



Research

Evaluation of Demographic and Clinical Characteristics of Suicidal Drug Ingestion in Children and Adolescents: A Single-Center Retrospective Study

Çocuk ve Ergenlerde İntihar Amaçlı İlaç Alımının Demografik ve Klinik Özelliklerinin Değerlendirilmesi: Tek Merkezli Retrospektif Bir Çalışma

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ABSTRACT

Objective: Adolescence represents a high-risk period for self-harm behaviors. This study aimed to evaluate the demographic and clinical characteristics of patients aged 9-18 years who presented to the pediatric emergency department with suicidal drug ingestion, and to identify age-specific risk factors.

Methods: This retrospective cohort study included 67 patients admitted to a tertiary pediatric emergency department between January 2023 and December 2024. Patients were stratified into early adolescence (9-14 years) and mid-to-late adolescence (15-18 years) groups. Clinical outcomes and demographic data were analyzed.

Results: The cohort was 83.6% female with a mean age of 13.93±1.4 years. Multi-drug ingestion was identified in 56.7% of patients. While the gender distribution was similar across groups, the 15-18-year age group exhibited significantly higher rates of multidrug ingestion (78.6% vs. 41.0%; $p=0.003$), recurrent suicide attempts (53.6% vs. 23.1%; $p=0.010$), and symptomatic presentation (64.3% vs. 35.9%; $p=0.022$). Furthermore, multidrug ingestion significantly increased the risk of intoxication in the 9-14 age group ($p=0.012$).

Conclusion: Clinical complexity increases with age, characterized by higher rates of multidrug use and recurrence among older adolescents. Consequently, prevention strategies should prioritize safe medication storage and age-specific psychosocial interventions involving both families and schools.

Keywords: Child, adolescent, suicide, intoxication, multi-drug ingestion

ÖZ

Amaç: Ergenlik, kendine zarar verme davranışları açısından yüksek riskli bir dönemdir. Bu çalışma ile, intihar amaçlı ilaç alımı nedeniyle çocuk acil servisine başvuran 9-18 yaş arası hastaların demografik ve klinik özelliklerinin değerlendirilmesi ve yaşa özgü risk faktörlerinin belirlenmesi amaçlandı.

Gereç ve Yöntem: Bu retrospektif kohort çalışmasına, Ocak 2023 ile Aralık 2024 tarihleri arasında üçüncü basamak bir çocuk acil servisine kabul edilen 67 hasta dahil edildi. Hastalar erken (9-14 yaş) ve orta-geç (15-18 yaş) ergenlik gruplarına ayrıldı. Klinik sonuçlar ve demografik veriler analiz edildi.

Bulgular: Çalışma grubunun %83,6'sının kız olduğu ve yaş ortalamasının 13,93±1,4 yıl olduğu saptandı. Hastaların %56,7'sinde çoklu ilaç alımı tespit edildi. Cinsiyet dağılımı gruplar arasında benzer olmakla birlikte; 15-18 yaş grubunda çoklu ilaç alımı (%78,6'ya karşı %41,0; $p=0,003$), tekrarlayan intihar girişimleri (%53,6'ya karşı %23,1; $p=0,010$) ve semptomatik başvuru (%64,3'e karşı %35,9; $p=0,022$) oranlarının anlamlı derecede daha yüksek olduğu gözlemlendi. Ayrıca, çoklu ilaç alımının 9-14 yaş grubunda intoksikasyon riskini anlamlı ölçüde artırdığı belirlendi ($p=0,012$).

Sonuç: Klinik tablonun karmaşıklığının yaşla birlikte arttığı, bu durumun özellikle büyük yaş grubundaki ergenlerde daha yüksek çoklu ilaç kullanımı ve tekrarlama oranları ile karakterize olduğu sonucuna varıldı. Önleme stratejilerinin, ilaçların güvenli saklanması ve aile ile okulları kapsayan yaşa özgü psikososyal müdahalelere odaklanması gerektiği vurgulandı.

