Health Education and Health Promotion (HEHP) (2014) Vol. 2 (1): (41-52)

Effectiveness of Drug Abuse Preventative Intervention among Iranian Medical College Students Based on the Theory of Planned Behavior

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Received: 29/09/2013 Accepted: 03/02/2015

Abstract

Aims: Drug abuse among college students continues as a major public-health concern. Theory-driven research is necessary to address and find causes. The current research investigates the utility of Theory of Planned Behavior (TPB) in designing and implementing a drug abuse educational prevention program among medical college students.

Methods: This quasi-experimental study was conducted among 120 college students in two groups: experimental and control, who were randomly enrolled at the baseline survey. We used a questionnaire, which included three sections of background data (11 questions), knowledge about the side effects of drug abuse questionnaire (16 questions), and TPB-based questionnaire (20 questions). Educational planning was based on active learning with using group discussion, printed leaflet, and audio-visual CD. The participants were followed up after 2-month intervention. Data were analyzed by the SPSS software version 16 using appropriate statistical tests such as stepwise multiple logistic regressions and t-test.

Findings: Almost 6.7% of the participants had a history of drug abuse. The three predictors of 1) attitude, 2) subjective norms, and 3) perceived behavioral control accounted for 48 % of the variation in the outcome measure of the intention to drug abuse. There was a significant improvement in average response for knowledge about the side effects of drug abuse and TPB variables among the students who were under intervention ($P < 0.05$).

Conclusions: Designing intervention to reduce positive attitude and subjective norms toward drug abuse among college students could be useful to substance abuse prevention.

Keywords: Prevention, Addiction, Drug abuse, Student, Theory of Planned Behavior

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Introduction

College students (aged 18-25 years) are the important and largest group that represents a heterogeneous population [1]. They are in a transitional stage from the adolescence to becoming adults [2], and acquiring new experience in new environment and accepting its influences [3-5]. There is a considerable variation in the rate of drug abuse among them [1]. According to the Reed et al., there are high rates of using alcohol and other drugs among college students [6]. Due to the use of illegal drugs, they accrued different experiences such as academic failure, suicide attempts [7], unprotected sex, involvement with campus security and police [8], and assault and injuries [9]. They are exposed to a great deal of misinformation and misconceptions about the use and impact of drugs such as performance enhancers, beneficial to pass the final examinations, and overcoming the intense academic pressure's situation; all these are created due to the popularity of enticing myths [10]. An important place to try to prevent drug abuse is the college setting [11-16]. Theory-driven researches are needed to address these issues of drug abuse. One promising theory is the Theory of Planned Behavior (TPB) [17], which was developed from the Theory of Reasoned Action (TRA) [18, 19]. Proponents of TRA sought to understand behaviors by looking at the relationship between attitudes, subjective norms, and behavioral intentions; a measure of the likelihood that a person will engage in a given behavior may be termed behavioral intention [18]. Attitudes and subjective norms were posited as the determinants of intention. It was then presumed that intention directly influences behavior. However, many researchers have suggested that TRA is insufficient when people believe they have little control over their decisions [17]. Thus, TPB was emerged by applying exactly the same framework as TRA, but with the addition of perceived behavior control as a third determinant of intentions. Therefore, we used the educational program prepared based on the framework of TPB to educate the college students about prevention of drug abuse; thereby we evaluated the effectiveness of the educational program.

Methods

Participants

This study was conducted among 120 college students in Yazd University of Medical Sciences during 2011–2012. 60 participants in the intervention group and 60 as the control group were randomly enrolled at the baseline survey, and all were followed up for 2-month after intervention. This study was conducted with the approval of Yazd University of Medical Sciences' Institutional Review Board.

Informed consent was obtained from the participants. Only the subjects who were student in Yazd University of Medical Sciences, and had no mental problems were eligible to participate in the study. In addition, unwillingness collaboration with the research team was considered as exclusion criterion.

Measures

Validity of the questionnaire was approved based on the comments of the expert group; furthermore, prior to conducting the main project, a pilot study was carried out. Initially, the relevant questionnaires were administered to 30 college students who were similar to the participants in the main study to obtain feedback about the clarity, length comprehensiveness, time of completion, and internal reliability of the measures. Moreover, the participants were instructed about how to fill questionnaires before gathering the information.

