

# Amphetamine-Type Stimulants in a Group of Adults in Tehran, Iran: A Rapid Situation Assessment in Twenty-Two Districts

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## Abstract

**Background:** Dependence on amphetamine-type stimulants (ATS) is a health concern in Iran (i.e. the most populated Persian Gulf country). However, there are no literature reports on ATS dependence in the community.

**Objectives:** The current study aimed to investigate the prevalence of ATS-dependence, the reasons associated with this problem and the treatment barriers among a group of adults in 22 districts of Tehran.

**Materials and Methods:** A rapid situation assessment was conducted. A mixed quantitative-qualitative methodology was applied. The study was conducted between September 2009 and January 2010. A researcher-made checklist was designed to collect data. The SPSS version 23 and Atlas-ti qualitative software were used for data analyses.

**Results:** In total, 6027 individuals were randomly recruited and interviewed. Among them, 261 participants were ATS-dependent. A desire to increase performance and reduce psychiatric problems, beauty-related issues and a desire to stop opiate use were the main reasons for the illegal use of ATS. Poor knowledge of ATS treatment services in the community, poor knowledge of the side effects of the illegal use of ATS and stigma were the main current treatment barriers. Amphetamine-Type Stimulants dependence was associated with unemployment (adjusted OR = 3.1 CI 95% 1.0 - 4.6), lack of leisure activities (OR = 2.9 CI 95% 1.0 - 5.3), curiosity (OR = 3.2 CI 95% 2.1 - 5.6) and increasing sexual performance (OR = 2.6 CI 95% 2.3 - 5.4).

**Conclusions:** The study results indicated that ATS-dependence was present among the study participants. This issue necessitates treatment, which should be considered by health policy makers. Prevention programs should be provided on the large scale in the Persian community to prevent ATS use and dependence.

**Keywords:** Amphetamine-Type Stimulants, Drug, Iran, Methamphetamine, Treatment

## 1. Background

The illegal use of amphetamine-type stimulants (ATS) is a global health concern with medical, psychiatric and social impacts. The use of ATS is a major health concern amongst the Persian population. The traditional pattern of illicit drug use in Iran is opium and the main route of drug use is smoking (1). However, in the recent years (i.e. since 2005), ATS use has become a health concern in the Persian community. Although Iran has the only universal methadone treatment system in Western Asia (2), ATS use is a health problem in Iran, which cannot be treated with methadone maintenance treatment (3, 4).

Amphetamine-Type Stimulants include a group of many drugs such as methamphetamine, ecstasy, and methylphenidate (Ritalin tablets). Some ATS such as methylphenidate are prescribed for the treatment of medical and psychiatric problems such as attention deficit and

hyperactivity disorder yet they can be misused with no medical prescription. This issue can result in dependence (2).

Amphetamine-Type Stimulants dependence such as methamphetamine dependence is a relapsing condition with no approved pharmacotherapies (4, 5). Furthermore, ATS-dependence is associated with high-risk behaviors such as violence, psychosis and suicide (1-5). Researches attempting to find an effective medication are ongoing and cognitive-behavioral treatments have remained as the main treatment options for ATS dependents (4).

Amphetamine-Type Stimulants dependence has numerous reasons. For example, a recent study of 209 males and females injecting methamphetamine users in Tehran indicated that methamphetamine dependence was associated with living with sexual partners, long duration of dependence, and lack of participation in 12-step meetings

and psychological sessions (6).

## 2. Objectives

Literature is not well documented on the prevalence of ATS dependence and the reasons associated with this problem in Iran. Furthermore, ATS treatment barriers have not been documented in Iran. To address this gap in the literature, this study aimed to investigate the prevalence of ATS dependence, the reasons associated with this problem and the treatment barriers in a group of general adult population in 22 districts of Tehran.

## 3. Materials and Methods

### 3.1. Study Design

Rapid situation assessment (RSA) was selected as the main study design in 2009. This was because of efficiency, cost-effectiveness and using a mixed quantitative-qualitative methodology (7). Furthermore, conducting a comprehensive survey in Tehran was time-consuming and expensive because the city is vast and populous.

“The guideline for the development and implementation of drug abuse rapid situation assessments and responses” was used (7) to conduct the current RSA. This guideline has been developed by the United Nations office for drug control and crime prevention as a standard method for conducting RSA (7).

The study was an approved and joint research project between the United Nations office on drugs and crime (UNODC) and the University of Social Welfare and Rehabilitation Sciences in Tehran.

