

## SELF-POISONING SUICIDE ATTEMPTS AMONG STUDENTS IN TEHRAN, IRAN

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### SUMMARY

**Background:** This study aim was to describe the epidemiology of intentional self-poisoning among students.

**Subjects and methods:** A cross-sectional study was conducted on self-poisoned students admitted to Loghman-Hakim Hospital in Tehran, Iran. Variables studied included age, sex, substance abuse, personal history, familial history and the immediate precipitant for the suicide attempt.

**Results:** A total of 248 students (200 F and 48 M) studied. The mean age was  $16.3 \pm 1.42$  years. Self poisoning with a pharmaceutical agent was the most common attempt modality (87.5%). The most common precipitant for the suicide attempt was family conflict (54.4%), followed by romantic disappointment (29.4%). The most common psychiatric disorders were adjustment disorder (84.3%) and depression (18.1%).

**Conclusion:** The emphasis in student suicide prevention programs must be on early identification of students at risk, and appropriate treatment of episodes of psychopathology.

**Key words:** self-poisoning – suicide - students

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### INTRODUCTION

Suicide and suicidal ideation is a significant issue in many countries (Brener et al. 2000, Chun & Lee 2000, Gould et al. 2003), with suicide the third leading cause of mortality among adolescents in the U.S.A. (CDC 2004). In a large-scale epidemiologic study conducted in the U.S.A. 19% of high school students had reported suicidal ideation, 15% made a specific plan to attempt suicide, 8.8% reported a suicide attempt and 2.6% made a suicidal attempt that was serious enough to require significant medical attention (Grunbaum et al. 2002). The major method of suicide in adolescents is reported to be deliberate self-poisoning (Gunnell et al. 2005, Hawton et al. 2000, Kypri et al. 2002). Self-poisoning is a significant issue amongst the young population of Iran, a problem magnified by a demographic in which

51.4% of the population are 20 years of age or less (Islamic Republic of Iran provides fresh data, 1998). The combination of often developmentally incomplete psychological coping mechanisms with a period in which many of life's major stressors are encountered for the first time bequeaths this age group a unique psychological vulnerability. Regretfully the rate of successful suicide is quite high among them. A Korean study of adolescent students aging 11 to 19 years reported a completed suicide rate of 15.5 per 100,000 (Kim et al. 2005).

Numerous studies have examined risk factors for suicide in students. Factors previously identified include a history of suicidal behavior during the last 5 years (Reith et al. 2003), victimisation by bullying (Prinstein et al. 2000, van der Wal et al. 2003), major depressive disorder (MDD) (Kaltiala-Heino et al. 1999, Prinstein et al. 2000), cigarette use (Seydaoglu et al. 2005),

substance abuse (Gould et al. 2003, Seydaoglu et al. 2005, Trezza & Popp 2000), antisocial behavior (Brent et al. 1988, Kaltiala-Heino et al. 1999, Prinstein et al. 2000), childhood neglect (Zhang & Guo 2003), parental psychopathology or parental divorce (Krishnakumar et al. 2005), and sociodemographic disadvantage (Gould et al. 2003). In addition to these, specific educational stressors may have important roles as additive emotional burdens for students. In a U.K study it was found that self-poisoning was more frequent on Monday in comparison with holidays, and was found in 90% of DSH subjects (Hawton KII et al. 2003). A Turkish study examining initiating stressors in cases of completed suicides identified psychiatric disorders, family conflicts, parental divorce, quarrel with father, perforated hymen and difficulties at school (Goren et al. 2003). Another study of 1393 middle school students in China showed that the most important cause of suicide was quarrels with parents (Zhang & Guo 2003).

Few studies are available concerning the risk factors for, and psychological evaluation of students attempting suicide by self-poisoning in Iran. This paper addresses this issue by focusing on poisoned students admitted to hospital, looking to identify the important risk factors and precipitating events for self-poisoning amongst the student population of Iran.

