



Explaining the causes of crystal addiction in Tehran: a qualitative approach

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Abstract

Aims The purpose of this study was to explain the causes of crystal (meth) addiction in Tehran.

Methods This research was qualitative and was carried out using content analysis and deep and semi-structured interview technique. The study populations consisted of crystal addicts in Tehran, Iran. Sampling was done using snowball and purposive sampling technique. Finally, 20 people were interviewed until data saturation and then the data were coded and analyzed.

Results In the process of data analysis and coding, nine main categories of causes of crystal addiction appeared, which were: predisposing psychological characteristics, role model(s), peer influences, lack of proper family monitoring, easy access and ease of use, triggering events, positive attitudes toward crystal, responding to a particular need, and enjoying the first use.

Conclusions Raising the awareness and attitude of young people and their families about crystal, teaching families how to properly supervise their children and the behaviors of their friends, as well as increasing social support in times of life crisis, could significantly tend to reduce the use of crystal in the community.

Keywords Crystal · Addiction · Tehran · Qualitative approach · Content analysis · Interview

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Introduction

Drug addiction is recognized as a social and health problem worldwide (Singer 2008). One of these high-risk drugs is methamphetamine, known in Iran as crystal (Baroni et al. 2007). According to the World Health Organization, amphetamines are one of the most important public health threats (Kaboudi et al. 2017; Tanibuchi et al. 2010), and it is estimated that more than 35 million people in the world use amphetamines (Hamamoto and Rhodus 2009), with a significantly high potential risk of mental, physical, and social trauma (Nadri Far et al. 2010; Rigi Kootesh and Raisi 2016). Although there exists a dearth of report on mortality due to the direct use of crystals, it should be noted that the drug is highly addictive and is more harmful to humans than other amphetamines socially, emotionally, psychologically, and even in terms of mobility (Shoaa Kazemi 2011). Crystal causes changes to the limbic system; this system is responsible for controlling emotions and, under the influence of crystal, increases the sense of pleasure (Orkie et al. 2013).

In our era, the tendency toward chemical psychedelic drugs has increased due to technological and social changes (Delaware Heravi et al. 2007). As with other stimulant and hallucinogenic drugs, taking these medications can lead to many side-effects in physical function (even when taken at low doses) (Mansourian et al. 2009). Also, following the use of these substances, death events (including accidents and accidents caused by distraction, etc.) in adolescents and young people occur more than in other age groups (Pirzadeh 2011). The abuse of methamphetamine or crystal, which is a 100% industrial drug, has started in our country about a decade ago, and its consumption has increased in recent years following changes in the pattern of consumption of substances from traditional to industrial (Ghorbani et al. 2011) as well as due to the decrease in its price (Moasheri et al. 2007). Given the current structure of our country and the provision of various places for adolescents and young adults to use these drugs, one should find appropriate ways to protect adolescents and young adults, of which the best and most successful method is raising the level of awareness of the whole society through individual and public education (Yekh Falah et al. 2009). Attention to the statistics indicates the increasing number of addicts in the community, which reveals the duty of everyone in opposition to this problem. Given the increasing trend in the use of psychedelic substances in the world, it does not seem that Iran is excluded from this problem. On the other hand, considering the geographical location of Iran, which is on the East–West link and is demographically one of the youngest countries in the world, having basic information on the use of this dangerous substance for the planning of future prevention and education programs seems quintessential (Mohtasham Amiri et al. 2009). Therefore, the purpose of this study is to explain the causes of crystal addiction among crystal

consumers in Tehran with a qualitative approach using a content analysis method.

Methods

Study design

This study was qualitative in terms of the research method and was conducted using content analysis and a deep and semi-structured interview technique. Participants were selected from among those who were addicted to crystal and who were not addicted to another drug, and were also interested in participating in and providing experiences in the research. A snowball and purposive sampling technique was applied to access them. Accordingly, interviews were conducted with crystal addicts in Tehran, and continued until data saturation, with 20 people including 15 males and five females. After each interview, the data was coded and analyzed and ended in three stages of open, axial, and selective coding. The duration of each interview lasted between 30 and 45 minutes, and the time and place of the interviews were determined by the participants themselves.

