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Predicting the Incidence of Self-Injury in Iranian High School Students

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Abstract: There is currently limit information about self-injury among adolescent population. The aim of this study is to estimate the incidence rate of substance abuse among the sample of 10-grade male students in Tabriz city and to evaluate the associated factors. Of all grade-10 male students in Tabriz, 1785(13.7%) were randomly sampled and were assessed twice. A self-administered questionnaire with 48 questions was distributed to students in February and March, 2005. The questions aimed to obtain information on self-injury, substance abuse, smoking, self-esteem, attitude toward smoking and risk-taking behaviors as well as demographic information. After one year (February and March ,2006) another questionnaire with 10-items was distributed to those students for determine the incidence rate of self-injury. The influence of different factors on incidence of self-injury was evaluated with a logistic regression model. At the beginning of the study among 1785 students 70 (4.0%, CI 95%: 3.1-5.0) had self- injury. At the end of follow -up, 4.8% of students reported incidence of self-injury. The results of logistic regression model indicate that transition in smoking stages (OR = 2.81), incidence of alcohol drinking (OR = 2.27) and having smoker friend (OR= 1.78) were factors associated with incidence of self-injury. This study has shown higher incidence rate of self-injury and determined some of its risk factors among students. More studies about adolescent population are necessary to approve the observed results of this study and thus allow for a certain generalization of the observations.

Key words: High school student, incidence rate, self-injury, related factors

INTRODUCTION

Self-Injury (SI), also called self-mutilation or cutting, is highly stigmatized emotional disorder. SI is the repetitive, deliberate infliction of harm to ones own body. Injuries are severe enough to cause tissue damage and include cutting, carving, scratching, burning, bruising and marking (Marshall and Yazdani, 1999; Boesky, 2002). In order to devise possible methods of intervention, researchers have sought to uncover the characteristics of people who take part in this activity. This has included identifying predisposing factors and associated behaviors as well as gaining a deeper understanding of the reasons for the behavior.

There are currently no reliable estimates of the prevalence of self-injury among adolescent population. The vast majority of research on self-injury has been conducted in clinical population or using small, unrepresentative community samples. These studies generally find that cutting and other forms of self-injury are evident in approximately 20% of the clinical population (Deiter *et al*., 2000) and are linked to high levels of pathology (Brodsky *et al*., 1995; Ross and Health, 2003). The few studies that have been conducted in U.S. community samples of young adults and adolescents are limited by small convenience-based samples and vary in estimates of self-injury prevalence from 4-38 % (Briere and Gil, 1998; Favazza, 1992; Gratz *et al*., 2002; Muehlenkamp and Gutierrez, 2004).

Large studies in Britain estimate that approximately 10% of youth 11-25 years of age self-injure. A British report on the national scope of the problem documents a dramatic increase in disclosures of self-injury to national children is help lines over the 5 years before the study, noting a 65% increase in the late 2 years (Young people and self harm: A National Inquiry, 2004).

Among clinical populations, self-injury is comorbid with borderline personality disorder, eating disorders, posttraumatic stress disorder, depression, anxiety disorder and a history of abuse or trauma (Alderman, 1997; Connors, 2000; Conterio and Lader, 1998; Sansone and Levitt, 2002; Yates, 2004). In Iran we have not any information on self-injury in adolescents. The aim of this study is to estimate the prevalence of self-injury among a sample of 10 grade male students in Tabriz city (Northwest of Iran) and to evaluate the associated factors such as demographic and risk taking behaviors.

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MATERIALS AND METHODS

Out of about 13000, 10-grade students in Tabriz City 1785 students were selected by random proportional cluster sampling. During February 2005, a self-administrated questionnaire was distributed to students during an hour session of their class. The questions aimed to obtain information on self-injury, substance abuse, general risk taking behavior, friends smoking, as well as demographic information. After one year (February and March, 2006) another questionnaire with 10-items was distributed to those students for determine the incidence of self-injury.

In the beginning of the study, three measures were used to assess student's substance abuse. The first measure assessed whether the respondents had ever consumed alcoholic beverages (ever consumed alcohol coded as 1; never consumed alcohol coded as 0). The second measure combined respondent's lifetime use of illicit drugs. Any use of these substances was sufficient for that individual to be classified as having used drugs (coded as 1). No reported use was classified as never having used drugs (coded as 0). Third, respondents were asked about their smoking status. In this study respondents were classified into three stages of the smoking continuum according to Kaplan *et al.* (2001):

Never smoker: Adolescent who have never tried cigarettes, not even a few puffs.