Demographics

Demographic data included age (years), marital status (single or married), living in dormitory (Yes or No), faculty name (Health, Nursing, Paramedical, Medical, Dentist), having friends with the history of smoking (Yes or No), having friends with the history of drug use (Yes or No), history of parent's divorce (Yes or No), history of smoking (Yes or No), history of alcohol use (Yes or No), and history of unprotected sex (Yes or No).

TPB Theoretical Variables

The TPB scale was designed based on a standard questionnaire [23-24], and included 20 items under four constructs: (a) attitude; (b) subjective norms; (c) perceived behavioral control; and (d) behavioral intention. Ten items measured the attitudes towards drug use (e.g., if I use drug, it would help me to relax). There were four items, which measured the subjective norms towards drug use (e.g., if I use drug, my best friends will confirm it). Two items measured the perceived behavioral control not to use drug (e.g., i believe that I can manage myself against pressure to drug use). The behavioral intention to drug use was measured by four items (e.g., I intend to use drug in the next months). A 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), was used to measure reliability coefficients for the TPB constructs. The results showed the internal consistency of attitude toward drug use (α=0.83), subjective norms toward drug use (α=0.75), perceived behavior control not to use drug (α=0.81), and behavioral intention toward drug use (α=0.89).

Knowledge about the Side Effects of Drug Abuse

The participants' knowledge about side effects of drug abuse was measured by 16-item scale.

Examples of the items are: 1) the opium use increased respiratory disorders, and 2) decrease in heart rate is one of the side effects of Marijuana use. Responses to the items were either yes /no, or I don't know. The knowledge score was computed by totaling the number of correct answers for all of the 16 items. The reliability coefficient for the knowledge scale was 0.62, suggesting that the internal consistency was low.

Drug Use

Drug use among the college students was evaluated by asking them to answer the question: ''Have you ever had a history of drug use?''; for which the response category was "yes" or "no".

Procedure

This was a quasi-experimental study to implement a drug abuse educational prevention program among a sample of college students in Yazd University of Medical Sciences. After obtaining informed consent, the participants were enrolled in the study. A 47-item, structured questionnaire with the aforementioned measures was distributed among the students to complete. The intervention aimed to provide the participants with refusal skills against drug use, and increase their knowledge about the side effects of drug use. The intervention activities included using group discussion, printed leaflet, and audio-visual CD. The educational program included four 1-hour weekly teaching sessions by using group discussion, printed leaflet, and audio-visual CD. The first teaching unit acquainted the students with the addiction history and epidemiology. The main topics discussed during the second teaching unit were type of drug and complications of drug use. The main topics discussed during the third and four teaching units were refusal skills against drug use. Instructional design was based on active learning through encouraging the students to actively participate in educational programs.

Statistical Analysis

Data were analyzed by the SPSS software (version 16) using appropriate statistical tests. Stepwise multiple logistic regression analysis was performed to explain the variation in the psychoactive drug use on the basis of TPB variables. In addition, Cross-tabulation and T-test were employed to determine comparability of the intervention with the control group.

Results

The participants' ages ranged from 18 to 35 years, with the mean (SD) of 23.49 (SD: 3.27) years. 30.8% (37/120) of the participants were younger than 22 years and 5% (6/120) were

older than 29 years. Vast majority of the participants (45%) were 22-25 years. At baseline, 8 (6.7%) out of the respondents reported having the history of drug use. Nearly 7.5 % and 14.2% of the respondents reported that their friends were drug and smoke users, respectively. 8.3% (10/120) and 5.8% (7/120) of the participants were cigarette smokers and alcohol drinkers, respectively. 3.3% (4/120) also reported that their parents were divorced. Moreover, 2.5% reported having unsafe sexual behavior (without using condoms, or having multiple sexual partners).

More details of the demographic characteristics of the participants in the intervention and control groups are shown in Table 1.

