Suicide Epidemiology and Characteristics among Young Iranians at Poison Ward, Loghman-Hakim Hospital (1997–2007)

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Abstract

Background: Suicide is a critical public health problem. In developing countries, the highest suicide rate is found in young adults with remarkable increasing rate. In this study, we have evaluated the epidemiology and characteristics of 8–16-year-old individuals who attempted suicide and were hospitalized in Loghman-Hakim Hospital, Tehran, Iran from 1997 to 2007.

Methods: A total of 6414 hospitalized patients, ages 8–16, who attempted suicide and were residents of Loghman-Hakim Hospital were investigated. We performed a retrospective chart review to study the characteristics of cases in a 10-year period by review of psychiatric and medical records.

Results: Out of 6414 patients 22.6% were male, 5978 patients were 12–16 years old and the rest were aged 8–12 years. During the 10-year period, suicides showed a rising trend among adults, while in children no significant increase was detected. Communicative disorders were the most common underlying risk factors, particularly in females. One patient out of five cases had psychiatric disorders, of which adjustment disorders were the most predominant. A remarkable peak in suicides was observed in May and July, while winter had the highest suicide rate among seasons.

Conclusions: Suicide due to drug overdose is higher in females than males in young population. This increasing trend is a psychiatric concern and should be resolved by improving mental and public health.

Keywords: Poisoning, psychiatry, suicide, youth


Introduction

Suicide is recognized as a major public health problem throughout the world.1 There are nearly 900,000 suicides worldwide each year, including as many as 200,000 adolescents and young adults. Suicide in children and adolescents is a national and global phenomenon.2 Lack of scientific knowledge about suicide attempts in youth is because of the limited research on this subject in addition to the conclusion of some researchers that suicide is beyond children’s capabilities.3,4 Before puberty, the prevalence of suicide attempts is rare and increases during adolescence. Because of the growing risk for suicide with increasing age, adolescents are the main target of repeated suicide attempts.5,6 A variety of global suicide rates depends on local factors such as data collection and reporting methods.7 Suicide rates lower than 6.5 per 100,000 have been reported in Latin America and Middle Eastern Arabic countries. The highest rates have been reported from Finland, Latvia, Lithuania, New Zealand, the Russian Federation, and Slovenia with rates over 30 per 100,000.8 In industrialized countries, males commit suicide 4 times as often as females. The exact place that suicide has in the deaths of adolescents and young people depends on what other factors are operational in that country.9 Abuse, loss of friends (including boyfriend or girlfriend), substance abuse, academic failure, family discord, legal/disciplinary problems, school concerns, and mental health conditions such as depression increase the risk for suicide among youths of both sexes.9 Sex differences in suicide attempt rates are considerable, but the pattern of sex differences is not same between countries.7

Self-poisoning is one of the prevalent methods used for attempting suicide. It seems attempted suicide among children is more common than estimated. Recent studies report that the suicide rate among children aged 5–14 years is 1–2 deaths per 100,000 and among youth aged 15–19 years, it is 11 deaths per 100,000.7 This age selection is based on a recommendation by Margaret Thompson (Head of Ontario, Canada Poison Center). According to a study performed in Iran in 1997, poisoning occurred more common at ages 2–6 years for children and 21–40 years for adults. The most common route of poisoning was oral intoxication, particularly drugs, which has been confirmed by a recent report in 2007. Intentional poisoning has been reported 4 times more than unintentional cases.10,11

The aim of this study was to describe the epidemiology and characteristics of 8–16-year-old individuals who attempted suicide (parasuicide) and were hospitalized in Loghman-Hakim Hospital, Tehran, Iran during a 10-year period (1997 to 2007). Male and female suicide attempts were compared with respect to psychiatric disorders, reason for suicide, seasonality, and educational level. Parasuicide is an apparent attempt at suicide, commonly called a suicidal gesture, in which the aim is not death.
Materials and Methods

In this cross-sectional retrospective study, 6414 individuals that had attempted suicide were recruited. The study population consisted of hospitalized patients in the age range of 8 to 16 years old that attempted suicide and were residents in the Poison Center of Loghman-Hakim Hospital from 1997 to 2007. Loghman-Hakim Hospital is a unique poisoning referral center in Tehran, Iran that admits patients from all cities in Tehran Province. Annually, around 20,000 hospitalized patients are observed and treated in this center. The daily turn-over in this center is 80–100 patients.

