ORIGINAL ARTICLE

Acute Voluntary Self-Poisoning in Adolescents and Suicide Intent Assessment: A Prospective Study in the Emergency Department of the Mahmoud Yaacoub Emergency Medical Center

Intoxication volontaire aiguë chez les adolescents et évaluation de l'intention suicidaire: étude prospective au service des urgences du Centre Mahmoud Yaacoub d'Assistance Médicale Urgente

Camillia Jeddi, Soumaya Abidi, Mohamed Kilani, Hafedh Thabet

University of Tunis el Manar, Faculty of Medicine of Tunis, Department of Emergency Medicine, Center of Mahmoud Yaacoub of Urgent Medical Assistance, Tunis, Tunisia

Abstract

Introduction: Adolescent suicide attempts remain a critical global health concern, with self-poisoning being the most common method. This study aimed to describe the demographic and clinical features of adolescent self-poisoning cases presenting to the emergency department (ED), and to assess their suicide intent.

Methods: A prospective study was conducted over 12 months (October 2023–September 2024) at the ED of Mahmoud Yaacoub Emergency Medical Center. Adolescents aged 10–19 years with voluntary self-poisoning were included. Data on demographics, clinical history, suicide attempt characteristics, presentation, and management were collected. Suicide intent was assessed using the Pierce Suicide Intent Scale.

Results: A total of 246 cases were included, predominantly female (84.6%), with a median age of 17 [IQR: 16–18]. Psychiatric history was noted in 28.5%, and 26.8% had previous suicide attempts. Pharmaceuticals were the main substances, with acetaminophen (18.8%) and benzodiazepines (16.5%) most frequently used. Most patients were asymptomatic (65.9%); gastrointestinal (19.1%) and neurological (15.6%) symptoms were common among symptomatic cases. Activated charcoal and antidotes were administered in 7.3% and 10.2% of cases, respectively. Moderate suicide intent was identified in 58.4% of those assessed. Multivariate analysis showed that prior suicide attempts (OR = 2.49, p = 0.044, 95%CI [1.02-6.03]) and presumed ingested toxic doses (OR = 2.48, p = 0.038, 95%CI [1.05-5.88]) were independent predictors of high suicide intent.

Conclusion: Voluntary self-poisoning in adolescents most often involved acetaminophen and benzodiazepines. A history of prior attempts and toxic presumed ingested doses were significantly associated with high suicide intent.

Key words: Adolescents, Intoxication, Intentional self-poisoning, Suicide attempts, Suicide intent, Emergency department

Résumé

Introduction: Les tentatives de suicide chez les adolescents demeurent un problème de santé publique majeur à l'échelle mondiale, l'intoxication volontaire étant la méthode la plus courante. Cette étude visait à décrire les caractéristiques démographiques et cliniques des adolescents admis aux urgences pour intoxication volontaire et à évaluer leur intention suicidaire.

Méthodes: Une étude prospective a été menée sur 12 mois (octobre 2023 – septembre 2024) au service des urgences du Centre Mahmoud Yaacoub d'assistance médicale urgente. Les adolescents âgés de 10 à 19 ans ayant présenté une tentative de suicide par intoxication volontaire ont été inclus. Des données démographiques, des antécédents médicaux, les caractéristiques de la tentative de suicide, la présentation clinique et la prise en charge ont été recueillies. L'intention suicidaire a été évaluée à l'aide de l'échelle de Pierce.

Résultats: Au total, 246 cas ont été inclus, majoritairement des femmes (84,6 %), avec un âge médian de 17 ans [intervalle interquartile : 16-18]. Des antécédents psychiatriques ont été notés chez 28,5 % des patients, et 26,8 % avaient déjà fait une tentative de suicide. Les médicaments étaient les principales substances utilisées, le paracétamol (18,8 %) et les benzodiazépines (16,5 %) étant les plus fréquents. La plupart des patients étaient asymptomatiques (65,9 %) ; des symptômes gastro-intestinaux (19,1 %) et neurologiques (15,6 %) étaient fréquents parmi les cas symptomatiques. Du charbon activé et des antidotes ont été administrés dans respectivement 7,3 % et 10,2 % des cas. Une intention suicidaire modérée a été identifiée chez 58,4 % des personnes évaluées. L'analyse multivariée a montré que les tentatives de suicide antérieures (OR = 2,49, p = 0,044, IC à 95 % [1,02-6,03]) et les doses toxiques présumées ingérées (OR = 2,48, p = 0,038, IC à 95 % [1,05-5,88]) étaient des prédicteurs indépendants d'une intention suicidaire élevée.

