

Retrospective evaluation of the demographic, psychiatric, and clinical characteristics of patients admitted to the intensive care unit following a suicide attempt

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Cite this article as: Şimşek MH, Korkmaz U. Retrospective evaluation of the demographic, psychiatric, and clinical characteristics of patients admitted to the intensive care unit following a suicide attempt. *J Health Sci Med.* 2025;8(6):1133-1142.

Received: 28.07.2025

Accepted: 13.10.2025

Published: 25.10.2025

ABSTRACT

Aims: This retrospective, multicenter study aims to evaluate the relationship between demographic, clinical, and psychiatric characteristics and mortality among patients admitted to the intensive care unit (ICU) following a suicide attempt.

Methods: Between January 2020 and May 2025, a total of 121 patients admitted to the ICU following a suicide attempt at three hospitals in a province of Türkiye were retrospectively reviewed. Demographic, clinical, and psychiatric data were extracted from medical records and analyzed to assess their associations with mortality.

Results: Male sex (with 96.3% of deceased cases being male) (aOR=35.402, 95% CI=1.821-688.370), jumping from a height (aOR=57.931, 95% CI=2.912-1152.486), and the absence of psychiatric consultation during ICU stay (aOR=150.134, 95% CI=10.590-2128.469) were all significantly associated with mortality. Patients who used the lethal methods had more extended ICU stays and were more frequently referred to locked psychiatric units. Mortality rates were significantly higher among those who did not receive a psychiatric consultation.

Conclusion: This retrospective study investigated key risk factors associated with mortality among patients admitted to the ICU following a suicide attempt. Advanced age, male sex, the presence of physical illness, use of high-lethality suicide methods, and the absence of psychiatric consultation were found to be the major factors that may contribute to mortality in this population. The findings suggest the critical importance of early identification of high-risk individuals, timely psychiatric assessment, and a multidisciplinary approach to intervention in reducing suicide-related mortality, although the results should be interpreted with caution given the limited number of events and retrospective design. Additionally, potential time-to-consultation biases warrant cautious interpretation.

Keywords: Suicide attempt, intensive care, mortality, psychiatric consultation

INTRODUCTION

Suicide is defined as the act of deliberately and voluntarily engaging in behavior that may result in one's death.¹ It represents a growing public health concern with significant consequences for individuals and societies alike.² According to the latest data from the World Health Organization, approximately 800,000 to 1 million people die by suicide each year.³ Suicide is the second most common cause of death among individuals aged 15 to 29.⁴

Suicidal behavior encompasses a continuum that includes suicidal ideation, suicide attempts, and completed suicide.⁵ While suicide attempts are more frequently reported among women, completed suicides occur approximately three times more often in men.⁶ Although suicide attempts are more common among young people and women, their prevalence is increasingly rising among older adults and men. In older populations, suicide attempts are more likely to result in death compared to those in younger individuals.⁷

Studies have shown that the most common methods of suicide attempts include drug or toxic substance ingestion, hanging, jumping from a height, and the use of firearms or sharp objects.⁸ In the general population and across both sexes, drug intoxication is the most frequently reported method. However, suicide attempts involving hanging, jumping from a height, firearms, and sharp instruments are reported more frequently among men and older adults compared to women and younger individuals.^{8,9}

Some suicide attempts are particularly severe and life-threatening, requiring monitoring and treatment in the intensive care unit. A significant proportion of high-lethality attempts are accompanied by underlying psychiatric disorders.¹⁰⁻¹² Moreover, many of these high-lethality cases involve comorbidity with multiple psychiatric conditions.¹³

One of the key risk factors for serious suicide attempts is a prior history of suicide attempts. A previous suicide attempt

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is among the strongest predictors of future attempts and death by suicide.¹⁴ Another factor influencing suicide risk is the individual's social support system. Literature indicates that suicide rates are significantly lower among married individuals compared to those who are unmarried. Conversely, individuals who are divorced or widowed have been found to have a markedly higher risk of suicide.¹⁵ Additionally, the presence of physical illness is another important risk factor. Studies have shown that individuals with physical illnesses are more likely to engage in severe and fatal suicide attempts compared to those without such conditions.^{16,17}

Suicide attempts may vary depending on an individual's place of residence. Rates of suicide have been found to be higher in rural areas compared to urban settings.¹⁸ Furthermore, individuals living in rural regions are more likely to employ more lethal methods of suicide.¹⁹ This pattern has been linked to reduced access to psychiatric services and greater difficulty obtaining appropriate treatment in rural communities^{18,19}. The frequency and lethality of suicide attempts also appear to fluctuate seasonally. Studies have shown that suicide attempts increase during the spring and summer months, with a decline observed in the autumn.^{20,21} Attempt rates tend to peak in the summer among women and younger individuals, while men are more likely to engage in violent and severe attempts during the spring²². Cross-national studies have also indicated that completed suicides occur most frequently in spring and follow a recurring seasonal pattern.^{20,23,24}

As the severity of a suicide attempt increases, so does the need for intensive care and the length of the intensive care unit (ICU) stay.²⁵ High-lethality methods such as jumping from a height, hanging, severe multi-trauma, and ingestion of multiple or highly toxic substances often necessitate admission to the ICU. The duration of ICU stay is typically prolonged depending on the severity of the attempt, the extent of resulting organ failure, and the presence of additional medical complications.^{26,27}

Studies have reported that some patients admitted to the ICU due to suicide attempts do not receive a psychiatric evaluation during their hospitalization.^{28,29} However, the absence or delay of psychiatric assessment may increase the likelihood of repeated suicide attempts and hinder access to appropriate treatment.^{30,31} Therefore, a timely psychiatric evaluation plays a critical role in the post-attempt treatment process.

