IJCMBS

Original Article

doi.org/ 10.5281/zenodo.14237924 JCMBS 2024; 4(3):126-37

Sociodemographic and Clinical Characteristics of Patients Hospitalized for Suicide in an Intensive Care Unit in Turkey: A Retrospective Study

Türkiye'deki Bir Yoğun Bakım Ünitesinde Intihar Nedeniyle Yatan Hastaların Sosyodemografik ve Klinik Özellikleri: Retrospektif Bir Çalışma

Ozlem Kackin [1*], Mehmet Emin Duken [2], Mehmet Kenan Erol [3]

[1]Department of Psychiatric Nursing, Faculty of Health Sciences, Harran University, Sanliurfa /Türkiye

[2]Department of Child Health and Disease Nursing, Faculty of Health Sciences, Harran University, Sanliurfa/Türkiye

[3]Department of Anaesthesiology and Reanimation, Faculty of Medicine, Harran University, Sanliurfa/Türkiye

Abstract

Background:Increasing suicide rates, mental health problems and the need for intensive care have become an important health problem. Therefore, analyzing the sociodemographic and clinical characteristics of patients hospitalized in intensive care for suicide attempts is critical for developing effective intervention and prevention strategies. This study aims to analyze the sociodemographic characteristics and mental health of individuals who attempted suicide.

Materials and Methods: In this retrospective descriptive study, suicide cases in the adult intensive care unit of a university hospital between 01.11.2017 and 01.11.2023 were analyzed through the hospital automation system.

Results: The mean age of patients hospitalized in the intensive care unit in the last 10 years was 27.06 ± 10.15 years and 61% were female. 79.6% of the patients were admitted with a prediagnosis of suicide and 17.7% with alcohol or substance intoxication. Family pressure (32.7%), economic problems (17.7%) and psychiatric problems (15%) were the main reasons for suicide. The most common methods of suicide were drug abuse (67%), insecticide use (26%) and hanging (4%). Seventy per cent of the patients were discharged with nausea and vomiting, 92 per cent were discharged, and 8 per cent died. Suicide cases occurred mostly in July (15%) in 2017 (21%) and 2022 (18%). Suicides were frequently observed at night, especially at 23:00 (14.6%).

Conclusions: This study investigated the sociodemographic and clinical characteristics of patients admitted to an intensive care unit in Turkey for suicide attempts. Results showed that most patients were young females who often attempted suicide by drug ingestion. Key contributing factors included family pressure, economic challenges, and psychiatric issues, with suicide cases peaking in the summer. These findings may aid in developing targeted prevention and intervention strategies by identifying high-risk groups and periods.

Keywords: Suicide, Poisoning, Intensive care unit, Retrospective, Psychiatric illness.

ÖZ

Amaç: Artan intihar oranları, ruh sağlığı sorunları ve yoğun bakım gereksinimi önemli bir sağlık sorunu haline gelmiştir. Bu nedenle, intihar girişimi nedeniyle yoğun bakımda yatan hastaların sosyodemografik ve klinik özelliklerinin incelenmesi, etkili müdahale ve önleme stratejileri geliştirmek açısından kritik öneme sahiptir.

Bu çalışmanın amacı, Türkiye'deki bir yoğun bakım ünitesinde intihar girişimi nedeniyle yatan hastaların sosyodemografik ve klinik özelliklerini analiz etmektir.

Gereç ve Yöntem: Bu retrospektif tanımlayıcı çalışmada, 01.11.2017 ve 01.11.2023 tarihleri arasında bir üniversite hastanesinin erişkin yoğun bakım ünitesindeki intihar olguları hastane otomasyon sistemi üzerinden taranarak incelenmiştir.

Bulgular: Son 10 yılda yoğun bakımda yatan hastaların ortalama yaşı 27.06 ± 10.15 olup, %61'i kadındır. Hastaların %79,6'sı intihar ön tanısıyla, %17,7'si alkol veya madde intoksikasyonu ile kabul edilmiştir. İntihar nedenleri arasında aile baskısı (%32,7), ekonomik sorunlar (%10,4) ve psikiyatrik problemler (%15) ön plandadır. En sık intihar yöntemleri ilaç içme (%67), insektisit kullanma (%26) ve asma (%4) olarak belirlenmiştir. Hastaların %70'i bulantı ve kusma şikayetiyle hastaneye başvurmuş, %92'si taburcu olurken, %8'i hayatını kaybetmiştir. İntihar vakaları en çok 2017 (%21) ve 2022 (%18) yıllarında ve temmuz aylarında (%15) gerçekleşmiştir. Gece saatlerinde, özellikle 23:00'de (%14,6) intiharların sık olduğu gözlemlenmiştir.

