Self-poisoning with drugs as a common suicide method among children and adolescents: a concise report from Zahedan, southeastern Iran

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Abstract

Intentional poisoning by drugs and chemicals is a common emergency in Iran and is recognized as the third leading cause of suicide globally. This report focuses on the prevalence of suicide attempts through self-poisoning among children and adolescents aged 7 to 18 years, based on data collected from the children's emergency room at Ali Ibn Abi Talib Hospital in Zahedan between 2009 and 2018. The study utilized a descriptive cross-sectional approach to examine all cases of children referred to the emergency department for suspected suicide attempts by self-poisoning. Data collection was comprehensive (census method), and analysis was conducted using SPSS software along with descriptive statistical techniques. Out of 45 documented suicide cases, 28 involved girls and 17 involved boys. Self-poisoning represented 23.07% of these cases. Most of these attempts occurred in the 15-18 age group and were predominantly reported in urban settings. The substances most commonly used for self-poisoning included sedative-hypnotics, antidepressants, and anticonvulsants. The findings indicate a significant prevalence of suicide attempts by self-poisoning among older children and adolescents, with a notable gender disparity favoring females. Urban areas showed higher rates of such incidents, suggesting possible socio-economic and cultural influences. The frequent use of prescription medications for self-poisoning underscores the urgent need for stricter control measures to limit access to these drugs among young populations. This study highlights critical aspects of suicide methods among children and adolescents in Zahedan, emphasizing the role of age, gender, and urban residency in influencing suicide attempts. It also calls for enhanced regulatory policies to prevent access to potentially lethal medications, aiming to reduce the incidence of suicide by self-poisoning in this vulnerable group.

Introduction

Suicide, a deliberate act of self-harm, is a significant global issue, particularly affecting children and adolescents.[1] Each year, over 800,000 individuals worldwide end their own lives.[2] The World Health Organization has identified suicide as the second leading cause of death among young people aged 10-24.[3-5] In Iran, the situation is particularly alarming, with rates higher than in other Middle Eastern countries.[6] In 2016, Iran reported 4626 suicide deaths, a 5% increase from the previous year.[7]

Child and adolescent suicide is influenced more by psychological, familial, and educational factors than by broader societal issues. Factors such as depression, family conflicts, and poor school environments play significant roles. Among these young individuals, females, those from tense family backgrounds, and those living

in economically disadvantaged areas are more prone to suicide.[8,9]

One prevalent method of suicide among children and adolescents in Iran is self-poisoning. This method includes the ingestion of harmful substances like household cleaners, pesticides, and drugs.[10] Emergency rooms frequently encounter cases of intentional poisoning by these means, making it a critical area of concern.[11] The increasing rate of suicide by self-poisoning among teenagers underscores the urgent need for effective prevention strategies.[12,13] Therefore, the present report focuses on the frequency of suicide by self-poisoning among children aged 7-18 in Zahedan, southeastern Iran. It aims to highlight the severity of the issue in this region and calls for targeted preventive measures to address this tragic trend.

Materials and Methods

This cross-sectional descriptive study was conducted from 2009 to 2018 at the Ali Ibn Abi Talib Hospital in Zahedan, Iran. It focused on examining self-poisoning as a prevalent method of suicide among children and adolescents. The study included a total of 45 children aged between 7 and 18 who had attempted suicide by ingesting one or more drugs. A census sampling method was employed, encompassing all patient files that met the inclusion criteria. Exclusion criteria included uncertain diagnoses, outpatient treatments, incomplete files, and accidental ingestion of substances. Data was collected using a form designed by the researchers, which recorded demographic details such as age, gender, residence, and the type of drug used. This form was filled out by the attending physician after reviewing each patient's file. The collected data was then digitized and analyzed using SPSS software version 26 (IBM, Armonk, NY, USA). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were utilized to summarize the findings. Additionally, chi-square and *t*-tests were applied to explore the relationships between various factors. The significance threshold for all statistical tests was set at $p<0.05$. Ethical considerations were strictly followed, with data being extracted anonymously from medical records. The study protocol received approval from the Ethics Committee of the Islamic Azad University (IR.ZAUMS.REC. 1402.359).