Conclusion: Chez les adolescents, les intoxications volontaires impliquent le plus souvent du paracétamol et des benzodiazépines. Des antécédents de tentatives de suicide et des doses toxiques présumées ingérées sont significativement associés à une forte intention suicidaire.

Mots clés: Adolescent,Service des urgences, Intoxication, Empoisonnement volontaire, Tentatives de suicide, Intention suicidaire

Correspondance

Camillia Jeddi

University of Tunis el Manar, Faculty of Medicine of Tunis, Department of Emergency Medicine, Center of Mahmoud Yaacoub of Urgent Medical Assistance, Tunis, Tunisia

Email: Camillia.jeddi@fmt.utm.tn

LA TUNISIE MEDICALE-2026; Vol 104 (08): 945-953 DOI: 10.62438/tunismed.v104i08.6753

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Introduction

A suicide attempt is defined by the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5-TR) as the " self-initiated sequence of behaviors by an individual who at the time of initiation, expected that the set of actions would lead to his or her own death "[1]. Suicide intent is the degree of seriousness or intensity underlying an individual's desire to end their life and it has been assessed through several standardized clinical instruments, such as the Beck Suicide Intent Scale or its revised version the Pierce Suicide Intent Scale (PSIS) [2,3]. Adolescents, who are undergoing significant psychological, physical, and social transitions, represent a particularly vulnerable population for suicide attempts [4,5].

Suicide attempt methods vary globally, influenced by culture and national regulations. In regions with limited access to violent means, self-poisoning is more common [6]. Recent studies in Brazil and Spain reported that voluntary self-poisoning among adolescents accounted for 84.1% and 94.2% respectively [7,8]. In Tunisia, self-poisoning is the most common method of suicide attempts among adolescents, as reported by Kerkeni et al. in a study of 101 cases, [9] and Boukhchina et al in a study of 30 adolescents [10]. However, to the best of the authors' knowledge, data describing adolescents presenting to emergency departments (EDs) for suicide attempts, particularly those involving self-poisoning, remain underreported in the Tunisian literature.

Accurately identifying the profile and suicide intent of adolescents presenting to the ED after self-poisoning is essential. In time-constrained settings without immediate psychiatric support, the PSIS [3,11] offers a rapid, reliable tool for assessing intent. Its use enables emergency physicians to gauge severity and prioritize psychiatric referrals when specialist evaluation is unavailable.

We aimed to describe the demographic and clinical characteristics of voluntary self-poisoning in adolescents. We also aimed to assess the risk of suicide intent by using PSIS.

Methods

This was a monocentric, prospective, observational and descriptive study of cases who consulted the ED of Mahmoud Yaacoub Emergency Medical Assistance Center, a national reference toxicology center, for voluntary self-poisoning among adolescents with suicide intent, over a period of 12 months from the 1st of October 2023 to the 30th of September 2024. We adopted the World Health Organization definition of an adolescent which is a person aged from 10 to 19 years old [12]. We defined early adolescence from 10 to 14 years old, middle adolescence from 15 to 17 years old and late adolescence from 18 to 19 years old.

Cases involving medical emergencies unrelated to suicide attempts, accidental substance ingestion, recreational drug use, or suicide attempts using methods other than self-poisoning such as hanging, suffocation, jumping from heights, cutting, or burning were not included.

Cases of completed suicide resulting in death, uncertain suicidal intent (characterized by ambiguous or conflicting reports from the adolescent, family members, or both), significant mental or cognitive impairments that could compromise the accuracy and reliability of suicide intent assessment, and incomplete medical records were excluded from the study. Mental or cognitive impairments were considered exclusion criteria because they may limit an adolescent's ability to provide an accurate history, understand the assessment process, exercise appropriate judgment, and reliably self-report symptoms, thereby affecting the validity of the evaluation.