Table 1: Pre-test equivalency results for the intervention and control groups

Variable		Intervention Group N(%) mean(SD)	Control Group N (%) mean (SD)	P-value
Age		23.03(3.03)	23.95(3.47)	0. 126
Sex	Male	17(53.1%)	15(46.9%)	0.680
	Female	43(48.9%)	45(51.1%)	
Live in dormitory	Yes	41(46.6%)	47(53.4%)	0.215
	No	19(59.4%)	13(40.6%)	
Marital status	Yes	58(50.9%)	56(49.1%)	0.402
	No	2(33.3%)	4(66.7%)	
Parents divers	Yes	1(25%)	3(75%)	0.309
	No	59(50.9%)	57(49.1%)	
Faculty	Health	29(52.7%)	26(47.3%)	0.566
	Paramedical	14(40.9)	9(39.1%)	
	Medical	12(40%)	18(60%)	
	Dentist	3(37.5%)	5(62.5%)	
	Nurse	2(50%)	2(50%)	
Having smoke user friends	Yes	52(50.5%)	51(49.5%)	0.793
	No	8(41.7%)	9(52.9%)	
Having drug user friends	Yes	58(52.3%)	53(47.7%)	0.083
	No	2(22.2%)	7(77.8%)	
History of smoking	Yes	3(30%)	7(70%)	0.186
	No	57(51.8%)	53(48.2%)	
History of alcohol use	Yes	2(28.6%)	5(71.4%)	0.243
	No	58(51.3%)	55(48.7)	
History of unprotected sex	Yes	2(66.7%)	1(33.3%)	0.559
	No	58(49.6%)	59(50.4%)	

As can be seen in Table 2, linear regression analysis was performed to explain the variation in intention to drug use. The procedure was stopped on the 2rd step and the best model was selected. Among the TPB constructs, attitudes and subjective norms toward drug use were accounted for 48% of the variation in intention to drug use [F (3, 247) =36.624, p<.001].

Table 3 indicates that there are significant improvements in average response for the TPB

variables among the students who were under intervention.

Table 2: Predictors of intention to drug use among the college students

Variable	B	SE B	B	t	p-value
Attitude	0.194	0.049	0.357	3.924	0.000
Subjective norms	0.535	0.121	0.402	4.427	0.000

Adjusted R squared = 0.48, F (3, 247) = 36.624, p < .001.

Table 3: Average responses for TPB variables about drug abuse before and after the educational program

Independent variables	Before Intervention Mean (±SD)	After Intervention Mean (±SD)	P-value
Knowledge about the side effects of drug abuse			
Intervention group	4.21 (3.41)	6.46 (3.12)	0.000
Control group	4.78 (3.08)	4.93 (3.01)	0.129
Attitude toward drug abuse			
Intervention group	25.58 (5.29)	22.45 (5.44)	0.001
Control group	24.01 (6.86)	23.65 (5.96)	0.345
Subjective norms toward drug abuse			
Intervention group	11.25 (5.29)	10.31 (2.73)	0.009
Control group	10.96 (2.89)	10.61 (2.55)	0.152
Perceived behavior control not to drug abuse			
Intervention group	6.98 (1.78)	7.91 (1.15)	0.000
Control group	6.71 (1.94)	6.55 (1.85)	0.248
Behavioral intention toward drug abuse			
Intervention group	10.75 (3.22)	8.76 (2.29)	0.000
Control group	11.16 (3.48)	11.38 (3.59)	0.118

Table 4: Drug use before and after intervention in the two groups

	Before Intervention n (%)		After Intervention n (%)	
Drug use	Yes	No	Yes	No
Intervention group	3(37.5%)	57(50.9%)	1(16.7%)	59(51.8%)
Control group	5(62.5%)	55(49.1%)	5(83.3%)	55(48.2%)
P-value	$\chi^2 = 0.536, P_{value} = 0.464$		$\chi^2 = 2.807, P_{value} = 0.094$	

Tables 4 shows drug use status before and after training in the two groups. The results showed that the percent of drug use in the intervention group was decreased after intervention, but this decrease was not significant.

Discussion & Conclusion

The aim of this study was to assess the effectiveness of a drug-abuse prevention program between the Iranian medical college students in Yazd University of Medical Sciences. The theory of planned behavior (TPB) was conducted as the theoretical framework to assess the educational needs of male participants. Adolescents and youth, because of the physical and psychological

special characteristics, have the highest risk course tendency for substance use. Even though the duration of the educational intervention in this study was short, significant improvements were found after manipulation. Analysis of the baseline and 2-months follow up clearly demonstrated significant effects of the intervention on the participants' attitude, subjective norms, perceived behavioral control, intention, as well as their knowledge about the side effects of drug abuse.