Results

The study focused on 45 children and adolescents aged between 7 and 18 years who had attempted suicide through self-poisoning in Zahedan, southeastern Iran. Among these individuals, 62% (28) were female and 38% (17) were male. The average age was approximately 17.62 years, with the majority of suicide attempts (87%) occurring in urban areas and the remaining 13% in rural settings. The age group most prone to these attempts was between 15 and 18 years old (Table 1).

The drugs most frequently used for self-poisoning included sedative-hypnotics, antidepressants, anticonvulsants, narcotics, and other chemicals such as oil and pesticides. Specifically, sedative-hypnotics were used in 28.88% of the cases, making them the most common drug involved. Antidepressants followed at 20%, anticonvulsants at 13.33%, and narcotics, along with other chemicals, each accounted for 11.11% of cases. Additionally, antipsychotics and cardiovascular agents were used in 2.22% and 4.44% of cases, respectively. Acetaminophen was also used in 4.44% of the incidents, and in another 4.44% of cases, the type of drug used was unknown. These findings highlight the prevalence of sedative-hypnotics, antidepressants, and anticonvulsants as the common drugs used in self-poisoning among children and adolescents in this region, indicating a significant public health concern that requires attention and intervention (Table 2).

Discussion

The study highlights that self-poisoning is a prevalent method of suicide among children and adolescents, particularly in Zahedan, southeastern Iran. It was found that nearly 25% of the referred cases involved children who had attempted suicide by self-poisoning, primarily using tranquilizers and sleeping pills. A significant study conducted over 3 years at Luqman Hakim Hospital in Tehran reported that out of 292 children aged between 6 and 15 admitted for suicide attempts, over 80% had used pharmaceuticals to try to end their lives.[8] Further research by Shirzad and Gharahdaghi indicated that around 16% of 260 documented suicide cases were drug-related fatalities.[14] In England, the most frequently used substances for suicide were sedatives and narcotics. Similarly, a study by Zakharov *et al*. in the Czech Republic found that drugs affecting the nervous system, such as sedative-hypnotics, and antidepressants, were commonly employed in suicide attempts.[15] Additionally, research by Tabibzadeh *et al*. identified benzodiazepines and tramadol as the primary drugs used in self-poisoning cases.[16] These findings underscore the critical need for increased awareness and preventive measures to address the issue of self-poisoning among young individuals, particularly in regions like Zahedan.

The age range of children who committed suicide predominantly falls between 15 and 18 years old. This finding aligns with other research indicating that adolescence is a particularly vulnerable period for suicide, attributed to significant physical and mental changes during these years. Buffone *et al*. reported an average age of 16 for suicides by drug poisoning among children.[17] Studies also reveal

Table 1. Demographic characteristics of participants.

	Number	Percent
Gender		
Female	28	62
Male	17	38
Age		
7-10	1	2
11-14	7	16
15-18	37	82
Residence		
Urban area	39	87
Rural area	6	13

Table 2. Frequency of type of drugs consumed by suicidal participants.

Type of drugs	Number	Percent
Sedative-hypnotics	13	28.88
Antidepressants	9	20
Narcotics	5	11.11
Antipsychotics	1	2.22
Anticonvulsants	6	13.33
Cardiovascular agents	2	4.44
Acetaminophen	2	4.44
Other chemicals (oil, pesticides, *etc.*)	5	11/11
Unknown	2	4.44
Total	45	100

that the suicide rate for children aged 13 to 15 is twice as high as that for those aged 10 to 12.[18] Tyrrell *et al*. found the mean age to be approximately 14.[19] According to Seghatoleslam *et al*.,[8] most children in their study were between 12 and 14 years old. In the United States, data from 2008 to 2015 indicates that the highest suicide rates occur between ages 15 and 17.[20] Similarly, a study in Iran from 2012 to 2018 found the peak age for suicide attempts to be 17.[21]