Sonuç: Bu çalışmada, Türkiye'de bir yoğun bakım ünitesine intihar girişimi nedeniyle kabul edilen hastaların sosyodemografik ve klinik özellikleri araştırılmıştır. Sonuçlar, hastaların çoğunun genç kadınlar olduğunu ve sıklıkla ilaç içerek intihar girişiminde bulunduklarını göstermiştir. Katkıda bulunan başlıca faktörler arasında aile baskısı, ekonomik zorluklar ve psikiyatrik sorunlar yer alırken, intihar vakaları yaz aylarında zirve yapmaktadır. Bu bulgular, yüksek riskli grupları ve dönemleri belirleyerek hedefe yönelik önleme ve müdahale stratejilerinin geliştirilmesine yardımcı olabilir.

Anahtar kelimeler: İntihar, Zehirlenme, Yoğun bakım ünitesi, Retrospektif, Psikiyatrik hastalık.

***Corresponding author:** Özlem KAÇKİN, Department of Psychiatric Nursing, Faculty of Health Sciences, Harran University, Osmanbey Campus, Haliliye, Sanliurfa / TÜRKİYE E-mail: ozlemkackin.711@gmail.com

Received: 29 September2024
Accepted: 19 November 2024

Cite as: *KACKIN.O et al.* Sociodemographic and Clinical Characteristics of Patients Hospitalized for Suicide in an Intensive Care Unit in Turkey: A Retrospective Study. *IJCMBS 2024:4(3); 126-37 doi.org/ 10.5281/zenodo.14237924*

Highlights

- Suicide attempts are more common in young adults, with women attempting more often, but men have a higher mortality rate due to lethal methods.
- Key suicide risk factors include substance abuse, economic stress, family issues, psychiatric disorders, and loneliness, emphasizing the need for targeted interventions.
- Suicide rates peak in summer and fall, with higher occurrences at night and early morning, suggesting the role of circadian rhythms and emotional vulnerability.

Introduction

Suicide is recognized as a serious health problem worldwide as it has a significant negative impact on the quality of life of the individual and the social fabric of society (1). The World Health Organization (2023) reported that suicide is the fourth leading cause of death for individuals between the ages of 15 and 29, more than 700,000 people die each year due to suicide and many more people attempt suicide (2). When the 2020 suicide rates were analyzed, it was found that the suicide rate was 10.3 per 100 thousand people in Germany, 11.92 in Poland, 13.47 in France, 9.4 in Romania, 5.61 in Italy, and 6.88 in Slovakia, and that these rates tended to decrease compared to previous years (3). The number of suicides in Turkey seems to be lower than in other countries. However, contrary to the data on the decline in suicide rates in European countries, 58,985 people have committed suicide in Turkey in the last 19 years, the suicide prevalence in 2019 was 4.4, the highest suicide prevalence was in 2021, and it increased by 12% compared to the previous year (2,4). Even if this figure is lower than the world average, one person dies by suicide every 3.5 hours in Turkey. Therefore, suicide and suicidal ideation are common in Turkey and require urgent intervention (1,5). According to the existing literature, socioeconomic status, family structure, education level, unemployment rates and lack of social support mechanisms are important reasons for the increase in suicide rates in Turkey (2,4,6-10). In addition, social norms and cultural pressures may lead to the restriction of emotional expression, especially among men, which may trigger suicide attempts (6, 7). In this regard, Kavaklı (2023) emphasized that low-income levels and high unemployment negatively affect the mental health of individuals in Turkey and increase suicidal ideation, and that the effects of socioeconomic factors on suicide rates differ by gender, highlighting the need for individualized prevention strategies. He also reported that unemployment significantly increases suicide rates during periods of economic recession, indicating the negative impact of economic instability. In addition, he reported that social norms and cultural pressures in Turkey lead to the restriction of emotional expression, especially among men, which triggers suicide attempts (7). Therefore, it is important to consider regional socio-economic factors and develop targeted prevention strategies to reduce suicide rates in Turkey.