The literature suggests that, following medical stabilization after a suicide attempt, assigning patients to open or locked psychiatric units based on psychiatric assessment outcomes can help reduce the likelihood of repeated attempts.^{32,33} However, some individuals may refuse psychiatric evaluation due to lack of insight, poor treatment adherence, or fear of stigma, and consequently remain outside the scope of follow-up care.³⁴ On the other hand, for those without active suicidal ideation, severe psychiatric symptoms, and who demonstrate good treatment adherence and social support, outpatient follow-up may be considered sufficient.³⁵ There is limited data in the literature regarding the psychiatric assessment processes of patients admitted to the ICU following a suicide attempt, including referral rates to psychiatry, whether patients were admitted to open or locked units, and rates of treatment

refusal. Moreover, studies that comprehensively examine these patients' sociodemographic, clinical, and attempt-related characteristics alongside psychiatric consultation status and clinical outcomes (e.g., death, psychiatric hospitalization, or outpatient referral) remain scarce.

This study retrospectively analyzed the demographic, clinical, and psychiatric characteristics of patients admitted to the ICU following a suicide attempt between January 2020 and May 2025. It aims to evaluate the associations between these characteristics and whether patients received psychiatric consultation, were referred to open or locked psychiatric units, and their clinical outcomes (e.g., death, discharge, or inpatient admission). Additionally, the study aims to identify variables that are mainly associated with mortality within this patient population.

The hypotheses tested in this study regarding patients admitted to the ICU following a suicide attempt are as follows:

- **H1:** Demographic characteristics are associated with clinical outcomes.
- **H2:** Psychiatric history (including previous diagnoses, psychotropic medication use, and past suicide attempts) influences clinical outcomes.
- **H3:** The presence of physical illness is associated with higher mortality rates following a suicide attempt.
- **H4:** The method of suicide attempt is associated with mortality.
- **H5:** There are differences in mortality rates and discharge types between patients who received psychiatric consultation and those who did not.
- **H6:** Length of ICU stay is associated with clinical factors such as the method of suicide attempt and comorbid physical illness.

METHODS

Ethics

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Giresun Training and Research Hospital Ethics Committee (Date: 23.07.2025, Decision No: 23.07.2025/14). Ethical approval was obtained from this single center only, and permission to access and use data from the other participating institutions was obtained from the Provincial Directorate of Health. Given the retrospective design, the requirement for individual informed consent was waived by the ethics committee.

Study Design

This study is a retrospective, descriptive, and comparative analysis of patients who were admitted to the ICU due to suicide attempts at three hospitals in a province of Türkiye between January 2020 and May 2025.

Medical records of all eligible patients were reviewed retrospectively. Sociodemographic (e.g., age, sex, marital status), clinical (e.g., length of ICU stay, presence of comorbid physical illness-chronic diseases such as diabetes,

hypertension-, method of suicide attempt), and psychiatric data (e.g., known psychiatric diagnoses, psychotropic medication use, history of previous suicide attempts) were extracted from patient files. Cases with missing data, those determined not to involve a suicide attempt, or those lacking sufficient clinical documentation to confirm the presence or absence of a suicide attempt were excluded from the study.

Inclusion criteria were as follows; being 18 years of age or older, admission to the ICU due to a suicide attempt, clear documentation of the suicide attempt in the clinical records, and availability of data regarding the ICU course, treatment, psychiatric evaluation, and clinical outcome. Exclusion criteria included: patients admitted to the ICU for reasons other than suicide attempts, cases with significant missing data in the medical records (e.g., absence of diagnostic information, method of attempt, or outcome), patients for whom the presence of a suicide attempt could not be clinically confirmed or remained uncertain, and individuals under the age of 18.

Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics version 27. The normality of continuous variables was assessed based on skewness and kurtosis values, with values between ± 1.5 considered indicative of normal distribution. Descriptive statistics were presented as mean $\pm$ standard deviation or median (interquartile range, IQR) for continuous variables, and as frequency (n) and percentage (%) for categorical variables.

Group comparisons were performed using independent samples T tests when parametric assumptions were met, and Mann-Whitney U or Kruskal-Wallis H tests when they were not. For categorical variables, group comparisons were conducted using the chi-square test or Fisher's exact test, as appropriate. Bonferroni correction was made for multiple comparisons. Additionally, relative risk, risk differences, and effect sizes were reported.

