

## FREQUENCY OF SUICIDE ATTEMPTS BY INGESTION OF DRUGS SEEN AT A TERTIARY CARE PEDIATRIC HOSPITAL IN MEXICO

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### ABSTRACT

Suicide is a complex behavior with biological, psychological and social causes. It has predisposing family factors such as domestic violence, psychiatric disorders and parents' alcohol abuse. Suicides have increased in children and adolescents in the last decade and it is now the third leading cause of death. Mexico has the second highest mortality rate in adolescents between 10-14 years old, of which 21.9 % are suicides. This study aimed to determine the frequency of suicide attempts using drugs in children and adolescents in a tertiary care hospital and to identify the causes. A retrospective and descriptive study was performed considering socioeconomic, cultural and biological issues related to suicide attempts using drugs in children and adolescents who were treated at the National Institute of Pediatrics from January 1995 to March 2005. A total of 141 drug intoxication cases were detected including 47 suicide attempts; 25 girls and 22 boys, with a median of 13 years of age. The most frequently used drug classes were analgesics 21 of 47 cases and antidepressants 11 of 47 cases. Risk factors were parents' divorce and family dysfunction in 16 of 47 cases of the population. Suicidal behavior in children and adolescents can be attention seeking, as well as an alarm signal asking for help. Analgesics and antidepressants are the most commonly used drugs in suicide attempts.

**Key Words:** *Suicide attempt; intentional intoxication; children; adolescence; drug ingestion; suicidal behavior*

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Suicide is a complex behavior with biological, psychological and social causes. It has predisposing family factors such as domestic violence, psychiatric disorders and parents' alcohol abuse.<sup>1,2</sup>

According to statistics, suicides have increased in children and adolescents in the last decade and it is now the third leading cause of death.<sup>3</sup> Mexico has the second highest mortality rate in adolescents between 10-14 years old, of which 21.9 % are suicides.<sup>4,5</sup>

According to the National Institute of Statistics, Geography and Computer Sciences (INEGI, Spanish acronym), in 2003, the primary method used for suicide attempts was medication overdose. Women attempted suicide at a ratio of

1.3 cases per 1 attempt in men; however, in those that actually committed suicide, the ratio was 5 males to 1 female. The most frequently used drugs in suicide attempts are tricyclic antidepressants, psychoactive drugs, such as anxiolytics, and analgesics.<sup>6</sup>

Forty percent of suicide cases are preceded by other suicide attempts and depressive disorders. In one third of the suicide cases, a parent, sibling or other immediate family member has a history of suicidal behavior. In adolescents, revenge or hostile thoughts directed against themselves or to an external target were the most noticeable; these thoughts are present in at least half of the youngsters who commit suicide.<sup>7,8</sup> Psychiatric disorders with high risk of suicide

include depression and major affective disorders, alcoholism or substance abuse, and psychosis, especially with death-related hallucinations.<sup>9</sup>

The serotonergic system in patients with suicide behavior has been found to be altered. Brain serotonin levels and its metabolite (5-hydroxyindolacetic acid) are lower in suicide cases. The serotonin receptors in the brainstem and prefrontal cortex could be deteriorated, which is manifested in the individual by non-conformity and dissatisfaction with his/her life-style.<sup>10-13</sup> The aims of this study were to determine the frequency of suicide attempts using drugs in children and adolescents in a tertiary care hospital and to identify the reasons for the suicide.

## METHODS

### Setting

A retrospective and descriptive study was carried out considering socioeconomic, cultural and biological issues related to suicide attempts by the intentional ingestion of drugs in the pediatric and adolescent population treated at the National Pediatrics Institute (INP, Spanish acronym) from January 1995 to March 2005.

### Patients

A total of 141 cases were reported as drug intoxications, of which 47 cases corresponded to patients who intentionally ingested drugs with the intention of committing suicide. Records of patients diagnosed with drug intoxication were obtained from a database with the support of the Clinical Archive. These diagnoses were established according to the International Statistical Classification of Diseases and Related Health Problems.<sup>14</sup> Codes X60-X84 and Y87.0 of this classification were considered; these codes classify self-inflicted drug injuries and drug poisoning.