After selecting the subjects, patient records were prospectively collected in the ED. Anamnestic data included patient demographics, medical and psychiatric history, and details of the suicide attempt such as timing, substances involved, administration route, presumed ingested dose (PID), and source of drugs. Clinical data included vital signs, neurological exam findings, and paraclinical results like electrocardiogram (ECG) changes and laboratory tests. Management followed the ABCDE approach, providing symptomatic treatment, decontamination, and antidotes as needed, with continuous monitoring of vital signs. Endotracheal intubation and Intensive Care Unit (ICU) admission were based on severity criteria including coma, respiratory, and hemodynamic instability. Length of stay and referrals were also documented.

Suicide intent was assessed using PSIS, a revised and objective version of Beck's scale designed to evaluate suicide intent and predict risk [3,11] (Appendix). PSIS was structured into three sections comprising a total of 12 items yielding a maximum score of 25: circumstances of the attempt (6 items), self-report (4 items), and medical risk (2 items). Scores classify intent as mild (0–3), moderate (4–10), or high (11 and above). The scale was administered by the on-call physician at the patient's bedside after clinical stabilization and after obtaining verbally informed consent from both the adolescent and the legal guardian. If either consent was not obtained, the PSIS was not conducted.

Statistical analysis was performed using Jamovi 2.6.44, with significance set at $p < 0.05$. Quantitative variables were tested for normality using the Kolmogorov–Smirnov test; normally distributed data were presented as means ± SD, while non-normal data were expressed as medians with interquartile ranges. Qualitative variables were described by frequencies and percentages. Patients completing the PSIS were categorized into mild, moderate, and high intent groups. Potential predictors, including demographics, timing, medical history, intoxication type, clinical, and laboratory findings, were analyzed using univariate binomial logistic regression. Variables significant at $p < 0.05$ were included in a multivariate model with backward stepwise selection.

The literature review was conducted via PubMed, ScienceDirect, and Frontiers using relevant keywords.

No conflicts of interest were declared, patient anonymity

was maintained, and local ethics committee approval was sought.

Results

Descriptive study

Once the predefined criteria for inclusion, non-inclusion, and exclusion had been applied, a total of 246 cases were retained to our study (figure1).

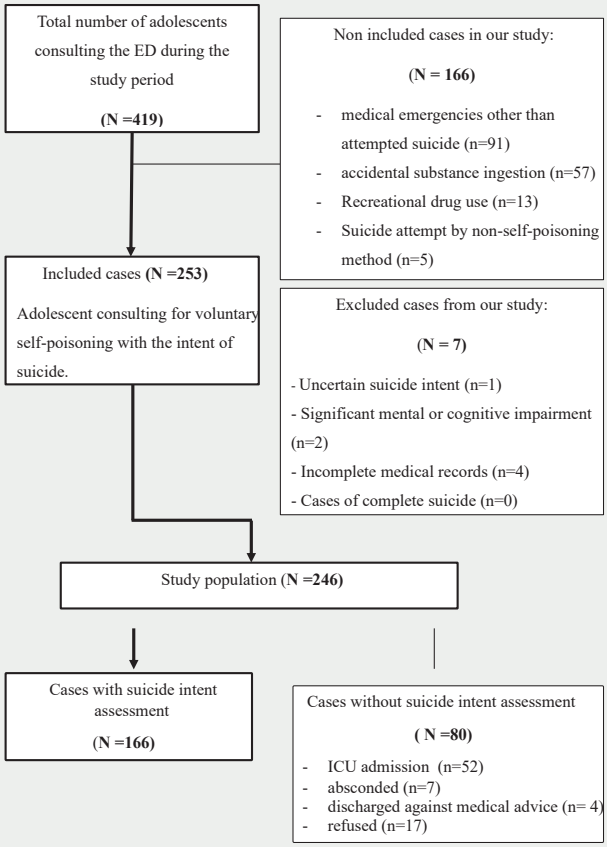


Figure 1. patient flowchart

Demographic characteristics of the study population

The median age of patients was 17 years [IQR: 16–18], with a range of 13 to 19 years. The majority were female, representing 208 cases (84.6%) (Table 1).