To identify variables associated with mortality following suicide attempts, logistic regression analyses were performed. In these analyses, mortality was the dependent variable, and independent variables included age, sex, marital status, place of residence, history of psychiatric diagnosis and treatment, presence of physical illness, method of suicide attempt, length of ICU stay, history of previous suicide attempts, and whether psychiatric consultation was conducted. Odds ratios and corresponding 95% confidence intervals were reported for each variable.

A p-value of <0.05 was considered statistically significant in all analyses.

RESULTS

A total of 137 patient records were identified through data screening. Following the application of inclusion and exclusion criteria, 121 patients were included in the final analysis (Figure).

Table 1 compares the sociodemographic characteristics of patients admitted to the ICU following a suicide attempt,

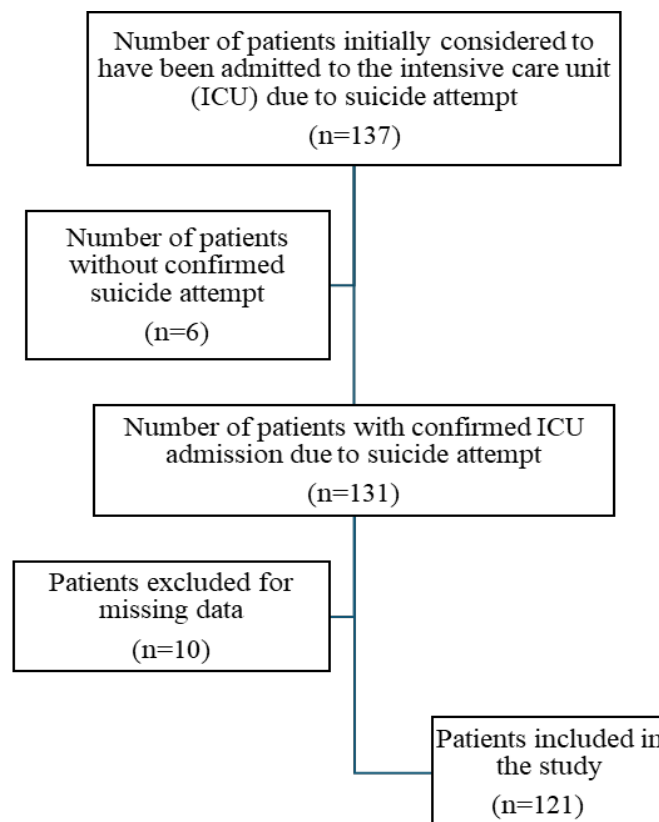


Figure. Study flow diagram

stratified by survival status. The mean age of deceased patients was significantly higher than that of survivors ($p=0.036$). There was also a significant difference in gender distribution: 96.3% of the deceased group were male, compared to approximately 48% among survivors ($p<0.001$). In contrast, no significant differences were found between the groups in terms of marital status, place of residence, or the season and year in which the attempt occurred (all $p>0.05$). Nonetheless, it is notable that the majority of suicide attempts occurred between 2021 and 2023 and were most frequent in the spring season.

Table 2 compares the clinical characteristics of survivors and deceased patients following admission to the ICU after a suicide attempt. No significant difference was found between the two groups in terms of ICU length of stay ($p=0.132$). Similarly, there were no statistically significant differences in the presence of a prior psychiatric diagnosis ($p=1.00$), psychotropic medication use ($p=0.847$), or history of previous suicide attempts ($p=1.00$). In contrast, the presence of a known physical illness was significantly associated with mortality; comorbid physical conditions were more common among deceased patients than among survivors ($p=0.019$). The method of suicide attempt also had a significant impact on clinical outcomes ($p=0.006$). While the majority of survivors had attempted suicide via drug ingestion (78.7%), this method was less common among deceased patients (37%). Conversely, methods such as hanging, jumping from a height, or the use of firearms/sharp objects were more prevalent among those who died. Moreover, there was a marked difference between groups regarding whether psychiatric consultation was requested. While 80.9% of survivors received a psychiatric consultation, only 11.1% of the deceased did ($p<0.001$).

Table 1. Comparison of sociodemographic characteristics between survivors and deceased patients (n=121)

	Survivors (n=94)	Deceased (n=27)	Statistic	p	Effect size (Cohen's d/Cramer's V)	Risk ratio (risk differences)
	Mean±SD/n (%)					
Age (years)	33.36±12.95	42.19±19.81	t=-2.184	0.036*		
Gender			X ² =18.337	<0.001**	0.389	18.3 (0.346)
Female	49 (52.1%)	1 (3.7%)				
Male	45 (47.9%)	26 (96.3%)				
Marital status			X ² =0.316	0.574**	0.051	1.36 (0.065)
Married	32 (34%)	7 (25.9%)				
Single	62 (66%)	20 (74.1%)				
Place of residence			X ² =1.478	0.224**	0.110	1.66 (0.109)
Urban	46 (48.9%)	9 (33.3%)				
Rural	48 (51.1)	18 (66.7%)				
Season of attempt			X ² =1.549	1***	0.113	
Autumn	14 (14.9%)	6 (22.2%)				
Winter	25 (26.6%)	5 (18.5%)				
Spring	30 (31.9%)	10 (37%)				
Summer	25 (26.6%)	6 (22.2%)				
Year of attempt			X ² =8.124	1****	0.259	
2020	7 (7.4%)	2 (7.4%)				
2021	22 (23.4%)	8 (29.6%)				
2022	20 (21.3%)	6 (22.2%)				
2023	26 (27.7%)	3 (11.1%)				
2024	9 (9.6%)	7 (25.9%)				
2025	10 (10.6%)	1 (3.7%)				

