

ORIGINAL ARTICLE

Attitude towards and use of ecstasy in medical university interns' based on HBM

M.H. BAGHIANIMOGHADAM, S.S. MAZLOOMY MAHMOODABAD, S. MOHAMMADI, B. BAGHIANIMOGHADAM
Shahid Sadoughi University of Yazd, The Research Center for Health Conducts and Health Promotion, Yazd, Iran

Key words

Ecstasy • Students • Knowledge • HBM

Summary

Using a self-reported questionnaire, 130 Yazd Medical University students were surveyed about their knowledge towards ecstasy and their use of ecstasy based on Health Belief Model. The age range was 18-31 years. Approximately, 23% of students had seen an ecstasy tablet, 6 (4.6%) had used ecstasy (2 female and 4 male), 4 of them lived in a dormitory and 2 were tenants. The levels of knowledge, perceived barrier and perceived benefit of students who had used ecstasy were lower than those who hadn't used ecstasy. There was a significant difference between the knowledge, perceived barrier and perceived benefit of samples and use of ecstasy ($p < 0.008$, $p < 0.003$ and $p < 0.13$, respectively). Approximately, 74% of the students were eager to know more about ecstasy and

its effects. Finally, the students were asked to select one or more item from a list of six which they considered the best way for providing young people with accurate information, and the responses (as percentages) for each source were as follows: discussion with parents: 1.5%; television programs: 64.6%; radio programs: 1.5%; talk at university: 12.3%; friends: 12.3%; newspapers/magazine articles: 7.7%. The data revealed that the knowledge of participants about ecstasy was low (mean = 27.69 ± 3.53 out of 48). The mean grade score of knowledge of males was more than females. A survey in Kerman (Iran) showed that the knowledge of general practitioners about ecstasy was lower than 50% and the knowledge of males was more than females.

Introduction

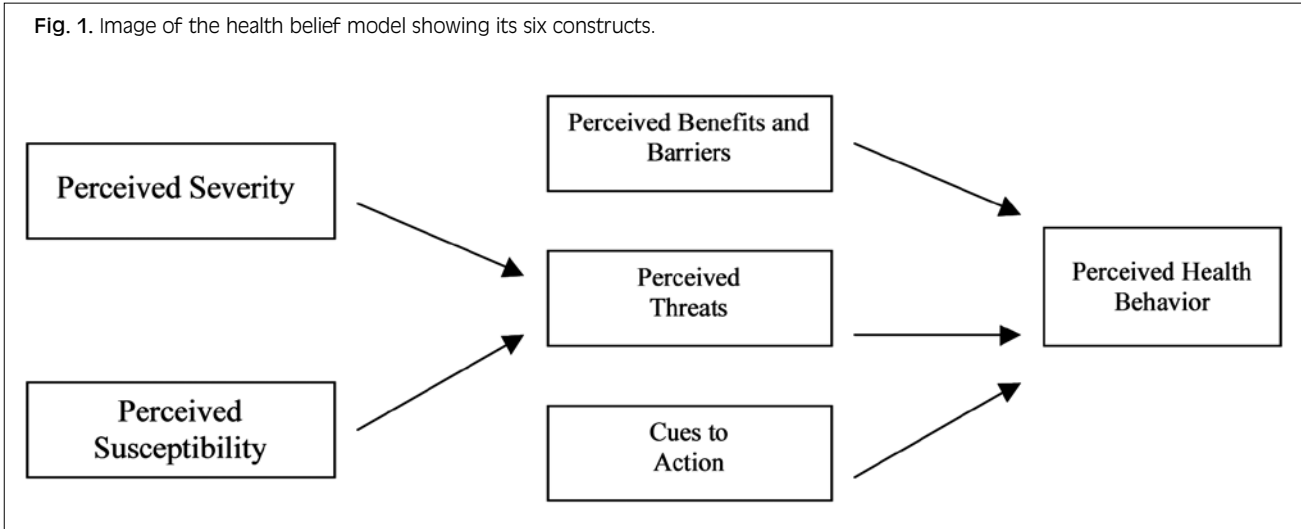
Ecstasy normally contains 3, 4 methyene dioxymethamphetamine (MDMA) that increases the level of serotonin, dopamine, and epinephrine in the central nervous system with consequent adverse effects on the cardiovascular system [1]. Ecstasy is a synthetic stimulant which has got immense popularity among teenagers and young adults in recent years [2]. Use of MDMA has been associated with sudden death and cardiovascular collapse [3]. Recent post-mortem data have suggested that MDMA may also have toxic effects on the liver and other organs, even in the absence of hyperthermia [4]. Studies have shown that after use of this type of drugs, psychological dependency is more than physical dependency [5]. Data of a study in Florida showed that there is significant relation between use of ecstasy and AIDS [6]. Concern about ecstasy and drug abuse in the world including Iran has been increasing. Many of the Iranian' adolescents use ecstasy in parties [7, 8]. Data of a study on Shiraz University students showed that in these students without considering cigarette use, the life-span of drug usage was 33.8%, while including cigarette use with drugs, it was 57.7% [9]. It is estimated that about 8.3 million people use ecstasy in the world [10]. Ecstasy contributes to the increasing fatality rate, and young people who use ecstasy may come to the attention of legal authorities. There has been little research on ecstasy use in the Islamic Republic of Iran and we urgently require baseline data in order to provide