Intensive care units are important clinics where the diagnosis and treatment processes of patients who attempt suicide are frequently followed (10). However, when the existing literature was examined, it was found that the existing studies were mostly conducted in emergency department clinics, and the studies conducted in intensive care units were limited (7). In this context, in a study conducted by Öztürk et al. (2020) in the toxicology intensive care unit between 2018- 2019, it was found that one-fifth of the patients attempted suicide at least once before the current attempt, and two-thirds of the patients had high scores in terms of depression to be considered risky (9) In the study conducted by Erol et al. (2018), it was determined that patients hospitalized in the intensive care unit (ICU) between 2015-2018 used antidepressant drugs due to psychiatric problems. However, in this study, only patients admitted to the ICU for intoxication within this 3-year period were included in the sample (10). Muhammedoğlu et al., (2014), suicide and intoxication cases admitted to the intensive care unit between 2011-2013 were examined, it was determined that suicide cases were mostly young people and women, and antidepressants, paracetamol-antigripal type drugs were preferred as suicide means (11). Although this study presented valuable data from another region of Turkey, it did not include data on changes in suicide rates by hour, month and year. Therefore, although each of these studies provides valuable data, they do not provide a broad perspective on how the proportion of patients who attempt suicide varies from year to year, month to month, and hour to hour, because they focus on short periods of time and specific drug groups. This limited perspective makes a comprehensive assessment of patients who attempt suicide difficult.

This retrospective descriptive study can contribute to the existing literature by covering a wider time period and analyzing the sociodemographic characteristics and clinical conditions of the patients comprehensively without being limited to a specific drug group or a short period of time. It also aims to reveal the sociodemographic and clinical determinants behind suicide by examining factors such as age, gender, education level and suicide

methods of patients who attempted suicide. This study fills an important gap in both theoretical and applied areas by making a number of original contributions to theliterature. By comprehensively addressing the socio-demographic and clinical characteristics of patients with suicide attempts admitted to an intensive care unit in southeastern Turkey, the study provides a better understanding of the contextual factors associated with suicide attempts. In particular, by analysing the demographic characteristics of the patients, such as age, gender, method of suicide, time of suicide (hour, month, year), the factors that increase the risk of suicide are examined in more detail. In this context, it provides a broader perspective by analysing a longer period of time. Unlike the existing literature in Turkey, it focuses on a more diverse patient profile rather than being limited to a short period of time or a specific drug group. The results of the study are expected to provide a more detailed and comprehensive perspective on suicide rates in Turkey than previous studies. The results of the study may contribute to the development of targeted interventions by providing a better identification of suicide risk groups. For example, highlighting differences between urban and rural areas may encourage the tailoring of suicide prevention strategies to cultural and socio-demographic characteristics. In addition, providing details of the profile of patients who have attempted suicide may provide health professionals with relevant information and awareness. It may also allow health services to plan resources more effectively and optimise post-suicide care. Understanding the contextual factors associated with suicide can contribute to such intervention efforts at both national and international levels. In terms of future research, the comprehensive dataset provided by this study can form the basis for more detailed longitudinal studies of suicide attempts. In particular, it can provide a starting point for research to monitor the effects of socio-demographic and clinical variables over time. In addition to theoretical knowledge, this study also supports the identification of strategies to improve public health in a practical sense.

Material and Methods

Place and time of study

This study is retrospective descriptive. The study was conducted in the adult intensive care unit of the only university hospital with a large capacity in the city center. This hospital is a center where many emergency and surgical procedures can be performed, patients can self-refer, and cases can be transported from the surrounding area by land and air ambulances.

Study population and sample

Patients aged 18 years and over received inpatient treatment in the intensive care unit between 01.11.2017 and 01.11.2023 due to suicide attempt and whose medical reports contained complete data were included in the study. Patients who did not meet these criteria, i.e. who were younger than 18 years of age or whose medical reports did not contain sufficient data, were excluded from the study. In total, the files of 263 patients admitted for suicide attempt were examined and 260 of these patients were found to meet the study criteria. The data obtained from the file records included the sociodemographic characteristics of the patients (age, gender, education level, marital status), clinical findings, triggering factors leading to suicide attempts, the nature of the suicide attempts, the drugs used in suicides with medication, and the examinations of the patients by mental health and illness specialists. The data were evaluated to analyze the diagnosis and treatment processes of the patients in detail. The findings of this study were reported in accordance with The Reporting of studies Conducted using Observational Routinely collected health Data (RECORD) guidelines (11).