Lincoln and Guba criteria were used to assess the trustworthiness of the present study (Bryman 2016; Lincoln and Guba 1985). To ensure the reliability and validity of the data, there was ongoing involvement with data and research, validation and coding of data by contributors. Finally, the collection, implementation, and encoding of data were carefully carried out, and enough time was allocated to do so. To ensure transmissibility, the gathered data were examined and approved by three experts in the field of qualitative research and addiction. A comprehensive description of the subject matter was also provided, and direct speech of the participants was also used.

In order to observe ethics in the research, participants were informed of the informed consent, and the time and place of the interview were determined by them. Also, the anonymity of the samples, the confidentiality of the data and the right to withdraw at the desired time were maintained for them (Table 1).

Results

In the process of analyzing and encoding data, nine main categories of causes for turning to crystal appeared. Below, each of them and their subcategories are explained.

Predisposing psychological features Including having excessive curiosity, tenderness, backwardness and accumulation, depression, low self-esteem, inability to say no, follower personality, feelings of sadness and loneliness, tendency to obtain multiple experiences.

Table 1 presents the demographic characteristics of the samples under study

Variables		Frequency	Percentage distribution
Age	Average	27 years old	
	The youngest	18 years old	
	The oldest	49 years old	
Marital status	Single	13	65
	Married	7	35
Economic status	High	6	30
	Average	9	45
	Low	5	25
Gender	Male	15	75
	Female	5	25
Family population	Under-populated	16	80
	Over-populated	4	20
Length of drug use	Average	18 months	
	Minimum	6 months	
	Maximum	10 years	
Employment	Unemployed	6	30
	Employed	8	40
	Student	6	30
Residency	Native of Tehran	14	70
	Immigrant	6	30
Level of education	High school	4	20
	Diploma	4	20
	Associate	2	10
	Bachelor	8	40
	Master and higher	2	10
History of drug use	As hobby	8	40
	No history	12	60
History of abstinence	Unsuccessful	12	60
	No action	8	40
History of family addiction	Yes	5	25
	No history	15	75

Most individuals considered excessive curiosity as a reason for turning to crystal consumption. In this respect, participant no. 13, aged 19, said: "I've always liked to try new things. That's why when I was asked to use crystal for the first time, I was so curious to see what it was like."

Role model Parents' smoking, playing the role of a smoker, having an addict cousin, seeing the feelings of others and curiosity for their experience, getting to know different kinds of drugs in the family, using a role model on TV to find crystal.

Some of the samples had a history of addiction in the family or among friends, and this made them familiar with the drug, as participant no. 12, aged 22, said: "When I saw that people around drank alcohol or used crystal, I tended to drink and smoke so that I could feel like them."

Peer influence friends being happy due to crystal consumption, the admiration by friends of crystal, the first experience in formal and friendly spaces such as high school and university, the first experience of opium use in a mixed party, to keep up with friends, considering more drinking and taking drug as a value at friendly parties. An individual's friends have a great influence on the attitude and behavior of the person and, in many cases, the individual is forced to take dangerous actions to satisfy their friends. Participant no. 7, aged 19, said: "I was at a friendly gathering, all of my friends were taking crystal, I could not say that I did not use it; I did not want them to think that I was afraid or I didn't want to keep up with them, so I told myself that I would do this only once."

Lack of proper family monitoring Lack of family awareness of the friends consuming crystal, lack of awareness by the family

of the consumption by children for several months, lying to the family to take money for crystal, family's inadequate understanding of the privacy of children, taking a lot of money from the family under the pretext of going to the doctor, the mother hiding a girl's addiction from the father.

Participant no. 6, aged 26, said: "My family did not know that my friend was taking crystal, so they did not have any objection. When I went to him, I sometimes stayed with him all night and my family thought that we were busy with the lesson and exercises."

Easy access and ease of use Easy access, no smell, no smoke, not time-consuming, no need for much to consume, being cheap, and selling crystal on the street.

One of the most important features of crystal is its ease of access and consumption. Participant no. 14, aged 31, said: "The best feature of the crystal is that it doesn't have any smell or produce any smoke so I took it very comfortably, even sometimes I went to my room, locked the door, and took it in my room."

Participant no. 15, aged 34, said: "The good thing about crystal is that it is not like opium that takes a lot of time to take. It is easy to take it in a few minutes."