n: Number of cases, p: Significance level, t: T test statistic, X²: Chi-square statistic, *Student's T test, **Yates Chi-square test, ***Pearson Chi-square test, ****Fisher's exact test, SD: Standard deviation

Table 2. Comparison of clinical characteristics between survivors and deceased patients (n=121)

	Survivors (n=94)	Deceased (n=27)	Statistic	p	Effect size (r / Cramer's V)	Risk ratio (risk differences)
	Median (Q1-Q3)/n (%)					
ICU stay (days)	2 (1-4)	2 (1-9)	Z=-1.505	0.132*	-0.137	
Known psychiatric diagnosis			X ² <0.001	1**	0.003	1.07 (0.015)
No	26 (27.7)	7 (25.9%)				
Yes	68 (72.3%)	20 (74.1%)				
Psychotropic medication use			X ² =0.037	0.847**	0.018	0.87 (-0.032)
No	55 (58.5%)	17 (63%)				
Yes	39 (41.5%)	10 (37%)				
Comorbid physical illness			X ² =5.508	0.019**	0.213	2.39 (0.237)
No	78 (83%)	16 (59.3%)				
Yes	16 (17%)	11 (40.7%)				
Method of suicide attempt			X ² =16.125	0.006***	0.365	
Drug ingestion	74 (78.7%)	10 (37%)				
Hanging	5 (5.3%)	4 (14.8%)				
Jumping from a height	5 (5.3%)	4 (14.8%)				
Firearm/sharp object	10 (10.6%)	9 (33.3%)				
History of suicide attempt			X ² <0.001	1**	0	0.96 (-0.010)
No	58 (61.7%)	17 (63%)				
Yes	36 (38.3%)	10 (37%)				
Psychiatric consultation requested			X ² =41.991	<0.001**	0.589	0.067 (-0.533)
No	18 (19.1%)	24 (88.9%)				
Yes	76 (80.9%)	3 (11.1%)				

n: Number of cases, p: Significance level, Q1: First quartile, Q3: Third quartile, Z: Mann-Whitney U test statistic, X²: Chi-square statistic, ICU: Intensive care unit, r: Rank-biserial correlation, *Mann-Whitney U test, **Yates Chi-square test, ***Fisher's exact test

Table 3 presents the relationship between the type of discharge following ICU admission and both the method of suicide attempt and whether a psychiatric consultation was requested. A statistically significant association was found between discharge type and method of suicide attempt ($p<0.001$). For instance, all patients transferred to internal medicine wards had attempted suicide by drug ingestion. In contrast, more lethal methods, such as hanging, jumping from a height, or the use of firearms/sharp objects, were more frequently associated with death or referral to psychiatric units, particularly locked psychiatric units. Likewise, the vast majority of patients who were discharged in stable condition had attempted suicide by drug ingestion. Among those discharged against medical advice, the rate of suicide attempts involving sharp or penetrating objects was notably higher compared to other groups. There was also a significant association between discharge type and whether psychiatric consultation was requested ($p<0.001$). Nearly all patients referred to any psychiatric unit had received a psychiatric consultation during their ICU stay, while the majority of those who died had not. A substantial proportion of patients transferred to internal medicine or discharged in stable condition also received psychiatric consultations. In contrast, most of the patients discharged after refusing treatment had not been evaluated by psychiatry.

Table 4 examines the impact of suicide attempt method and the presence of comorbid physical illness on the length

of stay in the ICU. A statistically significant difference was not observed in ICU stay duration based on the method of suicide attempt ($p=0.102$). Nevertheless, patients who attempted suicide by hanging or jumping from a height had more extended ICU stays compared to those who used drug ingestion or sharp/firearm-related methods, which were associated with shorter median stays. The presence or absence of a known physical illness was not significantly associated with the duration of ICU stay ($p=0.393$).