Ethics Approval

The study was approved by Harran Clinical Research Ethics Committee (date: 17.08.2023, decision no: 251354). After ethics committee approval, institutional approval to conduct the study was obtained from the administration of a tertiary university hospital. As the study was based on retrospective document review, case information forms were collected anonymously. The study was conducted in accordance with the principles of the Declaration of Helsinki. Due to the retrospective nature of the study, informed consent was not required.

Statistical Analysis

All data were recorded on a computer using the IBM SPSS Statistics 25 and descriptive statistics, which provided frequency and percentage values.

Results

Table 1 shows the distribution of sociodemographic characteristics of patients hospitalized in the intensive care unit due to suicide in the last 10 years. The mean age of patients who committed suicide was 27.06±10.15 years and the majority (61%) were female **(Table 1).**

Table 1. Sociodemographic characteristics of patients hospitalized in the intensive care unit due to suicide

Variables		Mean ± SD	Median (Min-Max)
Age, year		27.06±10.15	24 (18-65)
		n	**%**
Gender	Male	102	39
	Female	158	61
Place of residence	Province	216	83
	District	44	17

Table 2 shows the distribution of clinical characteristics of patients who committed suicide. When the data were analyzed, it was determined that 79.6% of the patients were admitted to the intensive care unit with a prediagnosis of suicide, 17.7% with alcohol or drug intoxication, and 2.7% with substance abuse. It was determined that patients committed suicide due to family and community pressure (32.7%), economic problems (17.7%), psychiatric problems (15%), problems related to interpersonal relationships (10.4%), unknown reasons (21.2%) and loneliness (3.1%). It was found that 67% of the patients preferred drinking drugs, 26% used insecticides, pesticides and herbicides, 4% used hanging and 3% used firearms as suicide methods **(Table 2)**.

Table 2. Clinical characteristics of patients hospitalized in the intensive care unit due to suicide

Variables		n (%)
Preliminary diagnosis of the patient	Drug and Alcohol Intoxication	46 (17.7)
	Substance abuse	7 (2.7)
	Suicide	207 (79.6)
Cause of suicide	Problems with interpersonal relationships	27 (10.4)
	Family and community pressure	85 (32.7)
	Economic problems	46 (17.7)
	Loneliness	8 (3.1)
	Psychiatric problems	39 (15.0)
	Unknown causes	55 (21.2)
	Ace	11 (4)
Suicide method	Firearm	7 (3)
	Drinking medicine	175 (67)
	Insecticides. pesticides and herbicides	67 (26)
Substances and drugs used in suicide	Organophosphate	65 (25)
	Anti-inflammatory	24 (9.2)
	Antidepressant	22 (8.5)
	Unspecified. Undetermined	19 (7.3)
	Multiple drug overdose	17 (6.6)
	Antipsychotic	15 (5.8)
	Proton pump inhibitor	13 (5)
	Anticonvulsant	11 (4.2)
	Antispasmodic	9 (3.5)

	Antibiotics	7 (2.7)
	Antiaggregant	5 (1.9)
	Antiarrhythmic	5 (1.9)
	Chemical agents (cleaning agents)	5 (1.9)
	Alcohol	4 (1.5)
	Antidiabetic	3 (1.2)
	Heroin	3 (1.2)
	Anxiolytic	2 (0.8)
	Diuretics	2 (0.8)
	Antihistamine	2 (0.8)
	Other	2 (0.8)
Ways of taking suicidal drugs and substances	Oral	257 (98.8)
	IV	3 (1.2)
Complaint of hospital admission	Blurred consciousness	26 (10)
	Loss of consciousness	18 (7)
	Nausea-Vomiting	183 (70)
	Restlessness-Abdominal Pain	6 (2)
	Respiratory Distress or Failure	16 (6)
	Suicidally intended ace	7 (3)
	Soft tissue disorder	4 (2)
The person who brought him to the hospital	Unspecified	14 (5.4)
	Parent	75 (28.8)
	Wife	2 (0.8)
	Himself	169 (65.0)
Number of days hospitalized	1	118 (45.4)
	2	99 (38.1)
	3	23 (8.8)
	4	14 (5.4)
	5 and above	6 (2.4)
Comorbid psychiatric illness	Alcohol dependence	1 (0.4)
	Depression	18 (6.9)
	Mood disorder	2 (0.8)
	Substance abuse	7 (2.7)

	Psychotic disorder	2 (0.8)
	Not specified	230 (88.5)
The result of a suicide attempt	Death	22 (8)
	Discharge after hospitalization	238 (92)

It was determined that patients used many drugs and substances as a means of suicide, but most of them took organophosphates (25%), anti-inflammatory drugs (9.2%), antidepressants (8.5%) and antipsychotics (5.8%), 6.6% used multiple drugs in overdose, 7.3% drank drugs, but the drugs they drank were not specified in the records and almost all of these drugs (98.8%) were taken orally.