Stimulant events Separating from fiancé, divorce, becoming unemployed, traveling with addicted friends, partying, and inappropriate marriage.

At times, events or crises occur in people's lives that make them weaker, and if there is not enough support in those circumstances, they may become addicted in order to calm themselves or escape from problems and difficulties. As Participant no. 11, aged 28, said, "After I separated from my fiancé, I felt very lonely. I was very upset. It was as if the world had been destroyed around me. I had tried every possible way so as not to think about it. Therefore, I began to take crystal. It really made me think less about my problem."

Participant no. 15, aged 34, said: "When I traveled with my friends, they all took crystal and asked me not to spoil their party, so I started taking the drug."

Positive attitude toward crystal Crystal consumption to abstain from opiate, not being addictive, giving up crystal is easier than opium, energy efficiency, no hallucination, increase in strength and energy, believing in crystal to be better than other drugs and to not have negative effects on the individual's body, shrinking the eyes, making the body fitter, helping sad and depressed people, enhancing sexual ability, and clearing the color of the face.

Unfortunately, there are false beliefs about crystal in the country, and one of the most commonly held beliefs is that crystal is not addictive, as it does not contain morphine. Participant No. 18, age 23 said "I thought crystal was not

addictive, everybody said that it was not addictive and easy to put aside so I was not worried about getting addicted to it."

Participant no. 16, aged 22, said: "I had heard that the crystal raised sexual power, so I took crystal."

Participant no. 3, aged 27, said, "I went to the gym; there, because I could lift a lot of weight, I turned to crystal, because they all said that it increased their strength."

Enjoying the first use To feel like you are in another world, feeling good and doing well, experiencing the best fun of one's life, enjoying the first crystal more than cannabis, feeling light and flying, dizziness and nausea at the first moments of use, getting better and feeling better after a few seconds, inability to describe the senses and the present after taking crystal, freeing the soul from everyday problems, the feeling of emptying the underarm, the vitality after a few seconds of consumption, the difference in the vitality of the crystal with other materials.

Another feature of crystal is that its enjoyment reaches the brain very soon, which makes the person feel pleasure sooner. Participant no. 3, aged 27, said: "When I first took crystal, I felt light a few moments later, I felt like I was flying, it was a pretty good feeling. Up to then, I had not experienced such a sensation in my life, it was really enjoyable."

Participant no. 15, aged 34, said: "When I first took crystal, I felt that I was in another world; I had already taken hashish and opium, but none of them was like crystal."

Responding to a specific need Increasing concentration, increasing sexual ability, reducing sleep, increasing energy for more work, for more beauty (the eyes and skin of the face), and improving voice.

Everyone has a particular incentive to turn to crystal, an incentive that is the primary stimulus of the individual to consume crystal, but most of these motives stem from the false beliefs that have become commonplace with the crystal.

Participant no. 2, aged 30, said: "I was a taxi driver. In order to be able to be more awake and work more, I started to take crystal." Participant no. 20, aged 19, said: "To reduce my weight, I started to use crystal, and everywhere I felt that taking crystal was slimming; then I began to use too much, it was so important for me to become slim."

Participant no. 17, aged 26: "As I was a prostitute, I would use crystal to make my clients happy."

Discussion

As shown in the findings, one of the factors influencing the tendency of people and especially young people to take crystal was their psychological features, such as excessive curiosity, lack of ability to say no, a desire to have multiple experiences,

etc. This finding is consistent with the findings obtained in Boostani and Karamizadeh (2017) and Kiani et al. (2011).

Drug use in adolescence and young people that is the culmination of manifestation of addiction (Anderson 2018; Boostani and Karamizadeh 2017; Kiani et al. 2011; Wilkins et al. 2004) is raised as a major public health problem (Winters et al. 1993), which in turn can be accompanied by dangers such as accident and suicide (Shariatirad et al. 2013), violence (Miller et al. 2007), educational problems (Enforcement 2013; Gilvarry 2000), and the early onset of sexual relationships (Floyd and Latimer 2009; Halkitis et al. 2005; Halkitis et al. 2007, 2009; Palamar et al. 2014; Turner et al. 2011).