Research indicates that the rate of suicide among girls is generally higher than that of boys. This finding is supported by Faramarzian *et al*., who reported that the suicide rate among girls was twice that of boys.[21] Similarly, in the Czech Republic, the suicide rate for girls is three times higher than for boys, and in the United States, it is twice as high.[22] Additionally, a study in China found that the suicide rate in rural areas is double that of urban areas.[23] This study also revealed that suicidal thoughts are more prevalent among rural children compared to their urban counterparts.[24] Contrastingly, a study conducted in southern Iran found that the suicide rate among boys was almost twice that of girls.[25]

The subject of the text appears to be the comparison of suicide rates and suicidal thoughts between children in urban and rural areas, with a focus on contributing factors such as loneliness. Studies have shown that children living in urban areas tend to have higher suicide rates compared to those in rural areas, as evidenced by research conducted in Iran.[21,25,26] A 2021 study by Ong *et al*. indicated that suicide rates among rural children were lower than those among urban children.[22] Contrarily, Tan *et al*. found that suicidal thoughts were more prevalent among children in rural areas than those in urban areas.[24] Loneliness has been identified as a significant factor linked to suicidal thoughts. This association might be intensified in urban settings where parents often work outside the home, potentially leading to increased feelings of isolation among children.

Study limitations

One limitation of this study is that it was conducted at a single referral hospital, which may limit the generalizability of the findings to other populations and settings. The study relied on medical records to identify cases of self-poisoning, which may have resulted in underreporting or misclassification of cases.

Practical implications

The practical implications of self-poisoning are profound. Firstly, it places a significant burden on healthcare systems. Emergency departments frequently encounter cases of drug overdose, necessitating immediate medical intervention to prevent fatal outcomes. Treatment often involves gastric lavage, the administration of activated charcoal, and supportive care to manage symptoms such as respiratory depression, seizures, and cardiac arrhythmias. In severe cases, admission to the intensive care unit may be required. Beyond the immediate medical response, self-poisoning has long-term consequences for the mental health and well-being of young individuals. Survivors of self-poisoning are at an increased risk of repeated suicide attempts and may suffer from chronic physical and psychological issues. It is essential to provide comprehensive mental health support, including counseling and psychiatric evaluation, to address underlying issues such as depression, anxiety, and substance abuse. Prevention strategies must be multifaceted to effectively reduce the incidence of self-poisoning among children and adolescents. Education plays a pivotal role; raising awareness about the dangers of drug misuse and promoting mental health literacy can empower young people to seek help when needed. Schools, parents, and healthcare providers should work collaboratively to identify at-risk individuals and provide timely interventions. Furthermore, restricting access to medications can significantly reduce the likelihood of self-poisoning. This can be achieved through measures such as secure storage of pharmaceuticals in households, implementing prescription monitoring programs, and regulating the sale of over-the-counter drugs. Healthcare professionals should also be vigilant in their prescribing practices, ensuring that medications are dispensed in quantities that minimize the risk of overdose.

Conclusions

The findings of this study, in conjunction with previous research, underscore the prevalence of self-poisoning as a method of suicide among referred children, with sedative-hypnotics being the most commonly used drugs. Adolescence was found to be a vulnerable period for suicide, with girls being more likely to commit suicide than boys. Additionally, children living in urban areas were found to be at a higher risk of suicide, potentially due to the impact of loneliness. These findings underscore the need for preventative measures and effective interventions to address the mental health needs of children and adolescents, particularly in urban areas. Further research is necessary to better understand the complex relationship between suicide and location and to develop targeted strategies to prevent suicide among at-risk children and adolescents.

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