guidance for policy-making on enforcement, treatment and education. Recent surveys showed that 4.3% of Birjand Medical University students and 4.6% of Shahid Beheshti Medical University interns had used ecstasy at some time in their lives [11, 12]. Another study reported that 11% of secondary-school students had experienced drug abuse [13]. Ecstasy prevalence among guidance and high school students in Zagreb has been reported to be 9% [14] and 76% of western Australian adolescents (13-48 years old) had used ecstasy [15]. This survey was conducted to explore attitudes towards ecstasy among students of Shahid Sadoughi Medical University of Yazd. With such information, we can plan preventive programs more effectively.

Methods

The study used a questionnaire composed of a number of multiple-choice questions. The reasons behind choosing a multiple-choice questionnaire were to limit the answering time, and to elicit more specific and objective responses. The questionnaire was carefully worded in order to make it as straightforward as possible. The subjects (130) were medical interns of Yazd Shahid Sadoughi Medical University in 2008. Special attention was paid to ensure that the students clearly understood the instructions about answering the questionnaire. They were also asked not to write their name or any other symbol indicating their identity in order to encou-

Fig. 1. Image of the health belief model showing its six constructs.



rage them to provide more open and honest answers, and they were assured about their responses being kept confidential. Regardless of whether they used ecstasy or not, the students were asked about the best ways of gaining information on ecstasy, ecstasy use and its effects.

HBM (*Health Belief Model*) was used to compare health behaviors. Data was collected by using questionnaires completed by the population under study. The questionnaire included 61 questions in eight sections; the demographic section = 8. [The questionnaire asked for information on age, sex, residence (with whom and household composition), and ecstasy use. The questionnaire also enquired about the amount of information they had obtained on ecstasy and the various sources and if they were interested in having further information, (knowledge = 24 questions), HBM = 29 (perceived susceptibility = 4, perceived severity = 9, perceived benefits = 7, perceived barriers = 4 and cues to actions = 5 questions).

HBM constructs were measured using three point Likert scales (agree = 3, thoroughly disagree = 1). The perceived susceptibility and perceived benefits (range: 4-12) were measured by summing participant states to 4 statements. Perceived severity was measured by summing participant responses to 9 statements (range 9-27) and perceived barriers were measured by summing participant responses to 7 statements (range 7-21). Perceived threat was measured by multiplication of scores of perceived susceptibility and perceived severity (range: 36-324). Cues to action was measured by summing participant responses to 5 statements (range 5-15) and the knowledge range of participants that was measured by 24 questions with range of 0-2 for every questions was 0-48.