A large body of research has shown that there is a significant relationship between personality traits and substance abuse tendencies (Kornør and Nordvik 2007; Polimeni et al. 2010), and that personality traits can be considered as a good predictor of abuse (Botvin and Kantor 2000; Kirisci et al. 2004).

Another factor in turning people onto crystal is having a role model, i.e., learning how to use crystal in a family or friends. In fact, when people become familiar with crystal and how to take it, they are more likely to use it. According to learning theories, addiction can be learned (Sadiq Sarvestani 2007). Sutherland argues that perverted behavior is learnable, not inherited, and a large part of deviant behavior occurs in the process of communicating with intimate groups such as a group of friends (Garooosi and Mohammadi Dolatabadi 2011). The results of this research were in line with the research by Sahami and Khezri (2013) and Boostani and Karamizadeh 2017.

In this study, peer influence was another major reason for turning to crystal consumption, which was consistent with studies conducted by Radfar et al. (2016) and Zarghami (2011).

Finding friends and engaging with other people in the community requires the right communication and life skills. Unfortunately, in today's society, where conditions have changed a lot, this issue is not taken into account. Every so often, someone suffers from addiction due to a lack of self-confidence in order not to lose his friends, as expressed in the proverb "When in Rome, do as the Romans do." Adolescents and young people in a friendship group want to be at the center of attention and have a positive opinion from their friends about their actions and behaviors. Therefore, it can be said that drug use by peers is one of the strongest predictors of drug use among adolescents (Brown 2013; Trucco et al. 2011).

One of the factors that led to the use of crystal in the results was the lack of proper family monitoring, which can be said to partly reflect the effects of modern society and the demographic decline of households. Many of our samples lived in under-populated families, and had a separate room for themselves. This and parents being very busy made the

parents less aware of their children, spending less time with them and thus making it easier for them to take crystal. In some situations, parents have very poor supervision over their children, and in fact ignore their children and have no knowledge of those with whom their child has a relationship; this in turn can lead to harmful consequences for the individual and the family. Also, sometimes inappropriate methods of parenting and undesirable patterns of extremes in showing affection to and support of the child can increase the tendency to consume the substance. This is consistent with the research by Kamkary and Shokrzadeh (2012) and Kushki (2009).

The convenience and the lack of odor of crystal consumption is one of the advantages that most crystal addicts express about it. Consumption of crystal is easier than for traditional drugs such as heroin and opium, and its consumption also has no odor, which, in turn, has led families to realize their children's addiction much later. This can exacerbate the consequences of taking crystal. In fact, it can be said that one of the factors of the tendency of people to take crystal is easy access and ease of use. These days, to buy crystal, just go to certain urban areas and offers will overwhelm you. This is in line with the result of the research by Boostani and Karamizadeh (2017), Kiani et al. (2011), and Moheb Ali et al. (2016).

Sometimes events make a person's life difficult and, in fact, make them ready to undertake dangerous work. However, if there is not enough support at that time, in some cases it could lead to drug use. This result is consistent with the research carried out by Boostani and Karamizadeh (2017).

Since the tendency for people to start drug abuse, at least for the few first times, is influenced by their attitude toward drug abuse (Aghababae et al. 2012), the existence of false beliefs, including the most important one, the belief in the non-addictiveness of crystal, causes many people fall into the trap of this dangerous substance, and then, when it comes to being addicted, it is too late. Therefore, it is imperative that the relevant authorities and the media provide comprehensive programs to further familiarize people with the drug. The results of this study were in line with Hosseini and Fagihi (2005), Shokrzadeh (2013), and Siah Jani et al. (2014).

Another feature of the crystal drug that makes people very addicted is the enjoyment of the first-ever experience; because of this very first experience, many people have a strong desire to take it again.

Some people mentioned that the main reason for turning to crystal was a response to a specific need, such as increasing physical fitness, enhancing concentration and slimming, and so on. This was also consistent with the results of the study by Mehrjerdi et al. (2013). Unlike other drugs, which are usually taken by males, the use of crystal among females in some places is almost equal to males (Asante and Lentoer 2017; Burke 2005). Females are one of the groups vulnerable to

the use of crystal for weight loss, which, given the emphasis on beauty and the importance of a female body in the modern world, can encourage females in our society to turn more towards crystal. Another reason for crystal use was the belief that it increased sexual power. This incentive to use crystal has been observed in Malaysia (Lim et al. 2018), Thailand (van Griensven et al. 2013), and Vietnam (Thu Vu et al. 2015).