### 3.2. Study Site and Sample Collection

The study sites included 22 districts in Tehran; via the following official information resources, 22 districts with considerable rates of illegal use of ATS in the past two years were identified.

1. Hospitals especially emergency rooms,
2. Drug treatment and harm reduction canters,
3. Courts,
4. Prisons,
5. Police reports of arrest figures and ATS confiscation,
6. Official reports of ATS-related deaths,
7. Crime-related reports,
8. Police reports of ATS use and vending and
9. Human immunodeficiency virus/ acquired immune deficiency syndrome (HIV/AIDS) treatment centers in each district.

After determining the study population, Open-Epi software was used to determine the sample size in each district. After determining the total required sample size using this software, convenience sampling was used as the main method of sample taking in each district of Tehran.

Eligibility criteria included age of 18 - 65 years old, male or female gender, living in the same districts where the participants were recruited for at least three months prior to recruitment and taking any stimulant with no medical prescription. Dependence on ATS was defined as the daily use of any ATS within the past twelve months for a purpose not consistent with legal or medical purposes in Iran. This definition was based on the recent American diagnostic and statistical manual of mental disorders (8).

### 3.3. Interview Team

Based on the study guideline (7), to increase the chance of finding ATS dependents in each district, 10 to 12 former ATS users with good communication abilities were recruited and trained. This group facilitated finding eligible participants in each district. Overall, 35 well-trained interviewers were recruited to collect quantitative and qualitative data. They were general practitioners, social workers or registered psychologists with high qualifications in interview techniques. With the support of UNODC, a two-week training workshop was held for the interview team.

### 3.4. Study Measures

A checklist was designed with the collaboration of three senior drug researchers at the Substance Abuse and Dependence Research Centre in Tehran. The checklist included details of demographics, illegal use of ATS and qualitative questions about the reasons of ATS use and treatment barriers.

The checklist was piloted on 30 ATS dependents before conducting the study. Piloting the checklist showed high test-retest reliability ( $\alpha = 98\%$ ) in a two-week study. The validity of the checklist was considered with reviewing the relevant literature in the field of ATS use (5, 6).

### 3.5. Study Procedure

The study was conducted between September 2009 and January 2010. Participation was confidential and voluntary. Consent forms were signed by participants. The study had one quantitative section, which included 6027 participants and one qualitative section, which included 60 interviews. All interviews were conducted in pre-allocated interview rooms in the districts. Focus group discussions (FGDs) were conducted with 50 ATS dependents and were audio-taped. The FGDs consisted of six to ten people. Key informant interviewing was also conducted.

Audio-taping was implemented with prior permission. Overall, ten key informants (KIs) were interviewed. Key Informants included health professionals, who worked with ATS dependents at drug treatment centers or other professionals such as the police.

### 3.6. Data Analysis

Quantitative data were analyzed using Chi-square test, independent samples t-test and logistic regression in SPSS version 22. Analyses were based on a two-tailed alpha at  $P < 0.05$  for statistical significance. Qualitative data were analyzed using Atlas-ti qualitative software.

## 4. Results

### 4.1. Participants in Each Study Site

Of the 22 districts, districts one and three were of high socio-economic status. Overall, seven districts (2, 4, 5, 8, 9, 13 and 22) were middle class and the remaining districts had low socio-economic status. Overall, 6027 participants were recruited from 22 districts. Most participants ( $n = 559$ ) were from district four and the least reported number of participants ( $n = 133$ ) was from district nine. District 11 had the lowest reported prevalence rate of ATS use (1.7%) while districts 17 and 16 had the highest prevalence rates of ATS use (25.1% and 23.5%), respectively (See [Table 1](#)).

### 4.2. Demographic Characteristics

More than half of the participants were males (53.1%) and the remaining (46.9%) were females. The age range and the mean age (SD) of all participants were 18 to 60 years and 32 (SD 11) years, respectively. Amphetamine-Type Stimulants dependents were more likely to be younger (29 (SD = 9) years vs. 32 (SD = 11) years,  $P = 0.05$ ), educated (41% vs. 34%,  $P = 0.05$ ), single (42% vs. 31%,  $P = 0.05$ ) and jobless (33% vs. 22%,  $P = 0.01$ ) than non-ATS users. Amphetamine-Type Stimulants dependents were also more likely to have unstable living conditions (33% vs. 22%,  $P = 0.01$ ) compared with non-ATS users (See [Table 2](#)).