We performed a retrospective chart review in this referral center to study the seasonality and characteristic of patients who attempted suicide during a 10-year period. Patients’ sex; age; education level; history of attempted suicide; method of suicide; reasons for suicide such as substance abuse, communicative disorder, economical issues, parental discord, loss and divorce, family history of addiction, educational problems, mood disorder, and psychiatric diagnosis that included depression, adjustment, bipolar, anxiety, personality and psychotic disorders; as well as the season in which the suicide attempt was made were all extracted by a review of psychiatric and medical records. Gender differences and seasonal distribution of suicides were tested with the Chi-square test. P-values equal to or less than 0.05 were considered significant.

Results

Over a 10-year period (1997–2007), 6414 attempted suicides in young people aged 8 to 16 were registered in Loghman-Hakim Hospital. Of these, 1451 (22.6%) were male and 4963 (77.4%) female. The following suicide distribution was observed according to age groups and sex: females at 8–12 years old (n = 289; 66.3%) and females at 12–16 years old (n = 4674; 78.2%). Males were less prevalent in both age groups (Table 1). According to the etiologic reasons of attempted suicides, communicative disorders were the most common underlying risk factors followed by familial history of substance abuse in females were reported higher than in males.

Evaluation of underlying psychiatric disorders showed that about 1 out of 5 cases with attempted suicides had psychiatric disorders, most of whom suffered from adjustment disorders. A history of attempted suicide was found in 1 out of 7 cases in our study population with no difference in gender. Most were students; less than 1% were illiterate.

There was a remarkable increase in suicides observed both in...
Table 4. Seasonal variations of attempted suicides

<table>
<thead>
<tr>
<th>Age group</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>8–12 year old males</td>
<td>39</td>
<td>27.1</td>
<td>44</td>
<td>30.6</td>
</tr>
<tr>
<td>8–12 year old females</td>
<td>44</td>
<td>20.5</td>
<td>60</td>
<td>27.9</td>
</tr>
<tr>
<td>Total 8–12 year olds</td>
<td>83</td>
<td>23.1</td>
<td>104</td>
<td>29</td>
</tr>
<tr>
<td>12–16 year old males</td>
<td>382</td>
<td>29.4</td>
<td>286</td>
<td>22</td>
</tr>
<tr>
<td>12–16 year old females</td>
<td>1304</td>
<td>28</td>
<td>1189</td>
<td>25.6</td>
</tr>
<tr>
<td>Total 12–16 year olds</td>
<td>1686</td>
<td>28.3</td>
<td>1475</td>
<td>24.8</td>
</tr>
</tbody>
</table>

males and females in May and July, while males had the greatest frequency in December and females in May, when separately analyzed. Suicide frequencies showed the lowest rate for the overall data in October (Table 3). The peak of suicides occurred in the summer among 8–12 year olds whereby the highest suicide rate among 12–16 year olds was reported during the winter. Generally, over the study period, suicide occurrence was obviously higher during the winter in both males and females (Table 4).

From 6101 eligible cases, the most important cause of patient suicide was drugs (91.7%), followed by pesticides (8.1%), self-infection (0.1%), and substance abuse (0.2%). In the 8–12-year-old cases, the most common drugs of poisoning were TCA (imipramine, amitriptyline; 22%), benzodiazepine (lorazepam, diazepam; 18.3%), and anticonvulsive drugs (phenobarbital, carbamazepine; 14.7%). In 12–16-year-old cases, sedative-hypnotics (33.1%) were the dominant drug type used by patients who attempted suicide by drug poisoning, followed by psychotropics (27.3%), and analgesics (17.6%). The most common pesticides for poisoning were organophosphates (63%) followed by carbamates (30%).