Conclusion

As the results of the research showed, one of the most important and maybe the main reason why young people are taking crystal is the misconceptions that are prevalent in our society towards crystal. In order to eliminate these misconceptions, all social institutions, including the department of education and the media, should be involved in the issue in order to increase awareness and influence the attitude of young people and their families with regard to crystal as well as education of the family to properly supervise their children and their friends, as well as increasing social support during times of crisis.

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Compliance with ethical standards

Conflicts of interest/disclosures The authors declare that they have no financial or other conflicts of interest in relation to this research and its publication.

Ethical approval Ethical approval was obtained from the ethics committee of the university. All information collected from this study was kept strictly confidential. All procedures performed in the study were in accordance with the ethical standards of the university research and ethics committee. Consent for participation was understood by completion and submission of the survey.

References

- Aghababae A, Jalali D, Saedzade H, Bagheri S (2012) Comparing effectiveness of four preventive methods of drug abuse on self-esteem and attitude to addiction in students of educational, cultural and dormitory complexes of imam Khomeini relief commission. *J Addict Res* 6(21):35–46
- Anderson K (2018) A model program for treating methamphetamine use among adolescents. Alliant International University, ProQuest Dissertations Publishing, 10746913
- Anderson K, Towvim L, Carney N, Rosiak J, Thomas B, Blaber C (2013) Law enforcement: snapshots from the Safe Schools/Healthy Students Initiative. Education Development Center, Inc., Waltham MA
- Asante KO, Lentoor AG (2017) Use of crystal methamphetamine among male adolescents in Cape Town, South Africa: Caregivers' experiences. *Substance Abuse Treat Prevent Policy* 12(1):18–24
- Baroni S, Mehrdad R, Akbari A (2007) Evaluation of ecstasy use among young people aged 15 to 25 who came to coffee shops in five regions of Tehran. *J Faculty Med Tehran Univ Med Sci* 65(11): 54–49
- Boostani D, Karamizadeh E (2017) Conditions and strategies of crystal (methamphetamine) consumption among addicted women (case study: Kerman City). *J Women Dev Polit* 15(1):1–20
- Botvin GJ, Kantor LW (2000) Preventing alcohol and tobacco use through life skills training. *Alcohol Res Health* 24(4):250–257
- Brown M (2013) Familial, social, and individual factors contributing to risk for adolescent substance use. *J Addict* 2013:1–9
- Bryman A (2016) Social research methods, 5th edition. Oxford University Press, Oxford
- Burke C (2005) Methamphetamine use by adult and juvenile arrestees in 2004. *CJ Bulletin: Criminal Justice Research Division, San Diego Association of Governments (SANDAG)*, sandiegohealth.org/sandag/sandag_pubs_2009-2007-2025/publicationid_1398_8716.pdf
- Delaware Heravi M, Ahmadi A, Nouri Sitani M (2007) Knowledge level of management students about the effects and effects of taking ecstasy compounds (pill X) in Tehran universities and medical sciences in 2005. *J Babol Univ Med Sci* 3(9):43–46
- Floyd LJ, Latimer W (2009) Adolescent sexual behaviors at varying levels of substance use frequency. *J Child Adolesc Subst Abuse* 19(1):66–77
- Garoosi S, Mohammadi Dolatabadi K (2011) Explaining the life experience of addicted women in drug addiction. *J Women's Sociol* 2(1): 55–74
- Ghorbani M, Kazemi H, Ghorbani T (2011) Comparing irrational beliefs in patients with crystal abuse disorder and ordinary people. *Knowl Res Appl Psychol Autumn* 12(3):32–37
- Gilvarry E (2000) Substance abuse in young people. *J Child Psychol Psychiatry Allied Discip* 41(1):55–80
- Halkitis PN, Green KA, Remien RH, Stirratt MJ, Hoff CC, Wolitski RJ, Parsons JT (2005) Seroconcordant sexual partnerings of HIV-seropositive men who have sex with men. *Aids* 19(1):S77–S86
- Halkitis PN, Mukherjee PP, Palamar JJ (2007) Multi-level modeling to explain methamphetamine use among gay and bisexual men. *Addiction* 102:76–83
- Halkitis PN, Mukherjee PP, Palamar JJ (2009) Longitudinal modeling of methamphetamine use and sexual risk behaviors in gay and bisexual men. *AIDS Behav* 13(4):783–791
- Hamamoto D, Rhodus N (2009) Methamphetamine abuse and dentistry. *Oral Dis* 15(1):27–37
- Hosseini S, Fagihi A (2005) Identifying and investigating the factors of addiction in youth and adolescents to drugs. *People's Health J* 6(55): 38–49
- Kaboudi M, Dehghan F, Ziapour A (2017) The effect of acceptance and commitment therapy on the mental health of women patients with type II diabetes. *Ann Tropic Med Publ Health* 10(6):1709–1713
- Kamkary K, Shokrzadeh S (2012) Scale standardization tendency to addiction (with emphasis on MMPI-ARF) secondary school students and pre-university. *Eur J Experiment Biol* 2(5):1868–1879
- Kiani M, Shamloo B, Sadeghi A (2011) Prevention of psychotropic substance use by adolescents. *Med J Quart J* 5(19):127–167
- Kirisci L, Tarter RE, Vanyukov M, Reynolds M, Habeych M (2004) Relation between cognitive distortions and neurobehavior disinhibition on the development of substance use during adolescence and substance use disorder by young adulthood: a prospective study. *Drug Alcohol Depend* 76(2):125–133
- Kornør H, Nordvik H (2007) Five-factor model personality traits in opioid dependence. *BMC Psychiatr* 7(1):37–43