### 4.3. Details of Amphetamine-Type Stimulants Use

The mean age of ATS dependents was 29 (SD = 9) years. Overall, 261 participants (4.3%) were current ATS dependents including ecstasy, methamphetamine and Ritalin tablets, respectively. The main routes of ATS administration were smoking (60%), ingestion (37%), sniffing (2.0%) and injection (1.0%), respectively. The frequency of ATS use among participants averaged 18 days (SD 8.0) per month. Overall, 34.6% of the participants had been on ATS use treatment, previously (See [Table 3](#)).

**Table 1.** Participants in Each District ( $n = 6,027$ )

22 Districts in Tehran	Participants (n)	ATS Dependence, (%)
District-1, Shemiranat	307	2.6
District-2, Azadi square	457	4.5
District-3, Pasdaran square	221	2.2
District-4, Tehran Pars square	559	8.7
District-5, Ashrafi-Esfahani	505	3.0
District-6, Enghelab Square	250	5.7
District-7, Nezam-Abad	247	3.6
District-8, Narmak	298	11.7
District-9, Mehrabad airport	133	4.3
District-10, Jemhoori	179	2.5
District-11, Qazvin square	203	1.7
District-12, Shoush square	196	8.6
District-13, Damavand	236	3.2
District-14, Khavaran	372	3.3
District-15, Afsariyeh	354	3.2
District-16, Bahman	212	23.5
District-17, Azari	188	25.1
District-18, Yaft-Abad	227	5.8
District-19, Khani-Abad	176	6.3
District-20, Shar-Rey square	136	3.8
District-21, Tehran-Sar	260	3.0
District-22, Narmak	311	6.8
	6,027	261

A considerable number of participants reported that they experienced low mood (37.6%), mental pressure (24.5%), curiosity for using ATS (23.0%) and a desire for increasing sexual performance (20.0%) in the last 12 months. Current ATS dependence was associated with unemployment (adjusted OR = 3.1 CI 95% 1.0 - 4.6), lack of leisure activities (OR = 2.9 CI 95% 1.0 - 5.3), curiosity (OR = 3.2 CI 95% 2.1 - 5.6) and increasing sexual performance (OR = 2.6 CI 95% 2.3 - 5.4).

### 4.4. Qualitative Analysis

The qualitative analyses of the interviews showed multiple reasons associated with the illicit use of ATS and different treatment barriers as follows:

#### 4.4.1. A Desire to Increase a Performance

A theme that repeatedly emerged from the narratives was a desire to increase a performance. Participants repeatedly described the roles of physical energy, concentration,

**Table 2.** Baseline Characteristics of Participants (n = 6,027)<sup>a</sup>

Variables	Characteristics	Group 1 n = 5,766 <sup>b</sup>	Group 2 n = 261 <sup>c</sup>	P Value
<b>Gender</b>	Male	5,000 (87)	212 (81)	0.148
	Female	766 (13)	49 (19)	0.132
<b>Mean age</b>	Year	32 ± 11	29 ± 9	0.05*
	18 - 24	628 (11)	23 (9.0)	0.134
<b>Age range</b>	25 - 34	3,232 (56)	122 (47)	0.176
	35 - 44	1,277 (22)	96 (37)	0.167
	45 and over	629 (11)	20 (7)	0.195
<b>Schooling</b>	< 12 years	2,950 (51)	123 (47)	0.189
	12 years	1,970 (34)	108 (41)	0.05*
	12 - 16 years	846 (15)	30 (12)	0.178
<b>Marital status</b>	Single	1,800 (31)	110 (42)	0.05*
	Married	3,050 (53)	121 (46)	0.167
	Other conditions such as widow	916 (16)	30 (12)	0.257
<b>Employment</b>	Employed	3,600 (62)	141 (54)	0.197
	Unemployed	1,280 (22)	86 (33)	0.01*
	Home maker	886 (16)	34 (13)	0.245
<b>Living conditions</b>	Own housing	1,920 (33)	74 (28)	0.298
	Rented housing	1,920 (33)	118 (45)	0.01*
	With family	1,280 (22)	42 (17)	0.154
	Homeless	646 (12)	27 (10)	0.135

<sup>a</sup>Values are expressed as No. (%) or mean ± SD.

<sup>b</sup>Group 1: participants who did not report ATS use.

<sup>c</sup>Group 2: participants who reported current ATS use.

and job-related performances as their reasons associated with current ATS use.

A man who ingested ecstasy reported:

"In 2005, Shisheh (e.g., methamphetamine) was first smuggled to Iran from Southeast Asia such as Japan and Thailand. Some guys use ecstasy for energy and sex. It keeps you awake with a good memory".