Anahtar Kelimeler: Çocuk, ergen, intihar, intoksikasyon, çoklu ilaç alımı

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INTRODUCTION

Adolescence is a developmental phase characterized by an increased risk of self-harm and suicide attempts (1). Intentional self-poisoning by drug ingestion remains one of the most frequent methods of attempted suicide among adolescents (2-5). According to World Health Organization data, approximately 800,000 people die by suicide every year; young people aged 15-29 account for more than one-third of these deaths (1).

Recent epidemiological data indicate a shift in the patterns of suicidal behavior. While early adolescence is often characterized by impulsive actions, older adolescents tend to exhibit more planned behaviors involving more lethal methods and multi-drug regimens. In developing countries such as Türkiye, rapid socio-cultural changes, increasing academic pressure, and changing family dynamics may further exacerbate these risks, creating unique stress factors for adolescents (6). Furthermore, recurrence rates in developing countries have been reported to be significantly higher than in Western countries, potentially due to disparities in post-discharge psychosocial support.

Consistent with these data, we aimed to evaluate the demographic and clinical characteristics of patients aged 9-18 years who had attempted suicide and contribute to the literature by identifying age-specific risk factors.

METHODS

This retrospective cohort study was conducted at the pediatric emergency clinic of the hospital and covered admissions between January 1, 2023, and December 31, 2024. This retrospective study was approved by the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Non-Interventional Clinical Research Ethics Committee and conducted in accordance with the principles of the Declaration of Helsinki (approval no: 2025-13-01, date: 23.07.2025). Due to its retrospective nature, informed consent was waived.

The study included patients aged 9-18 years who were admitted for intentional drug ingestion with suicidal intent and were observed during follow-up. Data regarding age, gender, amounts of drug, drug diversity (single vs. multiple drugs), time to presentation, clinical findings, and number of previous suicide attempts were evaluated retrospectively from patient files. Patients were divided into two age groups to assess developmental differences: 9-14 years (early adolescence) and 15-18 years (mid-to-late adolescence).

Intoxication risk was classified based on the development of moderate-to-severe clinical toxicity. To ensure objective

classification, moderate-to-severe toxicity was defined as clinical criteria corresponding to a Poison Severity Score of grade 2 (moderate) or higher. This included persistent neurological symptoms (e.g., Glasgow Coma Scale <15, seizures, agitation), cardiovascular instability (e.g., hypotension, arrhythmia requiring treatment), or metabolic derangements requiring invasive interventions.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, version 21.0. The normality of continuous variables was assessed using the Shapiro-Wilk test. Continuous variables were expressed as mean±standard deviation or median based on distribution. Categorical variables were summarized as frequencies (n) and percentages (%). Comparisons were performed using the Student's t-test, Mann-Whitney U test, and Pearson's chi-square test. When the expected count in any cell was less than 5, Fisher's Exact test was employed. To evaluate the impact of multi-drug ingestion on clinical severity, risk ratios (RRs) with 95% confidence intervals (CI) were calculated. A p-value of <0.05 was considered statistically significant.

RESULTS

The study population consisted of 67 patients, with a female predominance (83.6%; n=56) and a mean age of 13.92±1.39 years. Based on developmental stages, 58.2% (n=39) were in the early adolescence group (9-14 years), while 41.8% (n=28) were in the mid-to-late adolescence group (15-18 years).

Multi-drug ingestion was detected in 56.7% (n=38) of patients. Among cases of multi-drug ingestion, combinations of non-steroidal anti-inflammatory drugs (NSAIDs) and paracetamol, and of antidepressants and antipsychotics were frequently observed. Regarding time to presentation, 50.7% (n=34) presented more than 2 hours after ingestion. Symptomatic presentation was observed in 47.7% (n=32) of the patients. The spectrum of symptoms included gastrointestinal symptoms (n=25: nausea, vomiting, and abdominal pain) and neurological symptoms (n=12: somnolence, dizziness, and extrapyramidal symptoms). Cardiovascular symptoms, such as tachycardia, were also noted in a smaller subset of patients. The clinical course was generally favorable, with only one patient (1.49%) requiring intensive care unit (ICU) admission.