In 1684 out of 6554 patients with sufficient data for diagnostic assessment, there were 901 (53.5%) adjustment disorders, 441 (26.2%) mood disorders, 132 (7.8%) personality disorders, 37 (2.2%) anxiety disorders, 39 (2.3%) bipolar disorders, 32 (0.8%) psychotic disorders, and 121 (7.2%) had more than one of the above mentioned disorders. In our study, 536 (14.5%) out of 3687 patients had a record of a previous suicide attempt. There were 301 patients (56.2%) who had one previous suicide attempt, 46(8.6%) had 2 previous attempts, 35 (6.5%) attempted 3 times, and 23 patients (4.3%) had attempted more than 3 times. In 131 patients (34.4%) there were no previous suicide attempts.

During this 10-year period from 1997 to 2007, suicide attempts showed a rising trend among adults while the trend in children showed no significant peak. The number of attempted suicides showed an increase from 1997 to 1998 with an apparent peak while there was a decreasing trend until 2002. In the last 5 years, the increase in suicide attempts was noted among 12–16-year-old children.

Discussion

The present findings show that there were 6414 cases of attempted suicide admitted to the Poison Center of Loghman-Hakim Hospital with the age range of 8 to 16 years during a 10-year period from 1997 to 2007. All cases had attempted suicide by using therapeutic drugs. According to the studies performed in Loghman-Hakim Poison Center, the most important agents of acute poisoning were drugs (69.13%). Sedative-hypnotics followed by opioids (12.34%) and organophosphates (6.21) were reported to be the most common agents in 2003, which corresponded with our results, while in 1997 benzodiazepines (24.5%) were most frequent, followed by antidepressants (20.5%), and analgesics (18%).

In China, more than 60% of suicide deaths occurred by pesticides. In Sweden, drug poisoning was found as the most common suicide method in nearly every second woman and every fifth man who committed suicide.

A rising trend for suicide attempts was found within the period of 1997 to 2007 among adults while no significant change was observed for children. Another report from the USA showed that during 1992–2001, the suicide rate for individuals aged 10–19 declined from 6.2 to 4.6 per 100,000. The rising rates of youth suicide have been clearly evident in developed countries such as Australia and New Zealand since the 1970s.

It is considerable that contrary to international reports, a higher incidence of poisoning is shown in females than males in all age groups, at a ratio of 3.5:1. The increasing rate of acute poisoning in females is for their much more communicative disorder.

Drug overdose is more common in females throughout the world. Ghazinour et al. have studied parasuicide for the period of 2000–2004 in an overall age range and reported that females outnumbered males in the age category of 10–19 years, but in males was contrary after the age of 20 years. Mello-Santos et al. from Brazil have reported 3-times more suicide attempts for males compared to females during 1998–2000.

Psychological disorders were diagnosed in 20% of our study population. The high rate of adjustment disorders among cases with suicide attempts (54%) agreed with other international studies that have identified various risk factors for suicide, including depression, alcoholism, and schizophrenia.

The frequency of depressive disorders among females in the present study was 24%, which was lower than the 50% among adolescents as reported by Shaffer et al. in 1988, and higher than females under the age of 30 (18%) according to Asgard. The frequency of depressive disorders among females in the present study was 24%, which was lower than the 50% among adolescents as reported by Shaffer et al. in 1988, and higher than females under the age of 30 (18%) according to Asgard. Psychiatry interviews were not performed for all of our study population, which might skew the results.

The proportion of victims with previous suicide attempts in the present study was 14%, which was lower than the rate of 80%
The Ethical Committee of Shahid Beheshti University of Medical Sciences approved the study protocol, with code number 10.

Acknowledgment

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References