A drug control police officer reported:

"Ritalin tablets and Shisheh are cheap and are illegally produced...We need approving and keeping strong laws against producers and dealers in Tehran".

#### 4.4.2. A Desire to Decrease a Psychiatric Problem

Participants' narratives repeatedly highlighted how a desire to reduce a psychiatric problem led to current ATS use. Furthermore, participants repeatedly explained how their misconceptions of ATS as non-addictive drugs resulted in self-treatment for psychiatric problems.

A man who misused ecstasy reported:

"Young people take ecstasy with friends in parties for

dancing. I take it for getting rid of low mood and depression".

A male psychiatrist, who worked with ATS users at a drug clinic reported:

"Some people think Shisheh is good for treating anxiety and depression. I have some clients, who misuse ATS for low mood or anxiety at this clinic. I think we need more ATS education on TV, at schools and universities".

#### 4.4.3. Beauty-Related Issues

Participant accounts indicated how beauty-related issues resulted in current ATS use. Some participants reported that some ATS users, street vendors, body building centers, peers and/or relatives had recommended illicit ATS use to cease appetite and lower weight. In addition, further data analysis highlighted that some beauty salons had recommended ATS as a way to improve quality of skin.

A woman who smoked methamphetamine reported:

"My friend lost weight by smoking Shisheh. She suggested it to me and I said yes because of my heavy weight".

**Table 3.** Characteristics of Amphetamine-Type Stimulants Dependents (n = 261)

Variables	Characteristics	No. (%)
Mean age at first ATS use, y		29 (SD 9)
Current ATS use	Ecstasy	98 (38)
	Methamphetamine	86 (33)
	Ritalin tablets	64 (24)
	Other ATS	13 (5.0)
Current route of ATS administration	Smoking	157 (60)
	Ingestion	97 (37)
	Sniffing	4 (2.0)
	Injection	3 (1.0)
Lifetime ATS use	Ecstasy	91 (35)
	Ritalin tablets	86 (33)
	Methamphetamine	71 (27)
The frequency of ATS use	Other ATS	13 (5.0)
	per month	18 (SD 8.0)
Life-time ATS use treatment		90 (34.6)

A street drug vendor, who sold ATS in the south of Tehran, reported:

“We say to people Shisheh can make you slim and they buy them. Some people think Shisheh is good for skin. Some body builders use Ritalin tablets to make their appearance perfect”.

#### 4.4.4. Amphetamine-Type Stimulants Use for Ceasing Opiate Use

Participant narratives underscored how some ATS users used opiates before initial ATS use and believed that only opiates such as opium, opium residues and heroin were addictive. Further qualitative analyses of narratives indicated that most participants did not have an adequate amount of information about the addictive effects of ATS. As a result, some of them used ATS to substitute them with opiate use.

A man who misused Ritalin tablets and smoked methamphetamine reported:

“I use Ritalin tablets and Shisheh. Some mates suggested using them to stop opium smoking”.

A female clinical psychologist, who worked at a drug clinic reported:

“ATS users come to our clinic for treatment. Most of them believe that opium and heroin are addictive but stimulants aren't. Families should be educated about the side

effects of ATS misuse and take care of their family members to protect them from ATS use”.

#### 4.5. Barriers to Amphetamine-Type Stimulants Treatment Entry

##### 4.5.1. Poor knowledge of ATS Treatment Services in the Community

Among participants, who were dependent on illicit ATS use, narratives described how poor knowledge of illicit ATS treatment services in the community prevented them from treatment entry. Further qualitative analyses of the narratives demonstrated that although, ATS treatment was a necessity for some participants, poor information about ATS treatment centers hampered treatment entry.

A woman who misused Ritalin tablets reported:

“I misuse Ritalin tablets every day with no medical prescription. But I don't know where to go for treatment. I know I need treatment but who can help me?”

##### 4.5.2. Poor Knowledge of the Side Effects of Amphetamine-Type Stimulants Use

Among participants, who were dependent on ATS use, their narratives described how poor knowledge of the side effects of ATS use prevented them from treatment entry. Further qualitative analyses of the narratives indicated that although ATS treatment was a necessity for some of them, poor information of the addictive nature of ATS use and ignoring treatment primarily hampered treatment entry.

A man who smoked Shisheh reported:

“I smoke Shisheh every day but I don't think it's addictive. I don't need treatment. I can quit any time I want.”

