Deliberate Self-Poisoning In Adolescents

Matityahu Lifshitz MD and Vladimir Gavrilov MD

Toxicology Unit, Division of Pediatrics, Soroka University Medical Center and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

Key words: adolescents, suicide attempts, poisoning, intoxication, risk factors

For Editorial see page 283

Abstract

Background: Adolescent suicide has become increasingly more prevalent in recent years, with self-poisoning being a frequent means of suicide attempt.

Objective: To investigate the factors associated with adolescent self-poisoning.

Methods: Data on adolescents referred for intentional self-poisoning to the Adolescent Medical Unit during the years 1990–1998 were evaluated retrospectively. Data were obtained from the hospital medical records and included the following factors: socio-demographic data, educational status, agent and route of intake, motivation for overdose, and the extent of serious suicidal intent.

Results: We evaluated 324 cases of adolescent self-poisoners aged 12–18 years (mean ± SD 14.8 ± 1.5 years). The female/male ratio was 8:1. Most of the patients were attending school and lived in urban areas. Oral ingestion was the only route of intake; 84.5% of the patients ingested drugs and 10.5% non-medicinal compounds. The drug most commonly taken was acetaminophen. The non-medicinal compounds were mostly pesticides and household materials. The suicide attempts were most frequently associated with transient depression, stemming from defects in child-family communication. As based on clinical psychiatric evaluation, patients who had ingested polydrugs and non-medical compounds evidenced a significantly greater suicidal intent (χ^2 =11.9, P < 0.001) compared to those who took only one or two kinds of drugs.

Conclusions: We found that self-poisoning attempts occur most frequently in depressed females at junior high and high school, usually in the context of family dysfunction. Non-medicinal agents and polydrug ingestion are major risk factors for evaluating the seriousness of the suicidal intent.

IMAJ 2002;4:252–254

Suicide is a complex outcome of multiple inter-related factors [1]. Deliberate self-poisoning in adolescents is a common clinical problem for pediatricians and pediatric mental health professionals. The rate of recorded adolescent suicide attempts has steadily and markedly increased in recent decades [2], and it is one of the most common causes of death in adolescents [3]. It is therefore important to develop tools for assessing the circumstances of self-poisoning in adolescents, particularly the degree of suicidal intent, and the implications for treatment and prevention. This study investigated some of the circumstances and factors associated with adolescent self-poisoning.

Patients and Methods

We collected the hospital records of all patients who had been admitted for deliberate self-poisoning to the Adolescent Medical Unit during the years 1990–1998. At that time, these patients had received psychosocial assessment by a psychiatrist, a psychiatric nurse and a social worker.

We assessed the following factors: sociodemographic data, educational status, agent and route of intake, motivation for overdose, pre-knowledge of potential toxicity of the agent (as reported by the patient in the medical history), and the extent of serious suicidal intent. The latter was based on clinical psychiatric evaluation, as presented in the medical history. Patients who were assessed by the clinician as having taken the overdose because of depression and desperation, and not as a manipulative or punitive device, were defined as having a greater suicidal intent.

Results

A total of 4,008 patients were admitted to the Adolescent Unit during the study period. Of these, 324 cases of adolescent self-poisoners (8% of all patients), aged 12–18 years (mean ± SD 14.8 ± 1.5years), were evaluated retrospectively. They included 288 females (89%) and 36 males (11%), a sex ratio of 8:1. Jews and Bedouins comprised 95% and 5% respectively. Most of the patients were attending school (82.7%) and lived in urban areas (72%). The catchment area of our hospital covers a population of which 65% of the residents live in urban areas and 35% in rural areas.

Oral ingestion was the only route of intake; 274 patients (84.5%) took drugs, 34 patients (10.5%) took non-medicinal compounds, and in 16 patients (4.9%) the agent was unidentified [see Figure 1 for the frequency distribution of the various agents]. Acetaminophen was the most common drug consumed, whereas pesticides and household materials were responsible for 55.8% and 35.3% of the non-medicinal cases, respectively. The psychiatric drugs were fluoxetine hydrochloride, fluvoxamine maleate, promethazine hydrochloride, perphenazine and tricyclic antidepressants. There were no fatal cases in the study period.

The circumstances preceding the overdose and the background problems of the patients at the time of overdose are shown in Tables 1 and 2. The suicide attempts were most frequently associated with transient depression (88.2%), feelings of loneliness (83.6%), and stress (65%). These feelings usually stemmed from child-family communication problems (65%), disappointment in love (25%), difficulty at school (5%), or a combination of some of these factors.