Table 5 evaluates the independent variables predicting mortality following a suicide attempt using univariate logistic regression analysis. The results indicate that older age significantly associated with the likelihood of mortality (OR=1.04 per year increase, 95% CI=1.008-1.066, $p=0.011$). Similarly, a longer duration of ICU stay was also an independent risk factor for death (OR=1.11 per additional day, 95% CI=1.013-1.206, $p=0.025$). Sex emerged as a strong predictor of mortality: male patients were significantly more likely to die than female patients ($p=0.001$). In this model, being male was associated with an OR of 28.311 (95% CI=3.689-217.269), suggesting that the risk of death among men was approximately 28 times higher than among women. Furthermore, The presence of comorbid physical illness was significantly associated with increased mortality risk (OR=3.35, 95% CI=1.313-8.557, $p=0.011$). In contrast, variables such as marital status, place of residence, previous psychiatric diagnosis, and use of psychotropic medication

Table 3. Relationship between discharge type, suicide attempt method, and psychiatric consultation (n=121)

	Deceased (n=27)	Transferred to internal medicine (n=15)	Referred to psychiatric unit (n=17)	Referred to locked psychiatric unit (n=19)	Discharged in stable condition (n=31)	Discharged against medical advice (n=12)	Statistic	p	Effect size (Cramer's V)
Method of suicide attempt							$X^2=43.285$	$<0.001^*$	0.345
Drug ingestion	10 (37%)	15 (100%)	13 (76.5%)	10 (52.6%)	28 (90.3%)	8 (66.7%)			
Hanging	4 (14.8%)	0 (0%)	1 (5.9%)	3 (15.8%)	1 (3.2%)	0 (0%)			
Jumping from a height	4 (14.8%)	0 (0%)	2 (11.8%)	3 (15.8%)	0 (0%)	0 (0%)			
Firearm/sharp object	9 (33.3%)	0 (0%)	1 (5.9%)	3 (15.8%)	2 (6.5%)	4 (33.3%)			
Psychiatric consultation requested							$X^2=74.837$	$<0.001^{**}$	0.787
No	24 (88.9%)	4 (26.7%)	0 (0%)	1 (5.3%)	4 (12.9%)	9 (75%)			
Yes	3 (11.2%)	11 (73.3%)	17 (100%)	18 (94.7%)	27 (87.1%)	3 (25%)			

n: Number of patients, p: Significance level, X^2 : Chi-square statistic, *Fisher's exact test, **Pearson Chi-square test

Table 4. Comparison of ICU length of stay by method of suicide attempt and presence of physical illness (n=121)

	ICU stay (days) median (Q1-Q3)	Statistic	p	Effect size (η^2/r)
Method of suicide attempt		KW=10.138	0.102*	0.059
Drug ingestion (n=84; 69.4%)	2 (1-4)			
Hanging (n=9; 7.4%)	7 (1.5-8.5)			
Jumping from a height (n=9; 7.4%)	6 (1-15)			
Firearm/sharp object (n=19; 15.7%)	3 (1-6)			
Comorbid physical illness		Z=-0.855	0.393**	-0.078
No (n=94; 77.7%)	2 (1-5)			
Yes (n=27; 22.3%)	2 (1-5)			

KW: Kruskal-Wallis test statistic, p: Significance level, Q1: First quartile, Q3: Third quartile, Z: Mann-Whitney U test statistic, ICU: Intensive care unit, r: Rnk-biserial correlation, *Kruskal-Wallis test, **Mann-Whitney U test

Table 5. Univariate logistic regression analysis of factors predicting mortality following suicide attempts (0=survivor, 1=deceased) (n=121)

		B	SE	Wald	p	Unadjusted OR	95% CI
Age (years)		0.036	0.014	6.501	0.011	1.037	1.008-1.066
ICU stay duration (days)		0.100	0.044	5.038	0.025	1.105	1.013-1.206
Gender	Female =Ref.	3.343	1.040	10.339	0.001	28.311	3.689-217.269
Marital status	Married=Ref.	0.388	0.490	0.628	0.428	1.475	0.564-3.854
Residence	Urban=Ref.	0.651	0.457	2.023	0.155	1.917	0.782-4.698
Psychiatric diagnosis	No=Ref.	0.088	0.496	0.032	0.859	1.092	0.413-2.888
Psychotropic medication use	No=Ref.	-0.187	0.450	0.172	0.678	0.830	0.343-2.005
Comorbid physical illness	No=Ref.	1.209	0.478	6.395	0.011	3.352	1.313-8.557
History of suicide attempt	No=Ref.	-0.054	0.451	0.014	0.905	0.948	0.391-2.296
Psychiatric consultation	No=Ref.	-3.520	0.666	27.921	<0.001	0.030	0.008-0.109
Method of suicide attempt	Drug ingestion=Ref.						
Hanging		1.778	0.751	5.612	0.018	5.920	1.359-25.781
Jumping from a height		1.778	0.751	5.612	0.018	5.920	1.359-25.781
Firearm/sharp object		1.896	0.570	11.075	<0.001	6.660	2.180-20.345

B: Logit regression coefficient, SE: Standard error, p: Significance level, OR: Odds ratio, 95% CI: 95% confidence interval, R²: Nagelkerke R-squared value, ICU: Intensive care unit

was not significantly associated with the risk of mortality (all $p>0.05$). The variable of psychiatric consultation showed a strong inverse relationship with mortality. Not receiving a psychiatric consultation was significantly associated with increased risk of death ($p<0.001$). The model indicated that patients who received psychiatric consultation during their ICU stay were much less likely to die than those who did not (OR=0.03, 95% CI=0.008-0.109). The method of suicide attempt also emerged as a significant predictor. Using drug ingestion as the reference category, attempting suicide by hanging or jumping from a height increased the odds of death approximately 6-fold, while using firearms or sharp objects increased this risk by 6.7 times (corresponding p -values <0.05 -OR=5.920, 95% CI=1.359-25.781- and <0.001 -OR=6.660, 95% CI=2.180-20.345-, respectively). On the other hand, the year and season of the suicide attempt were not found to have a significant association with mortality in the multivariate model.