When demographic and clinical characteristics were compared across age groups (Table 1), markers of clinical complexity increased significantly with age. The 15-18-year age group exhibited a significantly higher rate of multi-drug ingestion (78.6%) than the 9-14-year age group (41.0%)

($p=0.003$). Similarly, the history of recurrent suicide attempts (≥ 2) was significantly more frequent in the older group (53.6% vs. 23.1%; $p=0.010$). Symptomatic presentation was also significantly higher in the 15-18 age group (64.3% vs. 35.9%; $p=0.022$).

The distribution of ingested pharmacological agents varied by age (Table 2). Antidepressants were the most frequently ingested agents in the 15-18 age group (60.7%), a rate significantly higher than that in the 9-14 age group (30.8%) ($p=0.018$). No significant age-related differences were observed in the ingestion rates of antipsychotics, paracetamol, NSAIDs, or cold medications.

Risk analysis revealed that multidrug ingestion significantly predicted clinical severity (Table 3). Patients who ingested multiple drugs had a 1.74-fold higher risk of developing moderate-to-severe clinical toxicity compared with those who ingested a single drug [RR=1.74; 95% CI: (1.15-2.63); $p=0.018$]. Notably, subgroup analysis indicated that multidrug ingestion significantly increased the risk of intoxication in the 9-14-year age group ($p=0.012$). Conversely, the time to presentation (0-2 hours vs. >2 hours) was not identified as a statistically significant risk factor for the development of moderate-to-severe toxicity (RR=1.02; $p=0.91$).

Table 1. Clinical and demographic characteristics by age group

Variable	Early adolescence (9-14 years) (n=39)	Mid-to-late adolescence (15-18 years) (n=28)	p
Gender, n (%)			
Female	32 (82.1%)	24 (85.7%)	0.62
Male	7 (17.9%)	4 (14.3%)	
Time to presentation, n (%)			
0-2 hours	19 (48.7%)	13 (46.4%)	1.00
>2 hours	20 (51.3%)	15 (53.6%)	
Multi-drug ingestion, n (%)	16 (41.0%)	22 (78.6%)	0.003*
Recurrent attempts (≥ 2), n (%)	9 (23.1%)	15 (53.6%)	0.010*
Symptomatic presentation, n (%)	14 (35.9%)	18 (64.3%)	0.022*

Data are presented as n (%)
*: Indicates statistical significance ($p<0.05$)

Table 2. Distribution of ingested drug groups by age

Drug Class	Early adolescence (n=39)	Mid-to-late adolescence (n=28)	p
Antidepressants	12 (30.8%)	17 (60.7%)	0.018*
Antipsychotics	13 (33.3%)	13 (46.4%)	0.29
Paracetamol	9 (23.1%)	9 (32.1%)	0.43
NSAIDs	7 (17.9%)	8 (28.6%)	0.31
Cold medications	8 (20.5%)	6 (21.4%)	0.92
Others	6 (15.4%)	5 (17.9%)	0.78

Data are presented as n (%)
*: Indicates statistical significance ($p<0.05$), NSAID: Non-steroidal anti-inflammatory drug

Table 3. Assessment of intoxication risk ratios (n=67)

Risk factor	Moderate/severe toxicity (+)	Total (n)	Risk rate (%)	Risk ratio (RR)	p
Drug intake					0.018*
Single drug	11	29	37.9%	1.00 (Ref)	
Multi-drug	25	38	65.8%	1.74 (1.15-2.63)	
Time to presentation					0.91
0-2 hours	17	32	53.1%	1.00 (Ref)	
>2 hours	19	35	54.3%	1.02	

*: Indicates statistical significance ($p<0.05$), CI: Confidence interval, Ref: Reference category

DISCUSSION

Adolescence is a developmental phase associated with a high risk of self-harm and suicide attempts. Suicide attempts are a significant public health problem both globally and in our country (1). Drug ingestion is one of the methods most frequently encountered in adolescent suicide attempts (2-5). In our study, by evaluating the demographic and clinical characteristics of children and adolescents aged 9-18 years presenting to the pediatric emergency department for suicidal drug ingestion, we determined that suicidal behaviors were more common in females and that the clinical presentation became more severe with increasing age.