To ensure the clarity of questionnaires, pilot testing of questionnaires was also done for coherence and consistency in 10 students who were not included in the survey. Then content and validity was established by 5 experts chosen from among the academic staff. To determine the internal reliability, a Cronbach alpha was calculated for each scale ($\alpha = 0.72$ for knowledge scale, $\alpha = 0.86$ for constructs of HBM). All data was transferred directly to SPSS software. The data was analyzed

using T- test, chi square and Pearson test, and the level of confidence interval was 0.95. The details of the HBM are given below to facilitate a better understanding of items of HBM and aim of the study.

Results

Out of 130 questionnaires distributed among the students, all were returned. Table I shows the age distribution of the students; the age range was 18-31 years. Regarding sex, 66 (51%) were male and 64 (49%) female and 51.6% of them were household composition (living with, for example, mother or father), 21.9% lived in dormitory and 26.6% were tenants. The perceived susceptibility, perceived threat, perceived barrier and perceived benefit in students who lived with family was more than others, and lowest score in these constructs was for students who were tenants, and these differences were significant ($p < 0.05$, $p < 0.017$, $p < 0.013$ and $p < 0.013$, respectively). Table II shows the distribution of mean grade scores of knowledge and constructs of HBM. The data of this table shows that the scores of perceived severity is more than other constructs of HBM and the least scores were for cues to action. There was a significant difference between the four constructs of HBM (perceived severity, perceived threat, perceived barrier and perceived benefits) and status of composition (Tab. III). The mean grade score of these constructs in students who lived with their families was more than students who

Tab. I. Age distribution of respondents.

Age group (years)	N.	%
24-25	46	35.4
26-27	72	55.4
28-29	8	6.2
30-31	2	1.5
32-33	2	1.5
Total	130	100

Tab. II. Distribution of mean grade score of constructs of HBM.

Constructs of HBM	Mean	SD	Scores	Percent of acquired score
Perceived susceptibility	10.06	1.7	4-12	88
Perceived severity	24.75	2.7	9-27	91.66
Perceived threat	134.49	28.8	36-324	41.5
Perceived benefits	10.36	1.7	4-12	86
Perceived barriers	19.54	2.04	7-21	90
Cues to action	1.6	0.8	5-15	32
Knowledge	17.69	3.5	0-48	57.68

Tab. III. Distribution of mean grade score of constructs of HBM based composition of living.

Composition of living	In the home with family		Dormitory		Tenant		P V
	Mean	SD	Mean	SD	Mean	SD	
Perceived susceptibility	10.4	1.6	9.9	1.9	9.3	1.7	0.01
Perceived severity	25.15	2.5	24.7	2.8	23.9	2.9	0.11
Perceived threat	141.21	25.53	131.28	27.5	124.64	31.9	0.017
Perceived benefits	10.6	1.5	10.28	1.7	9.7	1.8	0.013
Perceived barriers	19.54	1.7	18.71	1.9	18.35	2.5	0.023
Cues to action	1.6	0.8	1.8	0.7	1.3	1.04	0.08
Knowledge	28.27	3.9	26.6	3.7	27.29	2.2	0.099

Tab. IV. Distribution of mean grade score of constructs of HBM based on gender.

Sex	Male		Female		Total		PV
	Mean	SD	Mean	SD	Mean	SD	
Perceived susceptibility	9.9	1.9	10.18	1.5	10.06	1.7	0.38
Perceived severity	25.1	2.3	24.6	2.9	24.75	2.7	0.09
Perceived threat	134.84	28.5	134.15	28.6	134.49	28.8	0.089
Perceived benefits	10.71	1.4	10.03	1.8	10.36	1.7	0.02
Perceived barriers	19	1.9	19.12	2.1	19.06	2.04	0.73
Cues to action	1.5	0.9	1.6	0.8	1.6	0.8	0.31
Knowledge	27.37	3.8	28	3.1	27.69	3.5	0.031

lived in dormitories or were tenants. The data showed no significant difference between the knowledge of students and their status of composition. Table IV shows the mean grade scores of constructs of HBM and gender of samples. There was a significant difference between the perceived benefit and gender. The knowledge of males and females was almost the same (mean grade score of males = 27.37 and for females = 28 out of 48).