The results of the multivariable logistic regression analysis are presented in [Table 6](#). The overall model was statistically significant and demonstrated strong explanatory power

(Nagelkerke $R^2=0.772$). The area under the ROC curve indicated high discriminatory ability of the model (AUC: 0.964, 95% CI=0.921-1.000, $p<0.001$). The Hosmer-Lemeshow goodness-of-fit test was significant ($X^2=21.986$, $p=0.005$), suggesting that the model did not achieve perfect calibration. Age and ICU length of stay were not statistically significant predictors ($p>0.05$). Male gender was significantly associated with an increased risk of mortality compared to females (aOR=35.402, 95% CI=1.821-688.370). The presence of comorbid physical illness increased the risk of death, although this association did not reach statistical significance (aOR=10.953, 95% CI=0.651-184.183). Lack of psychiatric consultation was strongly and significantly associated with mortality (aOR=0.007, 95% CI=0.000-0.094). Regarding methods of suicide attempt, jumping from a height was independently associated with a markedly increased risk of death compared to drug ingestion (aOR=57.931, 95% CI=2.912-1152.486). Hanging (aOR=11.732, 95% CI=0.333-413.939) and firearm/sharp object use (aOR=1.912, 95% CI=0.314-11.630) showed elevated odds ratios but did not reach statistical significance.

Table 6. Multivariate logistic regression analysis of factors predicting mortality following suicide attempts (0=survivor, 1=deceased) (n=121)

		B	SE	Wald	p	Adjusted OR	95% CI
Age (years)		0.037	0.040	0.858	0.354	1.037	0.960-1.121
ICU stay duration (days)		0.087	0.074	1.382	0.240	1.090	0.944-1.260
Gender	Female=Ref.	3.567	1.514	5.549	0.018	35.402	1.821-688.370
Comorbid physical illness	No=Ref.	2.394	1.440	2.763	0.096	10.953	0.651-184.183
Psychiatric consultation	No=Ref.	-5.012	1.353	13.722	<0.001	0.007	0.000-0.094
Method of suicide attempt	Drug ingestion=Ref.						
Hanging		2.462	1.818	1.834	0.176	11.732	0.333-413.939
Jumping from a height		4.059	1.526	7.078	0.008	57.931	2.912-1152.486
Firearm/sharp object		0.648	0.921	0.495	0.482	1.912	0.314-11.630

Hosmer-Lemeshow: $X^2=21.986$, $p=0.005$, Nagelkerke R^2 : 0.772, AUC: 0.964 (95% CI=0.921-1.000, $p<0.001$)

B: Logit regression coefficient, SE: Standard error, p: Significance level, OR: Odds ratio, 95% CI: 95% confidence interval, R²: Nagelkerke R-squared value

DISCUSSION

The present study investigated the factors associated with mortality among patients monitored in intensive care units following suicide attempts. It also examined the clinical and demographic characteristics and the timing of attempts among individuals who engaged in highly lethal methods. According to the findings of the present study, advanced age, male gender, the presence of comorbid physical illnesses, use of highly lethal suicide methods, more extended ICU stay, and whether a psychiatric consultation was requested during the ICU process were all significantly associated with mortality. Patients who used highly lethal methods were most often either referred to closed psychiatric wards or died during hospitalization. Notably, male gender and the lack of psychiatric consultation during ICU stay were the variables most strongly associated with mortality.

In the present study, the mean age of patients who died following ICU admission was found to be significantly higher compared to those who survived. Consistent with the literature, older adults, particularly older males, have been shown to have a higher risk of death following suicide attempts.⁷ This has been attributed to the greater planning involved and the use of more lethal methods in this age group.³⁶ Additionally, the presence of more comorbid medical conditions and increased vulnerability to medical complications among older individuals may contribute to this elevated risk.¹⁶ Psychosocial factors such as increased social isolation, higher rates of spousal loss, and living alone are also thought to play a role in the increased suicide mortality observed in older adults.^{7,15}

The present study focused on severe suicide attempts and found that the majority of patients requiring ICU care due to suicide attempts were male. Consistent with our findings, previous studies have reported a higher incidence of serious suicide attempts among males.³⁷ Moreover, in our sample, male gender emerged as one of the variables most strongly associated with mortality following ICU admission. Similarly, the literature indicates that males are significantly more likely to die from suicide attempts compared to females.^{6,38} In a large-scale study, the fatality rate of suicide attempts was reported as 14.7% for males, compared to only 3.3% for females.³⁹ This discrepancy has been attributed to males' tendency to use more lethal methods and their generally stronger intent to die.^{40,41} Our findings support this pattern, demonstrating a higher rate of mortality among males during ICU follow-up and underscoring the prognostic significance of gender. These results suggest that males who attempt suicide constitute a particularly high-risk group requiring targeted preventive and clinical interventions.