Characteristics of voluntary self-poisoning

All adolescents attempted suicide through ingestion of the toxic substance, except for a single case in which injection was used as the route of administration. Median time to ED consultation was 3 hours [2–7]. Most patients (65.9%) were asymptomatic; among the 34.1% with symptoms, gastrointestinal (19.1%) and neurological (15.4%) were the most common symptoms (table 2).

Table 1. Demographic characteristics and circumstances of suicide attempts among the study population

Demographic profiles and circumstances of suicide attempts (N= 246)	N (%)
Female/ male	208 (84.6) / 38 (15.4)
Medical and psychiatric history	
Asthma	5 (2)
Epilepsy	4 (1.6)
Type 1 diabetes	1 (0.4)
Hypothyroidism	1 (0.4)
Psychiatric disorder	70 (28.5)
History of suicide attempts	
Suicide attempt history	66 (26.8)
Multiple suicide attempt history	20 (8.1)
History of illicit drug use	6(2.4)
Pregabalin	2 (0.8)
Cannabis	2 (0.8)
MDMA	1 (0.4)
Unspecified	1 (0.4)
Distribution of suicide attempts by day of the week	
Monday	46 (18.7)
Tuesday	38 (15.4)
Wednesday	42 (17.1)
Thursday	35 (14.2)
Friday	31 (12.6)
Saturday	24 (9.8)
Sunday	30 (12.2)
Distribution of suicide attempts by season	
Autumn	66 (26.8)
Winter	54 (22)
Spring	73 (29.7)
Summer	53 (21.5)
Time of day of suicide attempts	
Day time [8:00 to 15:59]	88 (35.8)
Late afternoon and evening [16:00 to 23:59]	107(43.5)
Night and early morning [0:00 to 7:59]	31 (12.6)
Not identified	20 (8.1)
Location of suicide attempt	
Home	241 (98)
High school	3 (1.2)
Public place	2 (0.8)
Precipitating factors for the suicide attempts	
Family conflicts	116 (47.2)
Not disclosed	73 (29.7)
Romantic relationship conflicts	31 (12.6)
Social difficulties	15 (6.1)
Academic challenges	8 (3.3)
Death in the family	3 (1.2)

*MDMA: 3,4-Methylenedioxymethamphetamine.

Continuous variables are presented as median [IQR], ordinal variables are presented as frequencies and percentages.

Table 2. Initial symptoms and clinical findings on arrival to the ED

Symptoms (246)	N (%)
symptomatic	84 (34.1)
Digestive symptoms:	47 (19.1)
abdominal pain	47 (19.1)
nausea	26 (10.5)
vomiting	18 (7.3)
Neurological symptoms:	38 (15.4)
Drowsiness	16 (6.5)
Altered consciousness state	6 (2.4)
Coma	8 (3.3)
tremor	2 (0.8)
Balance disorder	4 (1.6)
weakness	1 (0.4)
Cardiac symptoms:	1 (0.4)
palpitation	1 (0.4)
Psychiatric symptoms	
Agitation	2 (0.8)
Oral mucosal irritation	1 (0.4)
Clinical findings	
RR (breaths per minute)	17 [16-18]
SpO_2 on room air (%)	98 [98-100]
HR (beats per minute)	87 [76-99]
Tachycardia (HR>100)	49 (19.9)
Bradycardia (HR<60)	3 (1.2)
BP (mmHg)	
SBP	120 [110-128]
DBP	70 [65-80]
Hypotension	4 (1.6)
High blood pressure	14 (5.7)
Management in the ED	
Endotracheal intubation /mechanical ventilation	11(4.5)
Activated charcoal	18 (7.3)
Antidote	25 (10.2)
N-acetylcysteine	21 (8.5)
flumazenil	4 (1.6)
ICU admission	52 (21.1)
Discharged and referred to psychiatric emergency	73(29.7)
Discharged and referred to psychiatric consultation	81 (32.9)

ED: Emergency department, ICU: intensive care unit, RR: Respiratory Rate, SpO_2: Peripheral Oxygen Saturation, HR: Heart Rate, SBP: Systolic Blood Pressure, DBP: Diastolic Blood Pressure.
*Hypotension: Systolic blood pressure: SBP <90 mmHg and/or diastolic blood pressure (DBP) <60 mmHg, High blood pressure: SBP ≥140 mmHg and/or DBP ≥90 mmHg.
* Continuous variables are presented as median [IQR], RR: Respiratory Rate, SpO_2: Peripheral Oxygen Saturation, HR: Heart Rate, SBP: Systolic Blood Pressure, DBP: Diastolic Blood Pressure.