Experimenter: Adolescent who indicated having tried or experimented with cigarette smoking, even a few puffs, but have smoked less than 100 cigarettes.

Regular smoker: Adolescent who indicated smoking 100 cigarettes or more in lifetime irrespective of current smoking status.

In order to measure general risk taking behavior, respondents were asked to respond by marking one of the choices of agreed, disagreed, or had no opinion for the statement of "I enjoy of doing things that are a little dangerous or risky." Respondents who agreed with the statement were classified as having a risky attitude (coded as 1); all others were considered as having a low-risk attitude (coded as 0).

Self-esteem was evaluated by the Persian version of Rosenberg self-esteem questionnaire. This test is a reversion of the original self-esteem scale, which was longer and harder to administer. The 10 questions are scored using a four-point scale, ranging from strongly agree (Alderman, 1997) to strongly disagree (Briere and Gilf, 1998). For example, "I feel that I have a number of good qualities" and "I take a positive attitude toward myself". The scores of this test ranging from 10 to 40, with lower scores indicating higher self-esteem. Five questions are reversed scored. Test-retest correlation of the Persian version measure in 31 students of grade-10, with 2-week interval 0.82 obtained (Cronbach alpha: 0.89).

Attitude toward smoking: Students expressed their attitude toward smoking through 6 pairs of adjectives forming semantic differential scales. Replies ranged from -2 to +2 for the following bipolar adjectives: Disagreeable-agreeable, bad-good, annoying-interesting, unpleasant-pleasant, unhealthy-healthy and disadvantageous-advantageous. Each of the 6 scales followed the statement "I think that for me, to smoke cigarettes is ...." Adding the replies to the 6 pairs of adjectives formed the attitude score. This produced a potential range of -12 to +12. The internal consistency for attitude indicated a cronbach alpha 0.85.

Principal component analysis was applied to calculate socioeconomic status by using mother's education, father's education and father's occupation. This measure graded the students into high, middle and low socioeconomic status level.

At the end of the study(after one year) students without experience of self-injury, who reported onset of self-injury during study period, considered as incidence of self-injury (coded as 1) and other students coded as 0. Logistic regression model and Chi- square test/or fisher exact test were used in statistical analysis by using CIA, Epi Info and SPSS statistical package programs.

RESULTS

The mean age of the subject was 16.3±0.87 (min 15 max 19). At the beginning of the study among 1772 students 76 (4.3 %, CI 95%: 3.4-5.3) had self- injury. Eight (10.5%) of them were carving, 4 (5.3%) burning, 9(11.8%) hitting, 27(35.5%) cutting, 7(9.2%) tattooing, 5(6.6%) skin picking and 17(22.4%) bruising. During one-year 355(19.9%) students dropout from the study and 21(1.2%) students were not answered the question about self-injury. During one year, among 1352 students without experience of self-injury, 67 students (4.9%; CI95%: 3.8-6.0) reported incidence of self-injury. The results showed that among all students who had incidence of self-injuty in this period, 35, 16, 7, 5 and 4 students had reported cutting, burning or hitting, scratching, carving and bone-breaking, respectively. Table 1 presents the incidence rate of self-injury by demographic characteristics of the adolescents. Attitude toward smoking scores (Mean±SD) in the students with incidence of self-injury was -8.69±4.75 and in the students without incidence of self-injury was-10.22±3.16 (p = 0.013).

Table 1: Incidence rate of self-injury by demographic characteristics of the adolescents

Characteristics	Incidence rate of self-injury (%)	p-value
Age		
15 years	3.5	0.797
16 years	5.0	
17 years	4.9	
18 years	5.2	
19 years	0	
Smoking status		
Nonsmoker	3.2	p<0.001
Experimenter	10.0	
Regular smoker	11.9	
General risk taking behavior		
Yes	7.8	p<0.001
No	3.5	
Number of smoker friend		
0	2.5	p<0.001
≥ 1	9.2	
Socioeconomic status		
High	3.4	0.353
Middle	4.8	
Low	6.3	
Ever use of illicit drugs		
Yes	11.5	0.122
No	4.6	
Ever use alcohol		
Yes	14.0	p<0.001
No	3.5	
Incidence of illicit drugs		
Yes	20.0	p<0.001
No	4.0	
Incidence of alcohol use		
Yes	9.7	p<0.001
No	2.9	
Progress in smoking stages		
Yes	12.3	p<0.001
No	2.9	