In contrast to some prior studies, the present study did not find a significant association between mortality and marital status, seasons, or patients' place of residence. However, given that our study focused on high-lethality suicide attempts, it is noteworthy that the majority of individuals involved in these attempts were unmarried. Previous research has indicated that the lethality of suicide attempts is significantly higher among unmarried individuals.⁴² Although some studies have

reported that suicide attempts in rural areas tend to be more lethal, other research has found no significant differences based on place of residence.⁴³ Similarly, our analysis did not reveal a significant association between attempt lethality and residential setting. Regarding seasonal variation, earlier studies have shown that completed suicides tend to occur more frequently in the spring.^{20,23,24} While our findings did not demonstrate a statistically significant relationship between season and mortality, this may be attributable to the relatively low number of completed suicides in our sample. Nevertheless, given our study's focus on serious suicide attempts, it is notable that most of these attempts occurred during the spring months. Another key finding is that the majority of high-lethality suicide attempts in our sample occurred between 2021 and 2023. Although global data on yearly peaks in severe suicide attempts are limited, studies have shown a marked increase in serious suicide attempts and ICU admissions following the COVID-19 pandemic.⁴⁴ This temporal pattern aligns with the time frame observed in our study. Although we observed apparent post-pandemic variation in suicide attempts, we lacked data on total ICU admissions for each year. Therefore, denominators could not be provided. This limits our ability to determine whether changes reflect absolute increases or shifts relative to overall ICU utilization.

In terms of clinical characteristics, approximately 72.7% of the sample had a previously diagnosed psychiatric disorder. Prior studies have shown that nearly 90% of individuals who engage in serious suicide attempts requiring intensive medical intervention have at least one psychiatric disorder.¹⁰⁻¹² Furthermore, high-lethality attempts are often associated with the presence of multiple co-occurring psychiatric conditions.¹³ In the present study, no significant association was found between prior psychiatric diagnosis and mortality. This finding may be attributed to the relatively small number of completed suicides in our sample.

A prior suicide attempt is considered one of the most significant risk factors for serious suicidal behavior. In our sample, 38% of the patients had a history of at least one previous suicide attempt. Consistent with our findings, previous studies have reported that 20% to 40% of individuals who engage in serious suicide attempts have a history of prior attempts.^{45,46} In the present study, no significant difference was found between survivors and non-survivors in terms of prior suicide attempts. This may be attributed to the fact that all patients in the sample had engaged in high-lethality suicide attempts.

Previous research has demonstrated that individuals with physical illnesses are significantly more likely to engage in severe and lethal suicide attempts compared to those without such conditions.^{16,17} Consistent with the literature, our study also found that the rate of mortality following suicide attempts was significantly higher among individuals with comorbid physical illnesses. This finding may be explained by factors such as functional impairment associated with chronic physical diseases, the burden of managing long-term illness, co-occurring psychiatric conditions, and the increased lethality of suicide attempts when compounded by underlying physical health issues.

The method used in a suicide attempt is a crucial factor in determining the individual's survival outcome. In the present study, the majority of survivors (78.7%) attempted suicide by ingesting drugs or toxic substances. In contrast, methods such as hanging, jumping from heights, and the use of firearms or sharp instruments were more common among the fatal cases. According to the literature, while drug or poison ingestion accounts for approximately 60% of all suicide attempts, it is responsible for only about 13% of suicide deaths. Conversely, firearms and hanging constitute only around 9% of all attempts but account for more than 75% of completed suicides.³⁹ These findings are consistent with our results and highlight the importance of considering the method of suicide attempt as a critical risk indicator.

One of the key findings of the present study is that the mortality rate was significantly higher among patients who did not receive a psychiatric evaluation compared to those who did. Several factors may account for this observation. First, it is possible that the severity of the patient's medical condition precluded a psychiatric consultation. In cases where death occurred shortly after admission due to critical clinical status, there may not have been sufficient time or opportunity for psychiatric assessment. In this context, the lack of consultation could be seen as a consequence of poor prognosis. Alternatively, for patients who did undergo psychiatric evaluation, the interventions provided may have indirectly contributed positively to the intensive care process. For instance, psychological stabilization may enhance treatment adherence and reduce complications such as agitation during ICU stay.⁴⁷ Another possibility is that psychiatric consultations were more commonly requested for patients who were closer to discharge. Previous studies have reported that some patients admitted to the ICU due to suicide attempts do not receive psychiatric assessment, or that such evaluations are delayed.²⁹ This may lead to missed intervention opportunities, increased risk of repeated suicide attempts, and ultimately, higher mortality rates. Nevertheless, the observed consultation-mortality association likely reflects confounding by severity and immortal-time bias, rather than a direct protective and causal effect.