### Outcome Measures

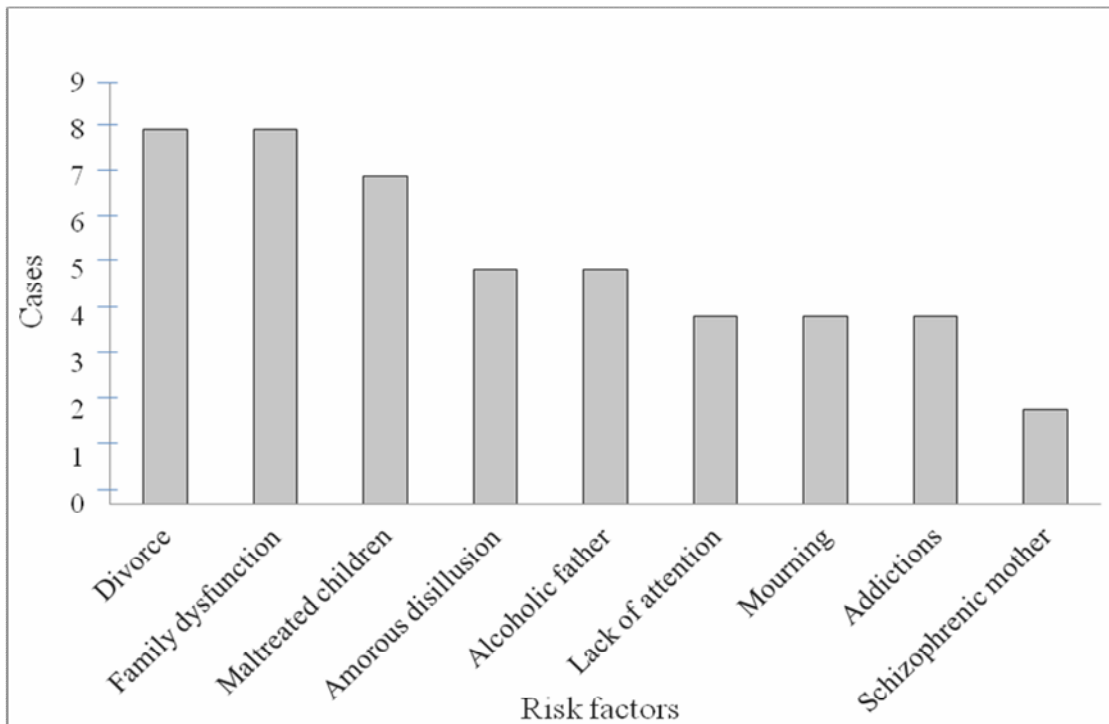
The Emergency Department patient diagnosis registry was revised in relation to drug intoxication diagnoses, since the first contact and immediate management occur in this department. Data for some patients were incomplete because the Emergency Department stay of children is approximately 4-8 hours. In addition, the clinical notes of the Emergency Department visits are

only kept for 3 months. This makes it difficult to follow-up on cases to obtain data. The reviewed clinical record data were integrated according to the Mexican Official Standard on Clinical Records.<sup>15</sup> Initially, the patients were treated in the Emergency Department and, if required, an evaluation is performed by medical staff, in services such as psychology, psychiatry, intensive care unit, along with a social work evaluation. Sufficient data were collected to meet the objective of this study.

