

# Is Web-Based Education Effective in Reducing Belief Toward Drug Abuse Among College Students?

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**Background:** Addiction is considered a basic structural problem in modern society, and seems to reach an epidemic scale in the last decades. Choosing a method to fulfill the intervention is an important issue to conduct educational interventions to prevent addictive behaviors. In this regard, web-based education has been widely used to introduce preventive programs to risky behaviors during recent years.

**Objectives:** The aim of the present study was to investigate the impact of web-based education intervention to decrease positive beliefs encouraging drug abuse among male medical college students.

**Patients and Methods:** This was a prospective-retrospective intervention study that was conducted among 75 male students in Kermanshah University of Medical Sciences, Kermanshah, Iran, during 2014. t-test was used for the statistical analysis.

**Results:** Our findings indicated that the belief toward drug abuse was significantly reduced after education ( $P = 0.003$ ). In addition, compared pre and post-intervention scores on survey items showed a significant reduction in enjoyment, improve energy, attraction, higher strength, and higher self-esteem items after education ( $P < 0.05$ ), whereas there was no significant reduction in excitement, relaxation, improved mental ability and forgetting problems after education ( $P > 0.05$ ).

**Conclusions:** Our findings showed that designing and implementing web-based educational intervention could be effective to reduce the positive beliefs toward drug abuse among college students.

**Keywords:** Education; Addictive Behavior; Beliefs

## 1. Background

Addiction is considered as a fundamental problem in our modern society, and seems to have reached an epidemic proportion during the last few decades. Recently, over one thousand kinds of drugs, sedative and irritant substances have been recognized, which are administered through eating, smoking, injecting and inhalation (1). Unfortunately, statistics published by the World Health Organization reported the increase of drug abuse among adults (2). Drug abuse has been shown to lead to recurrent occupational, social and regulatory problems. It is a major health, treatment and social problem, which most societies are currently facing in various degrees, although developing countries seem to face a higher danger (3). In this regard, studies showed that the prevalence of psychological problems among students before being accepted in universities is similar to their peers in society, although it increases due to greater stress later and paves the way to their drug abuse (4). Studies showed that the increasing rate of drug abuse could create risk factors for health problems, such

as cardiovascular diseases and cancers, cognitive and mental damage, mood disorders, severe damage to body and even death, in addition to social problems, like delinquency, problems with interpersonal relationships, etc. (5). According to statistics, drug abuse is responsible for the death of more than 26 million people each year, while it is predicted to increase to 40 million during the next 40 years, and one third of this number will be found in developing countries (6). These facts emphasize on the importance of conducting health interventions, while studies of the field suggested education as one of the most effective methods to prevent drug abuse (7). To address this issue, the WHO introduced education as a basis to prevent and also cure people with social disruptions. It has been stated that education results in permanent changes in individuals' attitude and function and, therefore, their lifestyles (4). On the other hand, designing and developing efficient preventive programs requires comprehensive understanding of the phenomenon and its relative factors (8). Among this,

attitude is one of the factors that multiple studies report as being effective in avoiding the use of drugs. Botvin and Griffin showed that individuals who have a positive attitude to use drugs are more likely to be recognized as drug users (9). Attitude is a functional concept in social psychology. It was introduced in the 1950s and is considered as one of the most important concepts in social psychology. Attitude is defined as the combination of recognition, feelings and preparation to act for a given item. It stems from an individual's positive or negative beliefs on doing a certain behavior, which are called behavioral beliefs (10, 11). On the other hand, choosing a method to fulfill the intervention is an important issue on which to conduct educational interventions. In this regard, web-based education has been widely used to introduce preventive programs to risky behaviors, during recent years (12-21).

## 2. Objectives

Therefore, considering the importance of the issue, the present study aims to investigate web-based education intervention to decrease positive beliefs encouraging drug abuse among male medical college students.

## 3. Patients and Methods

### 3.1. Participants and Procedure

This was a before and after study to implement a web based health education intervention to reduce positive belief about drug abuse among medical college students. This study was conducted among 75 male students in Kermanshah University of Medical Sciences, Kermanshah, Iran, during 2014. Furthermore, our study was conducted with approval from the institutional review board of Kermanshah University of Medical Sciences, Kermanshah, Iran. Informed assent and consent were obtained from participants. Having the official license from the research deputy of Kermanshah University of Medical Science, Kermanshah, Iran, completed questionnaires were collected through an announcement to register in the program among freshman and sophomore male students. Before conducting the program, questionnaires of background information and beliefs relative to drug abuse were sent in e-mails to the participants and, after which a planned educational program was delivered to them. One month after fulfilling the intervention, data was again gathered from the participants, accordingly.

### 3.2. Measures

The questionnaire used in the present study included two parts.

#### 3.2.1. Demographic Characteristics and History of Drug Abuse

The first part of the questionnaire was designed to back-ground information of the participants and, also, their his-

tory on drug abuse during the last month before conducting the program. Demographic information, including age (years), marital status (married, single), parent's educational status (primary school, secondary school, high school diploma, and academic education), has a friend who drug abuser (yes, no), has a family who are abusers (yes, no), live in dormitory (yes, no), and parents' divorce (yes, no), was evaluated in this part.