The results showed improving knowledge about the side effects of drug abuse among the intervention group. In this regard, Miovesky [20], Cuijpers [21], Ford [22] and Jalilian [23] showed that education programs could have a significant effect on increasing the awareness about the consequences of drug abuse. Allahverdipour et al. declared that knowledge about the side effects of drugs and improving resistance skills can protect adolescents against drug abuse [24]. Therefore, it seems that to improve knowledge might be an effective factor in implementing drug abuse prevention programs aiming to promote healthy behaviors.

Our findings showed that the applied drug abuse prevention program had a significant effect on modifying the participants' beliefs against drug abuse. These results are similar to those of other studies [25-26]. Koiso et al. [25] showed that educational program could have a significant effect on reducing attitudes toward drug abuse among the adolescents. Furthermore, Rassol [26] found the reduction of attitudes toward alcohol use among the college students after implementing the educational program.

Several studies have reported that subjective norm was an important factor for predicting drug abuse [27-31]. Gilbert et al. [27] showed implementing cognitive-behavioral education programs among students could have a significant effect on reducing their normative beliefs toward alcohol consumption, Marijuana use, and cigarette smoking. Furthermore, McAlister [28] reported similar results. According to the findings cited, it seems that drug abuse prevention programs pay special attention to subjective norms and peer pressure. It is worth noting that substance abuse behavior is learned from the society in two ways: a) by the process of modeling and emulation from friends and important people in life, and b) through individual's attitudes and beliefs [32].

Furthermore, our results showed that increase in perceived behavior control caused a significant decrease in the rate of drug abuse among the intervention group. These results are similar to those of other studies [24, 33, 34]. Allahverdipour et al., [35] noted that confidence to control one's own behavior through high self-control traits protects

individuals against drug abuse, which is similar to perceived behavioral control investigated in our study.

Additionally, this study showed that the average response to behavioral intention toward drug abuse was 10.75, which was reduced to 8.76 after the intervention. In this regard, the relation between behavioral intention and high-risk behaviors has been reviewed and confirmed in several studies. For example, Gerard et al. [36] concluded that educational program can reduce alcohol use intention. Nichols [37] found that health-based education interventions could significantly reduce smoking intention in young people. In addition, Allahverdipour [24] expressed that education programs have a positive effect on behavioral intention to substance abuse prevention in an intervention group.

Concerning the efficiency of intervention, in spite of decreasing the rate of drug abuse after intervention, no significant differences were found between the intervention and control groups, and these outcomes are not consistent with similar studies [20, 38]. Non-significant reduction in drug abuse after intervention between the intervention and control group could be due to low sample size, limited resources allocated to designing comprehensive educational program, low number of training sessions, and low number of drug abusers among the participants.

Conclusion

Overall, the findings of the current study support that implementing drug abuse preventative program among college students would be effective to improve their resistance skills against drug abuse. Furthermore, our results recommend designing a drug abuse educational prevention program among the young adults, and that educational designers should focus on encouraging subjective norms and positive attitudes toward drug abuse.

Limitations

This study was subject to several limitations. First, the participants from only one university may not be representative of all Iranian college students. Second, our findings should be considered preliminary. Third, instruments designed for the specific purpose were not developed or made available at the time of the research. Fourth, we needed to identify strong psychometric scales to develop questions. Fifth, a potential limitation is that the behavioral and psychological questionnaires used in the study rely on the self-report format, which may lead to recall bias and inaccurate assessment of prior experiences. Therefore, the results may be subject to self-report bias. Finally, small sample size and small numbers for each group are among the other limitations in this research.

Acknowledgment

This article is a part of research project supported by Yazd Shahid Sadoughi University of Medical Sciences, Iran. We would like to thank Deputy of Research of Yazd University of Medical Sciences for financial support of this study.

Conflict of interest statement

The authors declare that they have no conflict of interest.

Funding

This study was funded by the Deputy of Research of Yazd Shahid Sadoughi University of Medical Sciences.

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