About 23% of students had seen the tablet of ecstasy and 6 (4.6%) of them had used ecstasy (2 females and 4 males) and 4 of them lived in dormitories and 2 were tenants. The knowledge, perceived barrier and perceived benefit of students who had used ecstasy was lower than others who hadn't used ecstasy. There was a significant difference between the knowledge of participants and use of ecstasy ($p < 0.008$). There was significant difference between perceived barrier and perceived benefit of samples and use of ecstasy ($p < 0.003$ and $p < 0.13$, respectively)

Table V shows the students' sources of information about ecstasy. Approximately, 74% of the students

wanted to know more about ecstasy and its effects. Finally, the students were asked to select one or more items from a list of six which they considered the best way of providing young people with accurate information, and the responses (as percentages) for each source were as follows: discussion with parents: 1.5%; television programs: 64.6%; radio programs: 1.5%; talk at university: 12.3%; friends: 12.3%; newspapers/magazine articles: 7.7%.

Tab. V. Students' sources of information about ecstasy.

Sources	N.	%
Parents	2	1.5
university	16	12.3
Friends/acquaintances	16	12.3
Television	84	64.6
Radio	2	1.5
Newspapers and magazines	10	7.7
Total	130	100

Discussion

The survey relied on self-reported answers and because ecstasy use is illegal and socially unacceptable, the reliability and validity of such answers are matters of considerable importance. In the West, many studies of self-reported drug use suggest that such questionnaires can provide highly reliable data for research [16-18].

In a study previously conducted in the Islamic Republic of Iran, it was reported that about 4.3% of students had used ecstasy at least once in their life [11], which is lower than that of the current study. On the other hand, according to a study done by Johnston et al. [19], dealing with ecstasy use, about 7% of students had used ecstasy in 2001, that reduced to 2% in 2003. As the result of a survey that was done by Norgard et al. [20], the ecstasy use in students reduced from 9% in 2001 to 7% in 2002, and 4% in 2003. The most important reason for reduction of use of ecstasy was increase in knowledge levels.

Of the 6 students who had used ecstasy, 2 of them were tenants and 4 lived in dormitories. None of the students who lived with their families had used ecstasy. This result is in accordance with the results of a study that was previously conducted in the Islamic Republic of Iran [11]. Mean grade score of all of the constructs of HBM in students who lived with their parents was more than students who were tenants or lived in dormitories. A prior study in the Islamic Republic of Iran also showed that most of the students generally used drugs with friends or at parties [13], and in contrast to the study of Agahi and Spencer [21], the individuals were exposed to more peer models of drug use rather than adult family members. Also, a prior study in the Islamic Republic of Iran showed that exposure to drugs at the university influenced drug use more than parental influence [13]. This may indicate a major change during the past few years in this area in the Islamic Republic of Iran. In this regard, the findings of the current study concur with some studies in the West [22-27].

These results show that one of the best ways for preventing the use of ecstasy in students is living with the family.

It is shown that the percentage of acquired score in cues to action and perceived threat of participants as two constructs of HBM was low (32% and 41.5%, respectively). We can say that they don't have a good leader and another study claimed that increase of perceived threat could prevent and control brucellosis [28]. A survey conducted by Vickie reported that amputation of those

diabetic patients with low perceived threat was more than others [29].

The data revealed that the knowledge of participants about ecstasy was low (mean = 27.69 ± 3.53 out of 48). The mean grade score of knowledge of males was more than females. A survey in Kerman (Iran) showed that the knowledge of general practitioners about ecstasy was lower than 50% and the knowledge of males was more than females [30]. This is in accordance with a survey in students of Birjand University [11] and a survey in intern students of Shahid Beheshti [12] Medical University that showed that the knowledge of students about ecstasy was low. In these two surveys, the knowledge of males was more than females. Our results were not in accordance with the results of a study in Arak city [31] students in which the knowledge of females was more than males. Most of the information about ecstasy was obtained from television programs. In all, 64.6% of the students showed an interest in having further information about drugs and their effects. They reported that television was the best way to obtain information. An earlier study also showed that students were interested in drug education programs [32]. Hurd et al. reported that a curriculum-based program focused only on smoking resulted in a significant reduction in smoking [33]. Television has also been reported to be an important source of information about drugs [34].