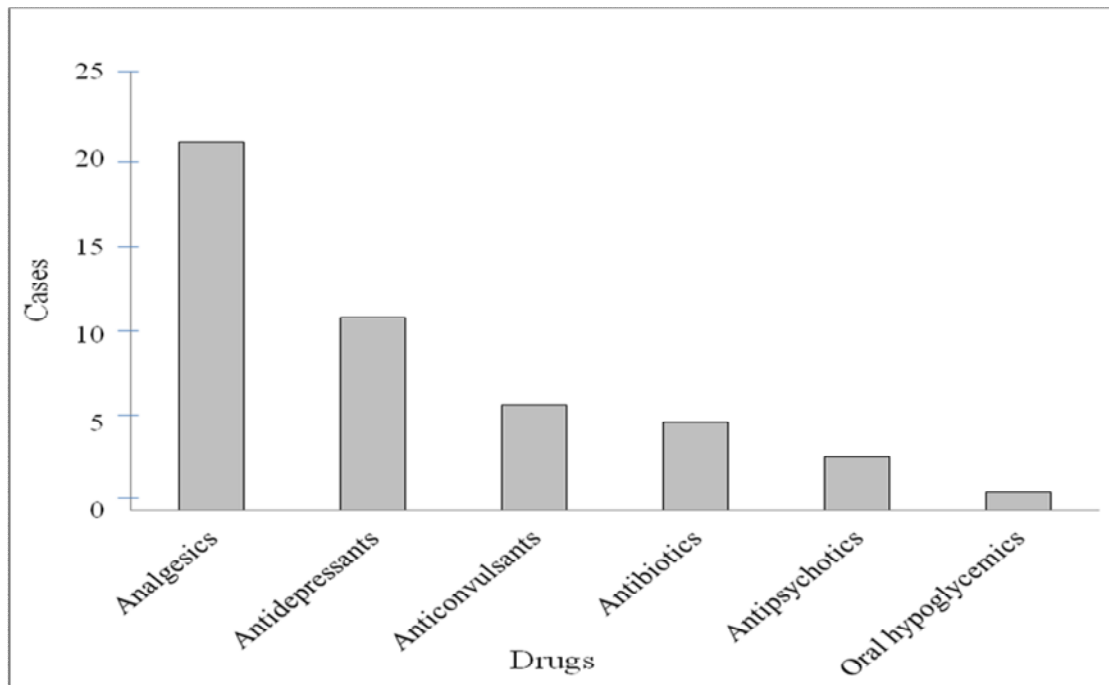
## RESULTS

A total of 141 records with drug intoxication diagnosis were reviewed, of which 33 % (n=47) were intentionally ingested in an attempted suicide, but in which the ultimate objective, death, was not achieved. Of the 47 patients, 25 were girls and 22 were boys, with a median of 13 years of age (6-17 years). Demographic, social and psychiatric data were collected from each patient. The risk factors observed were primarily parents' divorce in 8 cases and family dysfunction in another 8 cases, followed by child abuse in 7 cases, father's alcoholism in 5 cases, romantic disappointment in 5 cases, and lack of attention of the family to the child in 4 cases. Other risk factors are shown in Figure 1. Of the 47 patients who attempted suicide, 2 patients relapsed with another attempt, and one had a relative with suicidal history. The most frequently used drugs in suicide attempts were analgesics (*e.g.* paracetamol, acetylsalicylic acid, naproxen and tramadol) ingested by 21 patients; antidepressants (*e.g.* alprazolam, diazepam and clonazepam) ingested by 11 patients; antiepileptics (*e.g.* carbamazepine) ingested by 6 patients; antibiotics (*e.g.* ampicillin, cloramphenicol and amoxicillin) ingested by 5 patients; antipsychotics (*e.g.* trifluoperazine and haloperidol) ingested by 3 patients; and hypoglycemic agents (*e.g.* glibenclamide and metformin) ingested by 1 patient (*see* Figure 2). During the first hours of hospital stay, patients who attempted suicide, were subjected to gastric lavage with activated charcoal. Once stabilized, patients were referred to the Psychiatry department for further evaluation.

**FIG. 1** Risk factors associated with suicide attempts



**FIG. 2** Drug classes used in suicide attempts



## DISCUSSION

Our results correspond with previously reported data regarding the therapeutic drug classes used to in attempted suicides. From our study, we can conclude that for the last 10 years, analgesics and antidepressants have been the most commonly used drugs in suicide attempts.

Suicidal behavior in children and adolescents can be a way of attracting attention, as well as an alarm signal asking for help. These theories agree with our results, since the main cause of suicide attempts in children was lack of attention. However, among adolescents, the first cause was parents' divorce and romantic disappointment, although in most cases low socioeconomic status level and consumption of narcotics contribute to generate suicidal thoughts.

It has been reported that 90 % of suicidal adults suffer from one or more mental disorders at the time of suicide, and although this is not a definite factor determining suicidal thoughts in the pediatric population, a family history of schizophrenia (immediate family members) was found in 2 of our cases. It has been reported that sixty percent of those who attempt or commit suicide consult a professional 3 to 6 months before, although at young age the way of asking for help may be attention seeking behaviours like disobedience. In the pediatric population analyzed in our study, 4 adolescents who suffered from drug addictions. Moizeszowicz found that most suicide victims have a history of failed attempts, and the study also estimated that 10 out of 20 attempts are completed.<sup>16</sup> However, in children and adolescents at the INP these data were not corroborated; of the 47 cases of suicide attempt using drugs, none resulted in death. Our study revealed that the presence of genetic and family factors, such as suicide attempts or suicide deaths in immediate or distant generations, increases the risk of suicidal behavior in children.

Incidence of hospital admissions due to suicide attempts by intentional drug ingestion was found to be low at the National Institute of Pediatrics. Nevertheless, our results highlight the need for controlling use and safety of those drugs most commonly used in suicide attempts. Moreover, institutional and national programs dedicated to protect children's integrity, health

and rights should be strengthened and take our results, into consideration.

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