## SUBJECTS AND METHODS

We designed a cross-sectional descriptive study using a standardized questionnaire administered to all self-poisoned students aged 12-18 years who were admitted to Loghman Hakim Hospital Poison Center (LHHPC) Tehran, Iran, from March 2006 to March 2007. Exclusion criteria were accidental or homicidal poisoning, impaired consciousness or unwillingness to undertake the interview. This study was approved by the ethics committee of the faculty of medicine. Variables studied included age, sex, substance abuse, personal history, familial history and the immediate precipitant for the suicide attempt. The self-poisoned students were evaluated by a psychiatrist in the poisoning ward who screened all patients, with Psychiatric diagnoses made based on DSM IV diagnostic criteria (American Psychiatric Association, 1994). The data were analyzed using Statistical Package for the Social Sciences (SPSS Inc. Chicago, IL, U.S.A.) for Windows version 13.

## RESULTS

Two hundred and forty eight poisoned students (200 females and 48 males) were evaluated out of a total of two hundred and seventy one student presentations with attempted suicide (23 exclusions). One hundred and forty eight (59.67%) of them were high school students and one hundred (40.33%) were middle school students. The average age was  $16.13 \pm 1.42$  years (range: 13-18) (Table 1). Female students were strongly predominant among self-poisoned students (80.64%), with a female to male ratio of 4.1: 1.

**Table 1.** Age distribution of 248 self-poisoned students in our study

Age (years)	Percent	Number
12-13	5.64	14
13-14	10.88	27
14-15	10.48	26
15-16	29.03	72
16-17	25.80	64
17-18	18.14	45

Pharmaceutical preparations were the most commonly employed suicidal agents, and were ingested in 87.5% of cases. The mortality rate in self-poisoning was 4.8%. The most common precipitant for a suicide attempt was family conflict (54.4%), followed by romantic disappointment (29.4%). The reasons for attempting suicide are shown in table 2.

**Table 2-** Distribution of reasons for suicide among self-poisoned students

Reasons for suicide attempt	Percent	Number
Educational	6.5	16
Romantic	29.4	73
Disappointment	54.4	135
Family conflict	1.6	4
Parents disease	2.1	6
Economic problem	3.2	8
Parents fighting	7.3	18
Others	16.5	41
Unknown	6	16

We found that 23.6% of self-poisoned students had a history of psychological problems. After being examined by a psychiatrist, the most important psychopathology in students who attempted self-poisoning was found to be adjustment disorder (84.3%). The results of

psychiatric examination are displayed in table 3. A history of epilepsy was observed in 3% of poisoned patients. The distribution of chronic diseases among poisoned students is shown in table 4.

**Table 3.** Distribution of psychiatric diagnosis among self-poisoned students

Psychiatric diagnosis	Percent	Number
Adjustment disorder	84.3	209
Major depression	18.1	45
Personality disorder	8.9	22
Anxiety disorder	1.6	4
Obsessive disorder	1.6	4

**Table 4.** Distribution of chronic diseases among self-poisoned students

Chronic disease	Percent	Number
Physical disease	8.9	24
Psychological disorder	23.6	64
Epilepsy	3	8
None	64.5	152
Total	100	248

In the present study we found that 10.48 % of student who committed suicide had a history of substance abuse and 15.31 % had a history of cigarette smoking. Also 21.08% of students had a history of physical child abuse and 22.5% came from a broken family. A family history of psychological disorders was found in 33.5% of students (Table 5).

**Table 5.** Distribution of familial risk factors among self-poisoned students

Familial Risk Factor	Percent	Number
History of child abuse	21.8	59
Broken family	22.5	61
Family history of psychological disorder	33.5	83
None	22.2	45
Total	100	248

## DISCUSSION

The prevention of suicide is a health priority in many countries. Shaw et al. (2005) found that in Canada, suicide was the second leading cause of death in students aged 10-19 years after vehicle accidents (Shaw et al. 2005). Self-poisoning is the most common method in women and the second most common method in men attempting suicide (Kapur et al. 2005). In our study, the significant majority of patients attempting self-poisoning were female. This finding is in accordance with

other studies (Abdollahi et al. 1997, Afshari et al. 2004, Brent et al. 1988).