The patients who committed suicide were admitted to the hospital with complaints of nausea and vomiting in 70%, confusion in 10%, loss of consciousness in 7%, respiratory distress or failure in 6% and mostly individually, 45.4% of them stayed in the intensive care unit for one day, 38.1% for two days, 8.1% stayed in the intensive care unit for one day, 38.1% for two days, 8.1% for three days, 5.4% for four days and 2.4% for 5 days, 88.5% did not know whether they had a comorbid disease, and the most common comorbid disease was depression (6.9%). It was also determined that 92% of the patients were discharged after treatment, but 8% of them died (6 males-2 females) **(Table 2).**

Figure 1 shows the distribution of suicide rates by year in the last decade. When the data were analyzed, it was determined that the highest rates of suicide cases were realized in 2017 (21%), 2022 (18%), 2021 (15%), 2020 (10%), 2019 (10%), 2018 (8%), 2016 (8%), 2023 (4%), 2014 (3%), and 2015 (2%), respectively (**Figure 1)**.

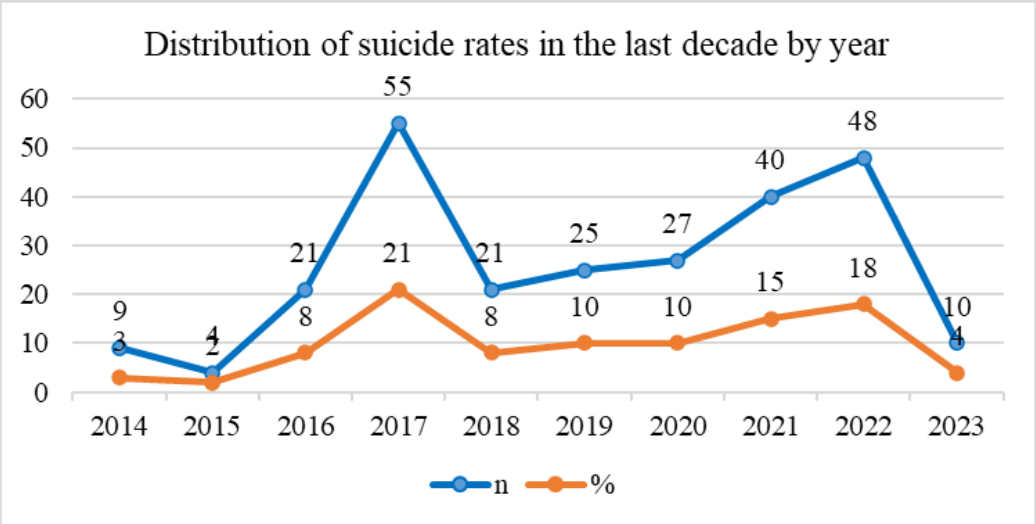

Figure 1. Distribution of suicide rates in the last decade by year

Figure 2 shows the distribution of suicide rates by month in the last ten years. When the data were analyzed, it was found that suicide cases were frequently committed in July (15%), October (13%), August (11%) and May (10%) **(Figure 2).**