#### 3.2.2. Beliefs Toward Drug Abuse

The second part investigated participants' beliefs towards drug abuse. Attitude questionnaire toward drug abuse included nine items, which were designed based on standard attitude questionnaires to drug abuse (7, 22). The attitude item, including enjoy, excitement, improve energy, attraction, relaxing, higher strength, higher self-esteem, improve mental ability, forgetting problems, was standardized to a seven point Likert scale, ranging from 1 to 7. A higher score indicated a more positive attitude toward drug abuse. Cronbach's alpha coefficient of the questionnaire was determined to be 0.93, in our study.

### 3.3. Procedure

Planned programs included two slides of power point items on drug abuse consequences and wrong beliefs of it, and a 3 minutes educational clip, challenging the positive beliefs to use drugs, which was sent to the participants, and an educational booklet introducing the common consequences of drug abuse. All educational content was available to participants on the online learning university site. Also, all designed content was sent to participants in four separate e-mails at every two weeks. To make sure that the e-mails were delivered to the participants, the research team asked to reply the e-mail and report the delivery. Also, if two e-mails were not replied by the participants, they were omitted from the final evaluation. In other words, not replying to two e-mails was considered an exclusion criterion. All participants had the chance to ask their questions through sending private e-mails. The research team was in charge to answer the possible questions.

## 4. Results

Among 75 participants of the study, 15 were omitted from the study due to avoiding replying to two emails or not completing the questionnaires (response rate was 84%). The mean age of respondents was 18.71 years [95% CI: 18.53 - 18.89], and ranged from 18 to 21 years. Three quarters (75%) of participants were freshman students, while 25 % were in their second year of studies. All participants were single. As it is shown in Table 1, the average response for positive beliefs toward drug abuse was 15.88, which decreased to 12.33 after intervention ( $P < 0.05$ ). In addition, result from analyzing items of positive encouraging beliefs on drug abuse showed that educational intervention had no meaningful effect on items such as excitement, relaxing, higher mental ability and forgetting the problems (Table 1).

**Table 1.** Differences Between Pre and Post-Intervention Scores on Survey Items

Items	Before Intervention	After Intervention	Difference	P Value
Enjoy	1.75 (1.31)	1.26 (0.54)	- 0.49	0.010
Excitement	1.76 (1.14)	1.43 (0.76)	- 0.33	0.063
Improve Energy	1.78 (1.32)	1.31 (0.74)	- 0.47	0.020
Attraction	1.68 (1.11)	1.23 (0.49)	- 0.45	0.005
Relaxing	1.61 (0.90)	1.41 (0.74)	- 0.20	0.181
Higher Strength	1.71 (1.16)	1.31 (0.62)	- 0.40	0.021
Higher Self Esteem	1.96 (1.50)	1.48 (0.91)	- 0.48	0.036
Improve Mental Ability	1.85 (1.52)	1.46 (0.87)	- 0.39	0.094
Forgetting Problems	1.75 (1.67)	1.40 (0.88)	- 0.35	0.155
<b>Total Beliefs toward Drug Abuse</b>	<b>15.88 (8.04)</b>	<b>12.33 (4.28)</b>	<b>-3.55</b>	<b>0.003</b>

## 5. Discussion

The present study aimed to determine the effectiveness of web-based educational intervention on decreasing positive beliefs toward drug abuse. Our findings showed the educational intervention was significantly effective to reduce positive belief toward drug abuse. Due to flexibility and availability of web-based education, it has been considered to be more practical in comparison to face to face and classic training (23). As it was mentioned earlier, efficiency of web-based education in preventive interventions to risky behaviors, such as drug abuse, was reported by several studies (12-21). On the effect of web-based education, Doumas et al. suggested that their web-based education intervention could exert meaningful effect on beliefs and expectations of drinking alcohol among students (24). In this regard, it should be mentioned that learning planners believe that learners would be successful at dominance level if they would have the necessary time for learning. Therefore, time is vital in learning and the educational content should be available to learners all the time and it should also be possible to have it available at home, and that way one can access the content based on their schedule, not the schedule planned by organizations (23). It should also be mentioned that several studies reported the effective role of decreasing encouraging beliefs on drug abuse prevention (25, 26). Furthermore, it has been noted that college students have more accessibility to the internet and studies showed their active use of the internet (27). Therefore, it seems that web-based education could be an efficient solution to conduct education intervention. Also, results showed that, although education intervention was generally effective to decrease the encouraging beliefs on drug abuse among college students, it did not show meaningful decrease of items such as excitement, relaxing, higher mental ability and forgetting the problems after fulfilling the intervention. Delforterie et al. showed that the more positive the beliefs to drug abuse, the higher the possibility to use drugs (28). Also, Stephens et al. suggested that beliefs could be related to the pro-

cess of decision making skills against drug use (29). It seems that more emphasis should be put on positive beliefs, such as excitement, relaxing, higher mental ability and forgetting the problems, while planning preventive educational intervention to drug abuse, to have better results. Generally, results from the present study showed the positive effect of making use of web-based education intervention to offer training content on decreasing encouraging beliefs to drug abuse among college students. Due to low the expenses of this type of education and its availability to participants, it is suggested to make use of web-based interventions, especially among students attending universities.

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## Authors' Contributions

Farzad Jalilian, Mehdi Mirzaei Alavijeh, and Ahmad Ali Eslami developed the original idea, the protocol, study design and data analyzed. Behzad Karami Matin and Mohammad Ahmadpanah participated in designing the educational program. Mari Ataee participated in writing the manuscript. All authors provided comments and approved the final manuscript. The authors declare that they have no conflict of interest.

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