Pharmaceutical substances were the most used agents in self-poisoning, accounting for 224 cases (91.1%). Single-drug ingestion was predominant, observed in 142 cases (63.4%). In 96 cases (42.8 %) the PID was toxic. The leading substance was acetaminophen, involved in 42 cases (18.8%), followed by benzodiazepines (16.5%). Antibiotics and antiepileptic drugs (AEDs) each ranked third, with 27 cases (12.1%) respectively (Table 3).

Table 3. Overview of Drug Self-Poisoning Characteristics in Adolescents.

Drug self-poisoning =224	n (%)	Toxic PID n (%)
Single drug poisoning	142 (63.4)	
Co-ingestion	82 (36.6)	
Source of medication		
Parent's medication	109 (48.7)	
Adolescent's own medication	63 (28.1)	
Over the counter drugs	8 (3.6)	
Friend's medication	1 (0.4)	
Unknown source	43 (19.2)	
Pharmaceutical drugs		
Acetaminophen	42 (18.8)	20 (47.6)
Benzodiazepines	37 (16.5)	12 (32.4)
Bromazepam	26 (11.6)	
Oxazepam	4 (1.8)	
Alprazolam	4 (1.8)	
Antibiotics	27 (12.1)	12 (44.4)
Amoxicillin	7 (3.1)	
Metronidazole	6 (2.7)	
Amoxicillin/clavulanic acid	4 (1.8)	
AEDs	27 (12.1)	8 (29.6)
carbamazepine	11 (4.9)	
valproate sodium	7 (3.1)	
lamotrigine	5(2.2)	
NSAIDs	22 (9.8)	1 (4.5)
Ibuprofen	7 (3.1)	
Flurbiprofen	5(2.2)	
Mefenamic acid	3 (1.3)	
Antidepressants	20 (8.9)	6 (30)
Sertraline	6 (2.7)	
Escitalopram	4 (1.8)	
Amitriptyline	5 (2.2)	

*AED: antiepileptic drugs, NSAIDs: Non-Steroidal Anti-Inflammatory Drugs, PID: presumed ingested dose.

Pesticides came in second place after drug self-poisoning represented by 19 cases (7.7 %). Rodenticides and pyrethroids were the only pesticides identified. Detergents and caustics were represented by 3 cases (1.2%), all of which involved bleach.

Initial physical examination and management

All cases presented without respiratory distress or signs of shock. Only 8 cases (3.3%) were comatose on arrival with a GCS ≤ 8. An ECG was performed in 118 cases, revealing a regular sinus rhythm in 96 cases (81.4%) (Table 3).
Hematological abnormalities were found in 59% of the 117 patients who underwent complete blood count testing. Serum electrolyte analysis was performed in 124 cases, with abnormalities detected in 30 cases—most commonly potassium imbalance (16.9%) and sodium imbalance (8%). Among 60 patients tested for muscle enzymes, elevated creatine kinase indicating rhabdomyolysis was found in 6.7%, elevated lactate dehydrogenase in 10%, elevated aspartate aminotransferase in 5.4% (7 of 130), and elevated alanine aminotransferase in 4.6% (6 of 130). Elevated serum creatinine levels were observed in two patients with no prior medical history.
All patients received prompt care following established protocols for acute intoxication in the ED. Endotracheal intubation was performed in 11 cases and 52 patients (21.1%) wera admitted to the ICU. After medical stabilization, patients were referred for further care. The most frequent referral was to psychiatric consultation in 81 cases (32.9%).

Suicide Intent Assessment

The suicide intent was assessed by PSIS in 166 cases (67.4%). The median score was 6 [3-10] ranging from 0 to 18. Moderate suicide intent level was the most common category level, with 97 cases (58.4%). Moderate suicide intent was predominant across different clinical and demographic characteristics in adolescents who attempted suicide by voluntary self-poisoning. High suicide intent was more frequent in males (23.1%) and middle adolescents (22.6%), cases of single-drug poisoning (17.3%) and those with previous suicide attempts (27.3%) and psychiatric history (23.3%) (figure 2).