- Kushki S (2009) Investigating coping patterns and personality traits of adolescents and youths who use glass. Thesis of general psychology, Islamic Azad University, Science and Research Branch
- Lim SH, Akbar M, Wickersham JA, Kamarulzaman A, Altice FL (2018) The management of methamphetamine use in sexual settings among men who have sex with men in Malaysia. *Int J Drug Policy* 55:256–262
- Lincoln YS, Guba EG (1985) *Naturalistic inquiry*. Sage, Los Angeles CA
- Mansourian M, Kargar M, Behnampoor N, Rahimzade H, Ghorbani M (2009) Knowledge and attitude of university students about ecstasy in Gorgan, Iran. *J Gorgan Univ Med Sci* 10(4):60–85
- Mehrjerdi ZA, Abarashi Z, Mansoori S, Deylamizadeh A, Fadardi JS, Noroozi A, Zarghami M (2013) Methamphetamine use among Iranian heroin kerack-dependent women: implications for treatment. *Int J High Risk Behav Addict* 2(1):15–21
- Miller CS, Shields AL, Campfield D, Wallace KA, Weiss RD (2007) Substance use scales of the Minnesota Multiphasic Personality Inventory: an exploration of score reliability via meta-analysis. *Educ Psychol Meas* 67(6):1052–1065
- Moasheri N, Miri M, Mashreghi MH, Eslami M (2007) A study of Birjand University students' knowledge and attitude towards taking ecstasy pills. *J Birjand Univ Med Sci* 13(4):55–61
- Moheb Ali H, Qasam A, Mardani S (2016) Measurement of the motivations leading to the use of industrial opiates (case study of caretakers in Qazvin). *J Qazvin Law Enforce Quart* 5(7):114–133
- Mohtasham Amiri Z, Khalili Mousavi A, Dostar sanayeh M, Jafari Shakib A, Poursheili Z, Mehdi Poor M (2009) The rate of ecstasy consumption in students in the border area of Guilan province. *Quart J Iranian Health Sci Res Instit* 8(4):335–341
- Nadri Far M, Raqiya F, Akbirzadeh M, Ebrahimi Tabas A (2010) A survey on knowledge, attitude and practice of student teens on ecstasy in Zahedan pre-University centers. *J Basic Principles Mental Health* 12(4):710–719
- Orkie M, Macree A, Kayyi Zaybari M (2013) The relationship of glass craving (methamphetamine) and personality characteristics in patients under methadone maintenance treatment. *J Psychiatr Clin Psychol Iran* 3(19):177–186
- Palamar JJ, Kiang MV, Storholm ED, Halkitis PN (2014) A qualitative descriptive study of perceived sexual effects of club drug use in gay and bisexual men. *Psychol Sexual* 5(2):143–160
- Pirzadeh A (2011) Students' performance in Isfahan University of Medical Sciences regarding the use of ecstasy pills based on the health belief model in 2010. *J Health Res* 7(1):1082–1089
- Polimeni A-M, Moore SM, Gruenert S (2010) MMPI-2 profiles of clients with substance dependencies accessing a therapeutic community treatment facility. *E-J Appl Psychol* 6(1):1–9
- Radfar SR, Cousins SJ, Shariatirad S, Noroozi A, Rawson RA (2016) Methamphetamine use among patients undergoing methadone maintenance treatment in Iran; a threat for harm reduction and treatment strategies: a qualitative study. *Int J High Risk Behav Addict* 5(4):e30327
