52	27.5	1.8±.5	16	21.6	0.8±.3	
	6-12 months	44	23.3		2	2.7		
		48	25.4		2	2.7		
	1-3 yrs	18	9.5		0	.0		
	3-5 yrs							

purity, among many others. With respect to poly drug use, for “Shisha” users, opium was drug commonly found in overdose cases in this study mostly by females, and

it was hypothesized that “Shisha” is a non-addictive substituent for opium. Although the Route of administration has long been known as one of the most silent predictors

**Table 4:** Perception of Current “Shisha” use in; a Comparison by Gender.

Variable	Male		Female		Total No (%)	P value
	Frequency (No)	Percent (%)	Frequency (No)	Percent (%)		
substituent for opium	46	24.3	25	33.8	71 (27.0%)	0.001
<b>Cause of overdose</b>	MA abstinence	57	10	13.5	67 (25.5%)	
	Other drugs co-use	36	10	13.5		
	Habitual MA user	50	29	25.7	46 (17.5%)	
					79 (30.0%)	
<b>Route of MA use</b>	Injection	18	0	.0		0.001
	Inhalation	133	61	82.4		
	Injection /inhalation	37	13	17.6		

for overdose, and injection found to be the most common route (25), risk of overdose associated with inhalation was estimated in 73.8% of our case.

The risk of overdose may depend not only on age of initiation and years of drug use, but also on recent period of abstinence. In our study, overdose after a period of abstinence were dominant in male subjects (30.2%) which was higher than similar studies (26).

The drug sold on the street under a variety of local production with different material and adulterine which may be potentially dangerous being sides the nature of drug itself and may cause unintentional overdose in both acute and chronic users. To determine nature of these local productions needs a household survey (27).

All of the factors described above may correlated with one another, and work together to shape one`s risk of overdose.

The reasons of Methamphetamine overdose, investigated in this paper were: wrong perception about “Shisha” as suitable, non-addictiveness substitutes for opium, in female respondents and drug use after a period of abstinence from drug in

male subjects, seems to be the major predisposing factors to overdose. History of drug use in family increase the risk of abuse Methamphetamine use .

Gender characteristics differences evaluation among Methamphetamine overdoes subjects will help to implementation of gender specific intervention measures for risk reduction programs for Methamphetamine users.

Although the methamphetamine use appears to increasing in many parts of the world (28), estimating the health consequences related to use and overdose is difficult. Methamphetamine use is a complicated social problem in many countries. The reasons why more and more people fall into methamphetamine addiction require more studies from the physiological, psychological, and social perspectives. Individual, social, and environmental factors have been reported to be associated with harm related methamphetamine use (29).

Results from this paper support previous findings showing that methamphetamine use can greatly increase the risk of toxicity and health problem. Although most respondents in this study had enough

knowledge about “Shisha”, some misunderstandings were observed. Most male and female respondents did not aware of addictive property of “shisha” and risk of overdose by using the same previous dose, after a period of abstinence. However, many meth users did not know about the nature of drug which was usually Purchase from source. This finding indicates that more information on the risks and harm of methamphetamine should be provided in intervention programs in future.

Our limitations present in this study, includes hospital-based, not population-based study, so we cannot make direct conclusions about the incidence of illegal drug overdose. It is possible that some patients with minor drug overdoses were treated in the community and never presented to the hospital.

The study was characterized by a number of strengths. First, this study provides the first report addressing the characteristics of drug overdose among “shisha” users. Second, the findings enrich our knowledge of gender differences in demographic characteristics, perception of methamphetamine and high of overdose among “shisha” users, although further investigation is needed.

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