Studies conducted in Türkiye report that the proportion of female cases ranges from 66.7% to 86.7%, while global studies show that suicide attempts are 3 to 9 times more common in girls (7-10). The higher incidence of suicide attempts among girls has been associated with a greater prevalence of mood disorders and increased sensitivity to psychosocial stressors (11,12). Our finding of a female prevalence of 83.6% aligns with national and international data.

When evaluated by age group, recurrent suicide attempts, multidrug ingestion, and the presence of associated symptoms were significantly more frequent in the 15-18 age group. While suicide attempts are frequent among younger adolescents due to insufficient developmental maturity, older adolescents prefer more planned suicidal behaviors and more toxic drugs (13).

Our study highlights a critical “cocktail effect” in older adolescents. The high rate of multidrug ingestion (78.6%) in the 15-18-year age group creates unpredictable toxicologic synergies. Our results showed that combinations, such as analgesics/NSAIDs and psychotropics, were frequently co-ingested. Unlike accidental poisonings, these mixtures complicate the clinical picture. This finding supports a more vigilant approach in the emergency department, in which history-taking must aggressively screen for co-ingestants.

A striking finding in our study is the recurrence rate of 53.6% in the 15-18-year age group. This rate is considerably higher than that reported in some Western studies (e.g., United States cohorts) (5,9). This disparity suggests a gap in post-discharge management in our setting. While medical stabilization is highly effective (as evidenced by low mortality and ICU admissions in our study), the lack of standardized safety planning and immediate psychosocial follow-up may contribute to high relapse rates. Interventions, such as creating a written safety plan before discharge, may help mitigate this risk (14,15).

The significantly higher use of antidepressants in the older age group (60.7%) likely reflects both a higher prevalence of diagnosed psychiatric conditions and greater access to prescribed medications among this demographic. This presents a therapeutic paradox in which the treatment modality becomes the instrument of the suicide attempt.

Study Limitations

This study has several limitations. First, its single-center, retrospective design may limit the generalizability of the findings. Second, the sample size (n=67), while sufficient for descriptive analysis, may be insufficient to detect rare clinical outcomes or small effect sizes, increasing the risk of type II error. Third, the reliance on patient files means that data regarding specific intent might be subject to documentation bias. Additionally, long-term psychiatric outcomes beyond the emergency department admission were not evaluated.

CONCLUSION

Our study reveals that suicidal drug ingestion among adolescents continues to be an important public health problem, and clinical characteristics vary with age. The increase in multidrug ingestion and recurrent suicide attempts during late adolescence indicates that this group should be managed as high-risk. In preventing suicide attempts among adolescents, early psychiatric evaluation, family- and school-based preventive approaches, and regulations regarding the safe storage of drugs are of critical importance. Furthermore, bridging the gap between acute medical care and long-term psychosocial support is essential to break the cycle of recurrence.

ETHICS

Ethics Committee Approval: This retrospective study was approved by the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Non-Interventional Clinical Research Ethics Committee and conducted in accordance with the principles of the Declaration of Helsinki (approval no: 2025-13-01, date: 23.07.2025).

Informed Consent: Due to its retrospective nature, informed consent was waived.

FOOTNOTES

Authorship Contributions

Concept: E.E.S., Design: E.E.S., Data Collection or Processing: G.A., Analysis or Interpretation: E.E.S., Literature Search: E.E.S., G.A., Writing: E.E.S., G.A.

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