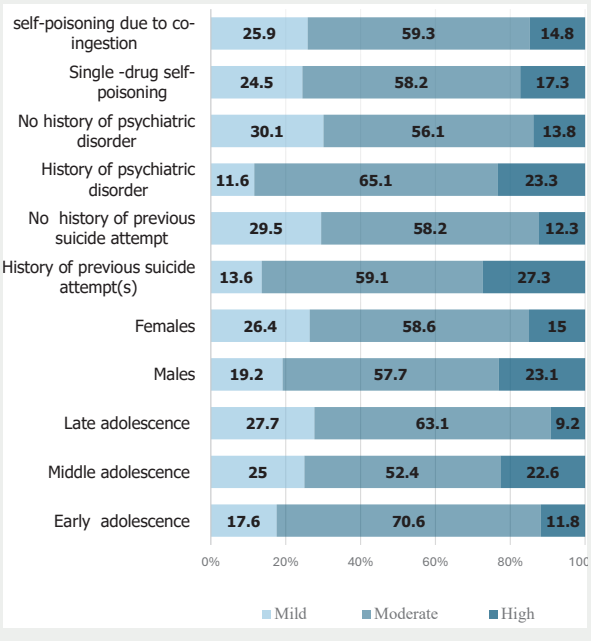


Figure 2. Patterns of suicide intent severity according to adolescent profiles

Predictive factors of high suicide intent

Our univariate analysis identified three independent variables that were significantly associated with high suicide intent levels. A multivariate analysis revealed that both history of previous suicide attempt and toxic PID were associated with a 2.5-fold increase in the likelihood of high suicide intent (Table 4).

Table 4. Predictive factors of high suicide intent.

Variable	p-(value)	OR	95% CI
History of previous suicide attempt	0.044	2.49	[1.02-6.03]
Toxic PID	0.038	2.48	[1.05-5.88]

*CI: Confidence Interval. OR: Odds Ratio. PID: presumed ingested dose

Discussion

Suicide attempt rates are alarmingly high worldwide and even more in developing countries. A 2019 cross-sectional study using school-based data from 40 low- and middle-income countries focused specifically on adolescents aged 13 to 17 years, found an average 12-month prevalence of suicide attempts of 17.2%, with rates ranging from 6.7% in Malaysia to 61.2% in Samoa [13]. Similarly, a 2020 pooled analysis of the Global School-Based Student Health Survey from 90 countries examined adolescents within the same age range and reported an average 12-month prevalence of approximately 17% [14]. Locally, aligning with international trends, a 2019 Tunisian school-based study reported that 7.3% of adolescents had attempted suicide [15]. Not only the rates of suicide attempts are high but studies point to an increasing trend over time, for instance, in the United States the ED visits for suicide attempts surged during the COVID-19 pandemic [16]. A 2023 study by Abimbola E. Arisoyin et al. further demonstrated a rising trend in suicide attempts among both sexes in adolescents aged 13–17 years over the 1991–2021 period [17]. Among the various methods of suicide attempts, self-poisoning remains one of the most frequently reported means in the literature, emphasizing the importance of understanding patterns of self-poisoning in adolescent populations [8,18,19].
The median age was 17[16-18] which exceeds those reported in Spanish (15.6–15.7 years) [20]and Italian (15.8 years) studies [21] , likely due to cases under 14 years typically consulting pediatric EDs. A Czech study (median 16 years) aligns more closely to ours [22]. The sex disparity in our cohort was notable, with females predominating (sex ratio F/M =5.5), consistent with both older and recent studies showing higher suicide attempt rates among adolescent females [18–21,23–27].
In our study, 28.5% of cases (n=70) had a documented psychiatric history, comparable to the 23.6% reported in a 2010 Tehran study by Farzaneh et al. [28], but significantly lower than rates in other countries. Higher proportions were reported in South Korea (54.4%) [23], Australia (67%) [29], and Spain, where Algarrada Vico et al. and Roversi et al. found 70.4% [20] and 71% [21], respectively.