In our study, most of the self-poisoned students were high school students. It thus seems that older students may be at greater risk. Multiple factors reportedly increase the risk of suicide. In our study it was found that the most common precipitant for a suicide attempt was family conflict, a finding in accordance with that of Zhang and Guo (2003), and Goren et al. (2003). The similarity of these findings in three culturally diverse locations lends weight to the suggestion that even relatively minor conflicts within the family environment can act as a trigger for suicide attempts, perhaps due to the emotional importance placed on these relationships. Additionally 21.08% of students had a history of child abuse and 22.5% came from a broken family. It seems that students who have not felt family warmth are at greater risk, and having a warm family and good support are protective factors (Adams et al. 1994, Marttunen et al. 1993, Zhang & Guo 2003).

In this study, another leading reason for suicide attempts was found to be romantic disappointment. This would appear to be an issue particularly with young female students, a finding in accordance with other studies (Lifshiz & Gavrilov 2000).

Some studies have placed emphasis on background disorders, particularly psychological disease, as an important risk factor for self-harm and deliberate poisoning; a finding that appears to be more significant in successful suicides (Kapur et al. 2005, Mauri et al. 2005, Tountas et al. 2001). We found that 23.6% of students studied had previously been evaluated by a psychiatrist and diagnosed with psychological pathology, however most of these problems were thought to be of relatively minor importance. After psychiatric review in the poisoning ward, we found that the most important psychopathology in students who attempted self-poisoning was adjustment disorder (84.3%). It seems that because students have weak problem solving abilities, stressors may prompt aggressive and impulsive behaviors such as attempting suicide (Afshari et al. 2004, Eddleston 2000, Tountas et al. 2001).

High rates of affective disorders and family histories of affective disorders have previously been demonstrated in suicidal inpatients and those who have attempted suicide (Brent et al. 1988, Schonwald & Ellenhorn 2001). In our study, MDD was found in 18.1% of patients. A positive

correlation of MDD with suicide has not surprisingly been previously demonstrated in other studies (Kaltiala-Heino et al. 1999, Kapur et al. 2005, Prinstein et al. 2000, Shaffer et al. 1988). Other related affective disorders were obsessive disorder (1.6%) and anxiety disorder (1.6%). Personality disorder was found in 8.9% of poisoned students. In addition, family history of affective disorders was observed in 33.5% of students in this study. Previous studies have linked antisocial personality disorder with suicide (Brent et al. 1988, Kaltiala-Heino et al. 1999, Prinstein et al. 2000, Shaffer et al. 1988), a finding not repeated in our study. Other factors thought to influence suicide rates in students are substance abuse (Gould et al. 2003, Trezza & Popp 2000) and cigarette smoking (Dervic et al. 2007, Seydaoglu et al. 2005). In the present study, we found that 10.48% of the students who committed suicide had a history of substance abuse and 15.31% had a history of cigarette smoking. Another factor, which increases the risk of suicide, is a history of previous suicide attempts. In our study, the prevalence of the history of previous suicide attempt was 32.1%.

Chronic disorder as a cause of suicide was found in 8.9% of patients. Groholt et al. found that chronic disorder could increase the risk of suicide 3.4 times in students under 15 years and 6.1 times in students aged 15-19 years (Grøholt et al. 1998). A history of epilepsy was observed in 3% of poisoned patients. Other studies showed that epilepsy could increase the risk of suicide up to four times (Bluglass & Bowden 1990).

This study adds to the body of evidence suggesting that students are at heightened risk of self harm episodes, with those at particular risk likely to have identifiable predisposing factors (such as fractured or non supportive home environments, or a history of depression or substance abuse). Immediate precipitating events are commonly conflicts within the family or romantic relationships. The emphasis in student suicide prevention programs must be on early identification of this pattern by parents, teachers, and physicians with the early provision of social and familial support. Recognition and treatment of accompanying psychopathology is likely to be similarly important, and restriction of access to pharmaceuticals may have an additional preventative impact.

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