With regard to a correlation between pre-knowledge of the potential toxicity of the compound ingested and the extent of serious suicidal intent, a significant difference was observed between patients who had been on medication and those who ingested non-medicinal compounds, as based on psychiatric

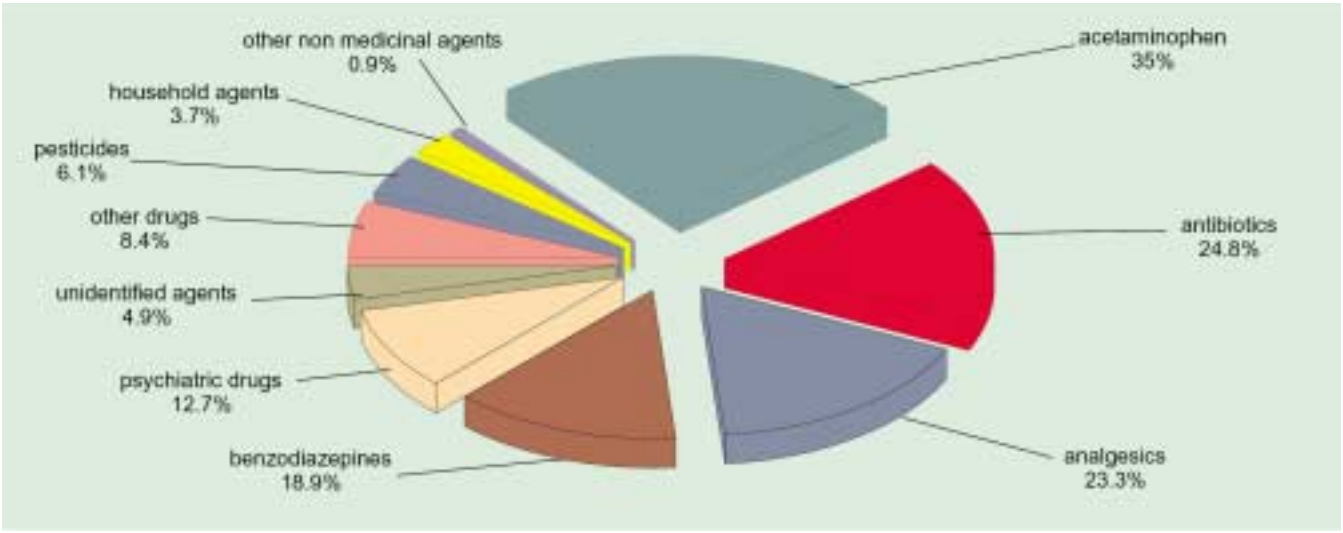

Figure 1. Frequency of the reported poisoning agent

evaluation. Eighty-five percent of the patients who swallowed non-medical compounds were aware of their potential toxicity as compared to only 7.9% of those who had self-administered a drug (χ^2= 127.5, $P < 0.0001$). Likewise, as shown in Table 3, patients who consumed three or more drugs also had a greater suicidal intent (based on psychiatric assessment) as compared to those who took only one or two kinds of drugs.

Table 1. Patients' feelings preceding the overdose

Feeling*	Patients	
	No.	(%)
Transient depression	286	(88.2%)
Loneliness	271	(83.6%)
Stress	211	(65%)
Not being wanted	174	(53.7%)
Unknown	28	(8.6%)

* Some patients mentioned a combination of these feelings

Table 2. Background problems associated with the overdose

Background problems*	Patients	
	No.	(%)
Child-family disorder	210	(65%)
Disappointment in love	81	(25%)
Difficulties in school	16	(5%)
Undiagnosable	17	(5%)

* Some patients mentioned more than one problem.

Table 3. Relationship between the number of drugs and serious suicidal intent

No. of agents	Patients		Patients with serious suicidal intent	
	No.	%	No.	%
1	181	(62.4%)	0/181	
2	54	(18.6%)	1/54	(1.8%)*
3	27	(9.3%)	11/27	(40.7%)**
4	18	(6.2%)	7/18	(38.9%)**
5	10	(3.4%)	4/10	(40%)**

* Compared to one agent, χ^2 = 3.30, $P = 0.07$

** Significant difference compared to one and two agents, χ^2 = 11.9, $P < 0.001$.

Discussion

Deliberate self-poisoning among adolescents is a major health problem. Most suicide attempts are a response to depression [2,4]. Figures for adolescent deaths due to intentional poisoning have been rising among British and American teenagers [2,5]. In fact, statistics for the USA indicate a threefold increase in the rate of adolescent suicide attempts in recent years [3].