Devising an educational program to change attitudes needs to take into account the individual's baseline of beliefs about ecstasy as gained by his/her social experience [35]. Agahi and Spencer suggested that preventive programs should target individuals' characteristics [21]. Gerevich and Bacskai showed that beliefs were one of the most important protective factors against drug use [36].

A few comments about the limitation of this study must be made. First of all, some questions undoubtedly failed to elicit complete and/or precise data, even though the students' appended comments suggest the survey was taken seriously. Secondly, in spite of explaining the confidentiality, it is possible that some of the students did not answer all the questions accurately because ecstasy use is socially and legally prohibited in the Islamic Republic of Iran. Thirdly, the subjects were only Yazd Medical University students and therefore generalization of the results may not be acceptable. Finally, the study was cross-sectional and the subjects were not followed up. Larger studies at the community level must be carried out to obtain a more representative picture of drug abuse in the Islamic Republic of Iran.

References

- [1] Cami J, Farre M, Mas M, Roset PN, Poudevia S, Mas A, et al. *Human pharmacology of 3,4- methylenedioxymethamphetamine (ecstasy): psychomotor performance and subjective effects.* J Clin Psychopharmacol 2000;20:45-66.
- [2] Frishman WH, Del Vecchio A, Sanal S, Ismail A. *Cardiovascular manifestation of substance abuse.* Heart Dis 2003;5:253-71.
- [3] Hong R, Matsuyama E, Nur K. *Cardiomyopathy associated with the smoking of crystal merhamhetamine.* JAMA 1991;256:1152-4.
- [4] Milroy MC, Clark JC, Forrest ARW. *Pathology of deaths associated with ecstasy and eve misue.* J Clin Pathol 1996;49:149-53.
- [5] Solowij N, Hall W. *Recreational MDMA use in Sydney: a profile of "Ecstasy" users and their experiences with the drug.* Br J Addict 1992;87:1161-72.