- Rigi Kootesh B, Raisi M, Ziapour A (2016) Investigation of relationship between internet addict with mental health and quality sleep in students. *Acta Medica Mediterranea* 32(5):1921–1925
- Sadiq Sarvestani R (2007) *Sociology of social deviations*. Samt, Tehran
- Sahami S, Khezri Z (2013) Conceptual model of crystal abuse. *Methods Psychol Models* 4(14):107–125
- Shariatirad S, Maarefvand M, Ekhtiari H (2013) Emergence of a methamphetamine crisis in Iran. *Drug Alcohol Rev* 32(2):223–224
- Shoaa Kazemi M (2011) The relationship between emotional intelligence and recurrence of crystal consumers in Tehran. *Soc Res Quart* 10:137–151
- Shokrzadeh S (2013) Comparison of clinical, family, personality and educational factors in consumers and non-consumers of crystal. *Quart J Drug Addict Res* 7(26):53–72
- Siah Jani L, Orki M, Zare H (2014) Methamphetamine use time (crystal) and persistent attention deficit disorders in methamphetamine abusers. *J Drug Addict Res* 7(27):53–66
- Singer M (2008) Drugs and development: the global impact of drug use and trafficking on social and economic development. *Int J Drug Policy* 19(6):467–478
- Tanibuchi Y, Shimagami M, Fukami G, Sekine Y, Iyo M, Hashimoto K (2010) A case of methamphetamine use disorder treated with the antibiotic drug minocycline. *Gen Hosp Psychiatry* 32(5):559. e551–559. e559 e553
- Thu Vu NT, Maher L, Zablotska I (2015) Amphetamine-type stimulants and HIV infection among men who have sex with men: implications on HIV research and prevention from a systematic review and meta-analysis. *J Int AIDS Soc* 18(1):19273
- Trucco EM, Colder CR, Bowker JC, Wiczorek WF (2011) Interpersonal goals and susceptibility to peer influence: risk factors for intentions to initiate substance use during early adolescence. *J Early Adoles* 31(4):526–547
- Turner AK, Latkin C, Sonenstein F, Tandon SD (2011) Psychiatric disorder symptoms, substance use, and sexual risk behavior among African-American out of school youth. *Drug Alcohol Depend* 115(1–2):67–73
- van Griensven F, Thienkrua W, McNicholl J, Wimonasate W, Chaikummao S, Chonwattana W, Akarasewi P (2013) Evidence of an explosive epidemic of HIV infection in a cohort of men who have sex with men in Thailand. *Aids* 27(5):825–832
- Wilkins C, Reilly J, Rose E, Roy D, Pledger M, Lee A (2004) The socio-economic impact of amphetamine type stimulants in New Zealand. Centre for Social and Health Outcomes Research and Evaluation (SHORE) Massey University, Auckland
- Winters KC, Stinchfield RD, Henly GA (1993) Further validation of new scales measuring adolescent alcohol and other drug abuse. *J Stud Alcohol* 54(5):534–541
- Yekh Falah L, Momeni A, Torkashvand A, Jahani Hashemi H (2009) The excessive use of ecstasy and effective factors in addiction to ecstasy from the viewpoint of students of Qazvin University of Medical Sciences. *J Faculty Nursing Midwifery, Tehran Univ Med Sci* 15(2):73–80
- Zarghami M (2011) Methamphetamine has changed the profile of patients utilizing psychiatric emergency services in Iran. *Iran J Psychiatr Behav Sci* 5(1):1–5

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