Previous suicide attempts were noted in 26.8% of cases, nearly double the 13.8% in a 2016 French study [24], but lower than rates in Spain (56.5%) [20] and Mexico (59%) [30]. Among disclosed triggers, family conflict (67.1%) and romantic issues (18.5%) were most common, consistent with earlier findings [24,25,28].

Suicide attempts occurred most frequently during the late afternoon and evening, consistent with earlier findings [31]. Mondays had the highest frequency (18.7%), declining through the week, mirroring patterns reported in Austria and the U.S. [32–34]. Attempts were fewer on weekends, supporting evidence that school days influence adolescent self-harm [35]. Seasonally, attempts peaked in spring (29.7%) and fall (24.9%), aligning with studies from Europe and Morocco [31,32,34], though some regions report summer peaks [36].
Most self-poisoning attempts occurred at home (98%), with few at school (1.2%) or public places (0.8%), consistent with prior studies [24,31].

Characteristics of the voluntary self-poisoning

Most cases involved medications accessed at home, particularly parental drugs. Larson et al. reported 88% of non-prescribed ingestions involved household members' medications [37]. Thoonen et al. found adolescents with caregivers mainly used prescription or over the counter drugs, while institutionalized youths used chemicals [38]. A 2024 Spanish study confirmed patients' own and parental medications as common sources [20], underscoring the need to control medication access at home.
Ingestion was the route in 99.6% of cases, aligning with previous studies reporting rates around 99.8% [20,22,31,39].
Pharmaceutical drugs were the most common substances used for self-poisoning, consistent with prior studies [18,20,22,39]. Single-drug ingestion predominated, while co-ingestion occurred in 36.6% of cases, similar to the findings from the studies conducted by Le Vaillant et al (35.6%) and Roversi et al (31%) [21,24]. Acetaminophen was the most frequent drug (18.8%), aligning with several reports [21,24,29]. However, other studies noted different main agents: benzodiazepines in Spain and Romania [20,40], and antidepressants/antipsychotics in Korea [23]. Toxic PIDs were observed in 42.8% of cases, similar the 37% reported by Roversi et al. [21]. Our findings also aligned with finding reported by Le Vaillant et al. study, who found toxic PID in 20.7% of acetaminophen cases and 17.2% of benzodiazepine ingestions [24]; however, our benzodiazepine toxic PID rate was higher at 32.4%. Regarding NSAIDs, we observed a lower toxic PID rate of 4.5%, compared to 10.3% reported by another study [24]. The median delay of consultation was 3 hours [2–7], consistent with previous studies [21].

Clinical and biological findings

Most cases in our study were asymptomatic on arrival, consistent with several studies such as an Italian study conducted by Roversi et al. and a Moroccan study conducted by Boukhorb et al.[21,31], but differing from a Spanish study conducted by Algarrada Vico et al., who reported more symptomatic cases [20]. Among symptomatic patients, digestive symptoms were most common, aligning with studies conducted by Le Vaillant et al. and Boukhorb et al. [24,31]. Compared to a French study reporting 20.7% hematological abnormalities, our findings showed a higher rate, with complete blood count abnormalities in 59% of tested patients. In contrast, serum electrolyte abnormalities were comparable between the two studies, at approximately 24% [24].

Management in the emergency department

Mechanical ventilation was required in 4.7% of cases in our study, higher than the 1.9% reported by the study conducted by Roversi et al. [21]. AC was administered in 7.3% of cases, considerably less than the 34.5% and 50.7% reported in an Italian and Spanish studies by respectively [20,21].
Antidotes were used in 9.9% of cases, lower than the 17.2% and 17.4% reported in these studies. Consistent with previous findings, N acetylcysteine was the most used antidote, followed by Flumazenil [20].