- [6] Kurtz SP. *Post – circuit blues: Motivations and consequences of crystal meth use among gay men in Miami*. AIDS Behav 2005;9:36-72.
- [7] Fiz Zidah. *Abuse drug, ecstasy, the new sport drug*. Journal of Behzisty Organization 2002;1:135-44.
- [8] Mokri A. *Brief overview of the status of drug abuse in Iran*. Arch Iranian Med 2002;5:184-90.
- [9] Ghanizadeh A. *Shiraz University students' attitude towards drugs: an exploratory study*. East Mediterr Health J 2001;7:460-2.
- [10] Gross SR, Barrett SP, Shestowsky JS, Pihl RO. *Ecstasy and drug consumption patterns: a Canadian rave population study*. Can J Psychiatry 2002;42:546-51.
- [11] Moasheri N, Miri M, Moshrefi Moghadam H, Eslami SM. *The rate of knowledge and attitude of Birjand Medical University students to ecstasy use*. J Medical University of Birjand 2006;13:55-61.
- [12] Hossianian Moghadam H, Farnaghi F, Sargame S, Zirakzadah H. *The rate of knowledge of Shaheed Beheshti Medical University. Intern students about ecstasy*. Journal of Legal Medical 2005;11:128-31.
- [13] Merchant NM, Pournadeali E, Zimmer SP, Ronaghy HA. *Factors related to drug abuse among Iranian university students*. Pahlavi Med J 1976;7:516-28.
- [14] Ljubotinal D, Galic J, Jukic V. *Prevalence and risk factors of substance use among urban adolescent: questionnaire study*. Croat Med J 2004;45:188-98.
- [15] Lenton S, Boys A, Norcross N, Rave S. *Drugs and experience: Drug use by a sample of people who attend raves in western Australia*. Addiction 1997;92:1327-37.
- [16] Barnea Z, Rahav G, Teichman M. *The reliability and consistency of self-report on substance use in a longitudinal study*. Br J Addict 1987;82:891-8.
- [17] Cooper AM, Sobell BM, Sobell LC, Maisto SA. *Validity of alcoholics' self-reports: duration data*. Int J Addict 1981;16:401-6.
- [18] Winters KC, Stinchfield RD, Henly GA, Schwartz RH. *Validity of adolescent self-report of alcohol and other drug involvement*. Int J Addict 1990-1991;25:1379-95.
- [19] Johnston LD, O'Malley PM, Bachman JG. *Monitoring the future national survey result on drug abuse*. St. Louis: Mosby 2004.
- [20] Norgard LS, Laursen MK, Lassen S. *Knowledge, attitude, behavior and polydrug use among ecstasy user a London study*. J Soc Adm Pharm 2001;18:51-8.
- [21] Agahi C, Spencer C. *Patterns of drug use among secondary school children in post-revolutionary Iran*. Drug Alcohol Depend 1982;9:235-42.
- [22] Fraser M. *Family, school, and peer correlates of adolescent drug use*. Soc Serv Rev 1984;58:434-47.
- [23] Pruitt BE. *Peer influence and drug use among adolescents in rural area*. J Drug Educ 1991;21:1-11.
- [24] Tolone WL, Dermott D. *Some correlates of drug use among high school youth in Midwestern rural community*. Int J Addict 1975;10:761-77.
- [25] Valliant PM. *Personality, peer influence and use of alcohol and drugs by first-year university students*. Psychological Reports 1995;77:401-2.
- [26] Wang M, Fitzhugh E, Westerfield R, Eddy J. *Family and peer influences on smoking behavior among American adolescents: an age trend*. Int J Adolesc Med Health 1995;16:200-3.
- [27] Williams JG, Covington CJ. *Predictors of cigarette smoking among adolescents*. Psychological Reports 1997;80:481-2.
- [28] Ghofranipour F. *Use of health belief model in prevention of brucellosis in shahre kord city in Iran*. Journal of Daneshvar 1997;15:23-8.
- [29] Driver VR, Madsen J, Goodman RA. *Reducing amputation rates in patients with diabetes at a military medical center*. Diabetes Care 2005;28:248-253.
- [30] Mozafari SH, Ziaaldini H, Nakhaei N, Fahimi R. *Knowledge of general practitioners about ecstasy. A tesis of General physician in Kerman medical university Iran*. 2003.
- [31] Khosravi SH, Gahani F, Gzerani N, Esrhrati B, Moghimi M. *Determine the knowledge and attitude of Medical University students of Arak about ecstasy based on HBM*. Journal of Arak Medical University 2007;10:1-7.
- [32] Jensen M. *Students' desire for a university drug education program*. J Drug Educ 1989;19:231-44.
- [33] Hurd PD, Johnson CA, Pechacek T, Peter Bast L, Jacobs DR, Luepker RV. *Prevention of cigarette smoking in seventh grade students*. J Behav Med 1980;3:15-28.
- [34] Wright JD, Pearl L. *Knowledge and experience of young people regarding drug abuse between 1969 and 1979*. BMJ 1981;282:793-6.
- [35] Spencer C, Agahi C. *Drugs and Iran after the Islamic Revolution: prophesying the next quarter century*. Int J Addict 1990;25:171-9.
- [36] Gerevich J, Bacskai E. *Protective and risk predictors in the development of drug use*. J Drug Educ 1996;26:25-38.

■ Received on July 9, 2009. Accepted on October 9, 2009.

■ Correspondence: S.S. Mazloomi MahmoodAbad, Daneshjo Bolv. School of Health in Shahid Sadoughi University of Medical Sciences, Department of Health Education, Yazd, Iran - E-mail: Mazloomi_S@Yahoo.com