##### 4.5.3. Stigma

Participant narratives suggested that stigma prevented treatment entry for ATS use. The study findings demonstrated that some participants perceived the necessity of treatment but social stigma prevented them from treatment entry.

A man who smoked methamphetamine and cocaine reported:

“I smoke Shisheh. I want treatment but what will happen to me if I go for treatment. My family, my colleagues, my friends, they'll all understand. I don't want them to look at me badly.”

## 5. Discussion

The study indicated that ATS dependence was present in the study regions in Tehran. This was a new trend of illicit drug use at the time of conducting the study (2). The study results indicated that ATS dependents were more

likely to be younger, single, educated, unemployed and with more unstable living conditions compared with non-ATS users. Such characteristics were likely to predispose this group to misuse of ATS. A research study indicated that participants with ATS dependence were more likely to be single and jobless than recreational ATS users (3). These demographic characteristics should be considered in designing and implementing prevention and educational programs for this group in Iran. Studies have indicated that cognitive-behavioral interventions are effective in the treatment of ATS users (9, 10). Such treatment interventions should be provided for this group in Iran.

The study indicated that ATS dependents had multiple misconceptions about the effects of ATS use. In fact, it was likely that most of them had no actual knowledge of the side effects of ATS use. Their misconceptions were likely to originate from lack of knowledge or poor ATS education. Poor knowledge of the side effects of ATS can be a strong motivation to self-treatment with ATS use or its common use in the community (11-16). Therefore, the provision of educational programs is suggested for this group.

Key Informants repeatedly emphasized the roles of mass-media in ATS education and prevention. Some KIs emphasized the role of law enforcement and family education in ATS use prevention. Health policy makers should consider ATS education as a health priority. Studies have shown that drug education is necessary to prevent the epidemic of any type of drug (17-19). Furthermore, law enforcement and police efforts should target ceasing ATS production and distribution in the Persian community on a large scale.

Poor knowledge of available ATS treatment services was frequently reported as an important barrier to treatment entry. A study on Puerto Rican injecting drug users found that perceived barriers to drug treatment played strong roles to treatment entry (20). Opiate use treatment is available in Iran but ATS use was a new health concern at the time of conducting the study. Therefore, participants were likely to not know about the availability of ATS treatment in the community.

On the basis of the study findings, we suggest policy recommendations for increasing access to treatment for ATS users in the community. It is important for people to have access to appropriate ATS treatment facilities in the Persian community. The role of mass-media, especially television in informing people about the treatment facilities for ATS use treatment in the community, is emphasized. Schools, universities, educational centers and hospitals should also contribute to informing people about the side effects of ATS use and available treatments in the community.

Poor knowledge of the side effects of ATS use and con-

sidering ATS as non-addictive drugs were strong barriers to treatment entry. A study indicated that poor knowledge of the side effects of illicit drug use was associated with its easy use (21). Participants were likely to traditionally consider opiate use as a health problem only while ATS use was a new concern in Iran at the time of conducting the study. To improve service delivery, treatment services should re-orient their services to better address the needs of ATS users in Iran. People should be informed that ATS use could be as addictive as opiate use.

Finally, the study results indicated that stigma had a detrimental impact on ATS treatment entry. This issue was due to the new nature of ATS use at the time of conducting the study in Iran. A study in the USA indicated that stigma among people with substance use disorders hampered treatment entry (22). These study results highlight the need for more work on stigma due to its important role in preventing treatment entry for the ATS use problem.

### 5.1. Conclusion

The results of this RSA highlight the importance of understanding the reasons associated with ATS dependence and treatment barriers. As the first report from Western Asia, especially the Persian Gulf region, the findings of this study highlight the necessity of the provision of effective laws against ATS producers and vendors, as well as ATS education, prevention and treatment programs for the population of Tehran.

### 5.2. Study Limitations and Suggestions

The use of ATS without medical prescription was a hidden activity in Iran during years 2009 and 2010. As a result, it was difficult to conduct a household survey. Therefore, the study was limited to a RSA. Conducting household surveys is suggested.

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### Footnotes

**Authors' Contribution:** Roya Noori designed the study and contributed to conducting the interviews. Sepideh Aryanfar contributed to providing strong technical advice in designing the study, writing and editing the paper and interviewing. Reza Daneshmand contributed to approving the study and conducting the interviews. Ali Farhoudian contributed to designing the study and training the research team. Salahedin Ghaderi contributed to

designing the study databases and data entry. Afsaneh Moradi performed data analyses and contributed to designing the study questionnaire. All authors contributed to writing the paper. All authors have read, edited and approved the final version of the paper.

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