Assessment of suicide intent by PSIS

The PSIS was considered the most appropriate instrument for this study because it provides a multidimensional assessment of suicidal intent while being brief and practical for the emergency department setting. Compared with the Beck Suicide Intent Scale [41], it is shorter, while still assessing key aspects of the attempt. Unlike other scales such as the Columbia-Suicide Severity Rating Scale [42] and the Risk–Rescue Rating Scale (RRRS) [43], which focus mainly on suicidal thoughts/behaviors and attempt lethality, respectively, the PSIS directly evaluates suicidal intent and is well suited for rapid ED assessment.
To our knowledge, PSIS use in adolescents who attempt suicide by self-poisoning are limited. A Texan study conducted by Bernardo Ng reported that 54.1% of cases had moderate suicide intent in Mexican American adolescents, similar to our 58.4%. Unlike our study, where high intent was least common, the Texan study found that the group of cases with mild suicide intent to be the smallest group [30]. By comparison, a 2019 Tunisian study, Charfi et al. found that 55.2% of adolescents exhibited high suicide intent, exceeding the proportion with mild to moderate intent [44] . Most cases in our study were deemed non-lethal by physicians, consistent with previous findings that adolescent suicide attempts are generally potentially less fatal [45,46].

Predictors of high suicide intent levels

To our knowledge, no study has investigated the predictive factors of high suicidal intent in adolescents who attempted suicide through voluntary self-poisoning.
Our multivariate analysis did not reveal that patients with a psychiatric history were more likely to present with severe suicide intent, a finding in contradiction with existing

literature indicating that individuals with depressive disorders are particularly vulnerable to suicide risk [47]. This may be explained by the fact that most histories were obtained through self-report or parent report, which were often nonspecific at the time of evaluation.

Our descriptive study found that 26.8% of cases had a history of previous suicide attempts. Multivariate analysis revealed a significant correlation between the presence of previous suicide attempt(s) and high suicide intent (p-value = 0.044). These findings align with existing literature identifying previous suicide attempts as one of the strongest clinical predictors of future suicide behaviors, including suicide ideation, repeated attempts, and completed suicide. For instance, a 2016 United Kingdom community-based cohort study by Bostwick et al. reported that 5.4% of individuals with prior attempts eventually died by suicide—approximately 59% higher than earlier estimates [48]. Similarly, a 2018 Australian study by Iorfino et al. demonstrated that prior suicide attempts significantly predicted suicide ideation (OR 1.72) and were strongly associated with repeat attempts (OR 2.59) [49].

Our finding that individuals with a prior suicide attempt exhibited higher suicidal intent in their current attempt deepens our understanding by showing that a history of attempts not only signals elevated overall risk but also correlates with greater severity of intent, reinforcing the need for vigilant monitoring and targeted intervention in this high-risk group

The second predictor identified in our multivariate analysis was the PID of the chosen substance to self-poison. Patients who ingested a toxic PID had 2.48 times higher odds of presenting with a high level of suicidal intent compared to those with a non-toxic PID. This association reached statistical significance with a p-value of 0.038, indicating that the ingestion of a toxic amount is closely linked to high suicidal intent. Consequently, assessing the PID in emergency settings can serve as a valuable clinical marker, not only for medical management of poisoning but also for evaluating the severity of suicidal intent.

Recommendations

Based on our findings, we recommend promoting mental health screening in schools alongside support programs that teach emotional regulation, coping, and conflict resolution to enable early detection of distress. Limiting access to toxic substances, particularly household medications, through public awareness on safe storage is crucial. Ensuring 24/7 availability of on-call psychologists is crucial for the immediate assessment of adolescents presenting with self-poisoning. in an ED lacking such coverage, the use of the validated PSIS tool should be implemented to identify patients with high suicide intent and facilitate timely psychiatric referral.

Strengths and limitations

This study has several strengths; to the best of the authors' knowledge, it is the first to investigate suicide intent among Tunisian adolescents, offering valuable insights into the epidemiological and clinical characteristics of their suicide attempts, as well as predictors of suicide intent severity.

However, limitations include its monocentric, urban setting, which may reduce generalizability; the non-representation of adolescents under 14, limiting age-range analysis; and reliance on self- or parent-reported psychiatric history without formal diagnoses, introducing potential bias.

Conclusion

Adolescent suicide attempts remain a significant global and national public health concern, with self-poisoning being one of the most common methods. However, data on such cases in Tunisia are scarce. Our study found a marked female predominance, with acetaminophen being the most frequently involved substance, followed by benzodiazepines and antibiotics. We identified a prior suicide attempt and a toxic PID as significant predictors of high suicide intent. Targeted prevention strategies should be implemented in this high-risk population to reduce suicide risk.

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