Table 2: Logistic regression analysis of the relationship between "Incidence of self-injury "and "risk variables"

Variables	OR	95%CI	P
Having general risk taking behavior	1.40	0.77-2.54	0.266
Higher smoking stage	1.83	0.94-3.59	0.078
Ever use of alcohol	1.76	0.84-2.91	0.127
Positive attitude toward smoking	1.02	0.91-1.07	0.751
Incidence of drug abuse	0.97	0.18-5.26	0.97
Incidence of alcohol use	2.27	1.12-4.66	0.025
Progress in smoking stages	2.81	1.52-5.19	0.001
Having smoker friend	1.78	1.04-3.27	0.046

Self-esteem scores (Mean±SD) in the students with incidence of self-injury was 18.85±5.17 and in the students without incidence of self-injury was17.95±4.47 (p = 0.113).

A logistic model was used to evaluate the relationship of general risk taking behavior, smoking stages, attitude toward smoking, ever use of alcohol, incidence of alcohol us, incidence of drug abuse, transition in smoking stages and having smoker friend on incidence of self-injury. The results of this analysis indicate that, having smoker friend (OR = 1.78), incidence of alcohol use (OR = 2.27) and progress in smoking stages (OR = 2.81) were factors associated with incidence of self-injury in students (Table 2).

DISCUSSION

The main goal of this study was to estimate the incidence rate of self-injury during one year among the sample of 10-grade male students in Tabriz city (northwestern region of Iran). We addressed gaps in literature by longitudinally assessing onset of self-injury for a younger population and examining how several personal and environmental factors may influence onset of a self-injury.

Regarding the frequencies of self-injury, their prevalence in the present study was 4.3%, which was lower than previous surveys that conducted in other countries. Depending on samples and definition of self-injury, the frequency of adolescent's self-injury varies. One survey of college students found that 12% of respondents reported engaging in self-injurious behaviors (Favazza *et al*., 1989). Ross and Heath (2003) who used a community sample (n = 444) from two different schools were found that 13.9% of the sample had engaged in self-mutilating behavior. Also studies with small convenience-based sample in U.S. vary in estimates of self-injury prevalence from 4-38% (Briere and Gil, 1998; Favazza, 1992; Gratz *et al*., 2002; Muehlenkamp and Gutierrez, 2004) and large studies in Britain estimate that approximately 10% of youth 11-25 years of age self-injure (Young people and self harm: A National Inquiry, 2004). Lower self-injury rates among adolescents in present study are mostly related to the lower mean age of participants (16.3±0.87) and lower prevalence of risk taking behaviors such as smoking, drug abuse and alcohol consumption in Iranian adolescents in comparison with other countries (Ayatollhi *et al*., 2005).

The results of present study showed that during one year 4.9% of students reported the onset of self-injury.It is seem that in this population- with lower prevalence of risk-taking behaviors- this incidence rate of self-injury is high.

In various studies it has been shown that there is a strong association between the adolescent age and risk taking behaviors (Donovan, 2004; Ayatollhi *et al*., 2005). The results of Chi square test showed that the age of students had not relationship with self-injury. The lack of age variability in this study may explain this finding.

The findings of this study like to other studies (Mohammadpoorasl *et al*., 2006; Young *et al*., 2006) showed that self-injury relates to the smoking status, use of alcohol and having smoker friend.

It is, however, important to know the limitations of the study too. First, the sample was limited to 10-grade students. Second, the study relied on self-report data. Although we went to great lengths to ensure

confidentiality and anonymity, we had no way of assessing underreporting of self-injury. The prevalence and incidence rare reported above may thus represent low estimates of the actual values. Finally, measuring of predictors was related to the beginning f the study, which could be change during the period of study.

CONCLUSION

In conclusion, this study has shown higher incidence rates of self-injury and determined some of its risk factors among students. More studies about adolescent population are necessary to approve the observed results of this study and thus allow for a certain generalization of the observations. The results also support the hypothesis that self-injury can be prevented by targeting the use of gateway drugs such as tobacco and alcohol.

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