Our findings revealed that self-poisoning suicide attempts were most common in female adolescents who were attending school and living in urban areas. A higher proportion of female to male adolescent self-poisoning attempts has also been reported in other studies [6,7]. On the other hand, it seems that male adolescents often resort to different suicidal means and some authors claim a higher suicide rate for males [8,9].

In accordance with other studies our research confirms that drugs are the most frequent agent of self-poisoning [10], and that acetaminophen is the drug most frequently consumed [3,6,10–12]. Self-poisoners tend to use those agents that are easily accessible, and acetaminophen is an over-the-counter medication.

Some authors [13–15] have observed that self-poisoners often lack awareness of the toxic and lethal potential of the drugs they have ingested. Our study showed that patients who had taken non-medicinal agents or multiple drugs seemed to be more aware of the potential toxicity of the agents and had a more serious suicidal intent than those who had taken only one or two kinds of medication. This finding has not been previously reported and is of particular interest since it identifies high risk suicide attempts, indicating that particularly these adolescents need intensive therapy and close follow-up.

In conclusion, self-poisoning is frequent in depressed junior high and high school female adolescents and is generally associated with family disorders. The main finding of this study

shows that the use of non-medicinal agents and the ingestion of several types of drugs are major risk factors for evaluating the extent of serious suicidal intent in adolescents.

References

1. Moscicki EK. Identification of suicide risk factors using epidemiologic studies. *Psychiatr Clin North Am* 1997;20:499–517.
2. Hawton K, Fagg J. Deliberate self-poisoning and self-injury in adolescents. A study of characteristics and trends in Oxford, 1976-1989. *Br J Psychol* 1992;161:816–23.
3. Rosenberg ML, Smith JC, Davidson, LE, Conn JM. The emergence of youth suicide: an epidemiological analysis and public health perspective. *Ann Rev Public Health* 1987;8:417–27.
4. Rosen DH. The serious suicide attempt: epidemiological and follow-up study of 886 patients. *Am J Psychiatry* 1970;127:764–70.
5. Krietman N, Schreiber M. Parasuicide in young Edinburgh women. *Psychol Med* 1979;9:469–79.
6. Hawton K, Ware K, Mistry H, et al. Paracetamol self-poisoning characteristics, prevention and harm reduction. *Br J Psychiatry* 1996;168:43–8.
7. Abdollahi M, Jalali N, Sabzevari O, Hoseini R, Ghanea T. A retrospective study of poisoning in Tehran. *J Toxicol Clin Toxicol* 1997;35:387–93.
8. McClure GMG. Suicide in children and adolescents in England and Wales 1960-1990. *Br J Psychiatry* 1994;165:510–14.
9. Tulloch AL, Blizzard L, Hornsby H, Pinkus Z. Suicide and self-harm in Tasmanian children and adolescents. *Med J Aust* 1994;160:775–86.
10. Ashbourne JF, Olson KR, Khayam-Bashi H. Value of rapid screening for acetaminophen in all patients with intentional drug overdose. *Ann Emerg Med* 1989;18:1035–8.
11. Gilberston RJ, Harris E, Pandey SK, Kelly P, Myers W. Paracetamol use, availability and knowledge of toxicity among British and American adolescents. *Arch Dis Child* 1996;75:194–8.
12. Veltri JC. Rollins DE. A comparison of the frequency and severity of poisoning cases for ingestion of acetaminophen, aspirin and ibuprofen. *Am J Emerg Med* 1988;6:104–7.
13. Fraser JJ. Non fatal injuries in adolescents: United States, 1988. *J Adolesc Health* 1996;19:166–70.
14. Harris HE, Myers WC. Adolescents' misperceptions of the dangerousness of acetaminophen in overdose. *Suicide Life Threat Behav* 1997;27:274–7.
15. Huott MA, Storrow AB. A survey of adolescents' knowledge regarding toxicity of over the counter medications. *Acad Emerg Med* 1997;4:214–18.

Correspondence: Dr. M. Lifshitz, Toxicology Unit, Division of Pediatrics, Soroka University Medical Center, P.O. Box 151, Beer Sheva 84101, Israel.
Phone/Fax: (972-8) 648-0187
email: matyl@bgumail.bgu.ac.il