Another notable finding of the present study is the association between the type of suicide attempt, the request for psychiatric consultation, and the type of discharge from the intensive care unit. In our sample, patients who attempted suicide using more lethal methods, such as hanging, jumping from a height, or the use of firearms or sharp objects, were predominantly referred to psychiatric units, especially closed psychiatric wards. According to the literature, inpatient treatment in closed psychiatric settings is often recommended for individuals who have engaged in high-lethality suicide attempts, as it provides both enhanced safety and opportunities for more effective intervention.^{48,49} Patients who attempt serious suicide acts frequently present with significant psychiatric burden, agitation, aggression, and impulsivity, factors that often necessitate treatment in a closed psychiatric ward.⁴⁹ In contrast, some patients in our study were referred for outpatient psychiatric follow-up. It has been suggested that outpatient care may be appropriate for

individuals who do not exhibit active suicidal ideation, lack severe psychiatric symptoms, have adequate social support, and demonstrate good insight and treatment adherence following psychiatric evaluation.³⁵

In the present study, a substantial proportion of patients who were discharged against medical advice had attempted suicide using firearms or sharp/piercing objects. The literature indicates that this patient group typically consists of individuals with poor insight, low treatment adherence, high impulsivity, and a fear of stigmatization.³⁴

The study found that patients who attempted suicide by hanging or jumping from a height had more extended stays in the ICU. These high-lethality methods tend to prolong ICU treatment due to the complications and organ failures they cause. Previous studies have reported that ICU stays due to major trauma typically range from 9 to 17 days, whereas in cases of severe poisoning, the duration is generally between 6 and 10 days.^{50,51}

In the present study, the method of suicide attempt was strongly associated with mortality, with approximately a sixfold increased risk of death. Specifically, the use of firearms or sharp objects was associated with a 6.7-fold increased risk of death. These findings underscore that the method of suicide attempt may be a critical determinant of clinical course and prognosis. Similarly, previous research has demonstrated that suicide attempts by hanging increase the risk of death by 6.2 times and jumping from a height by 3.7 times.^{52,53} In suicide attempts involving sharp objects, targeting areas other than the wrist or forearm has been shown to elevate the risk of death by 1.7 to 4.5 times.^{54,55} Rapid identification of individuals who employ high-lethality methods, along with prompt medical intervention and close monitoring, is crucial for reducing mortality in this population.

Limitations

This study has several limitations. First, it employed a retrospective design, which limits the ability to establish causal relationships. The apparent association between the absence of psychiatric consultation and higher mortality may partly reflect early deaths or greater illness severity, rather than a direct effect. The data were collected from hospitals in a single province, which restricts the generalizability of the findings. The sample size was relatively small. The absence of long-term follow-up data limits prospective risk assessment. Additionally, detailed information on certain important risk factors, such as patients' socioeconomic status and family history, was not available. The study did not include a control group and only evaluated suicide attempts requiring intensive care. Since the data were retrospectively extracted from patient medical records, the risk of incomplete or inaccurate documentation, although carefully reviewed, cannot be entirely ruled out. Physical illness was defined based on documented chronic medical conditions, while acute conditions were not consistently recorded, which reduced the granularity of this variable. Firearm and sharp-object attempts were grouped together. Although these methods differ in lethality and clinical trajectory, the small number

of cases in each subgroup precluded separate analyses. This grouping may have obscured potential differences between these methods and represents another limitation of the study. Finally, our dataset did not include detailed timestamp information for psychiatric consultations or severity proxies such as mechanical ventilation, vasopressor use, or multi-organ failure indicators. Consequently, we were unable to refit models excluding early deaths, to model consultation as a time-dependent exposure, or to adjust for illness severity using APACHE II, SOFA, or comparable surrogate variables.

CONCLUSION

This retrospective study examined the clinical and demographic characteristics of patients admitted to the ICU following a suicide attempt and identified factors associated with suicide-related mortality. The findings suggest that older age, male gender, the presence of comorbid physical illnesses, the use of high-lethality suicide methods, and the absence of psychiatric consultation are significantly associated with increased mortality risk. Patients who employed high-lethality methods tended to have more extended ICU stays and were more frequently referred to closed psychiatric units. It has been revealed that timely psychiatric evaluation may be a critical factor in the clinical course of patients, and mortality rates may be significantly higher in patients who do not receive psychiatric consultation. This underscores the importance of psychiatric involvement in the ICU setting. Overall, the findings highlight the need for early identification of high-risk individuals, the development of appropriate intervention strategies, and improvements in post-attempt care processes. Future research should explore these risk factors in greater detail and focus on developing effective prevention and management strategies for individuals at risk of suicide.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Giresun Training and Research Hospital Ethics Committee (Date: 23.07.2025, Decision No: 23.07.2025/14).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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