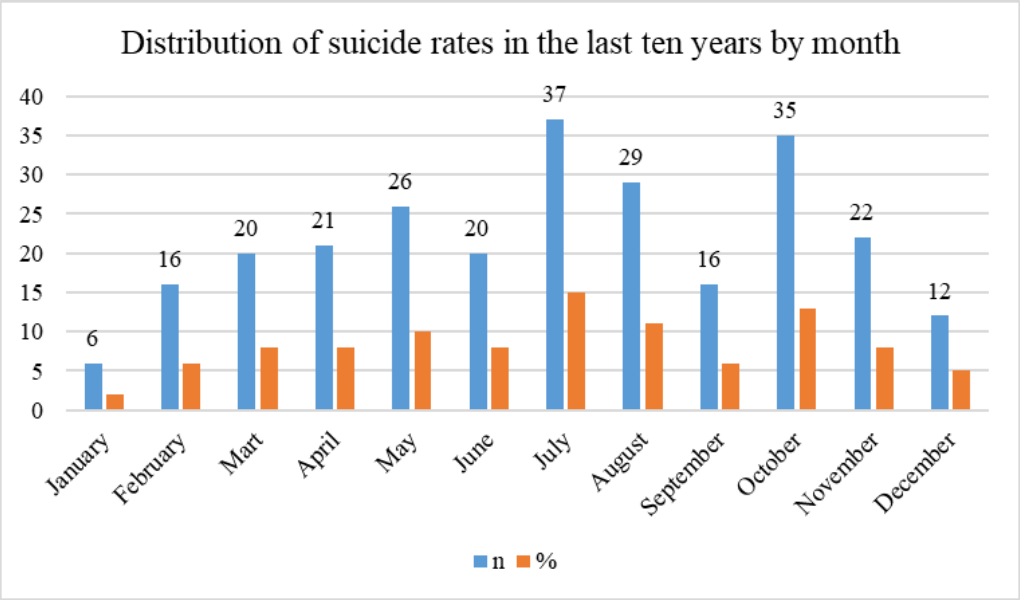

Figure 2. Distribution of suicide rates in the last ten years by month

Figure 3 shows the distribution of suicide rates according to hours in the last decade. When the data were analyzed, it was found that suicide cases were frequently committed between 23:00 (14.6%), 01:00 (9.2%), 17:00 (6.5%) and 11:00 (6.2%) **(Figure 3)**.

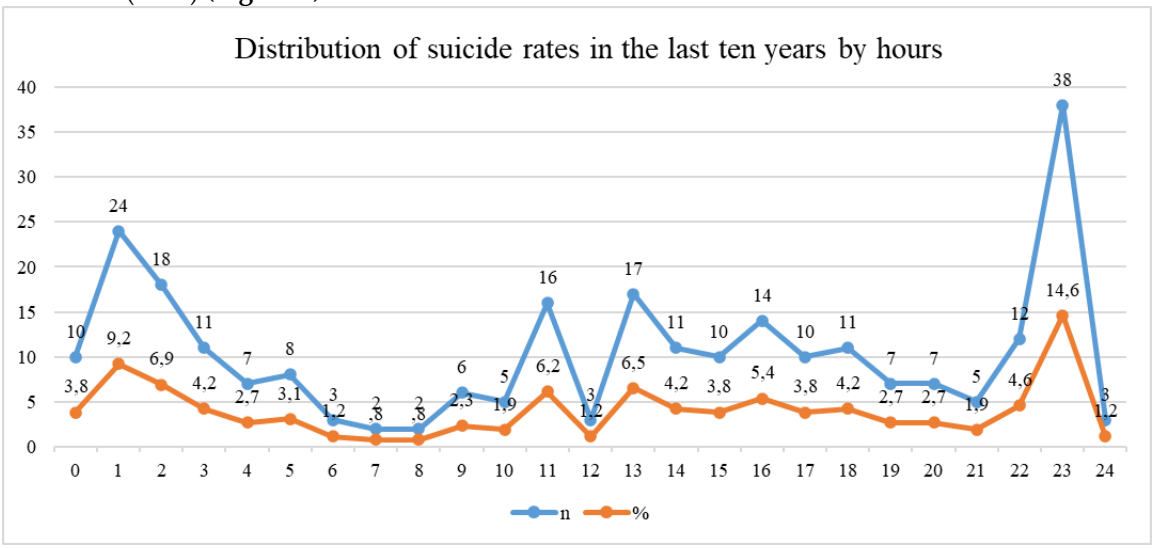

Figure 3. Distribution of suicide rates in the last ten years by hours

Discussion

This retrospective descriptive study sheds light on the profile of patients admitted to intensive care for suicide by examining the sociodemographic and clinical characteristics of patients treated for suicide in an intensive care unit in southeastern Turkey between 2014 and 2023. The study aims to fill the gaps in literature by examining the impact of sociological and psychological factors on suicide. Analyzing the data on this group of patients, especially those hospitalized in the intensive care unit, is important in terms of shedding light on the profile of patients admitted to intensive care units and contributing to the elimination of gaps in literature. Such data provides an important basis for better understanding the risk factors associated with suicide and for developing effective interventions for this critical patient group.

In this study, it was found that individuals in the age group of 27.06 ± 10.15 years were more prone to suicide and women had a higher rate of suicide than men. In studies evaluating the socio-demographic characteristics of suicide cases, it was found that the cases were mostly young adults and suicide mortality was higher in men than women in

all age groups (13,14). Literature shows that suicidal thoughts become more common as stress increases in young adults. This has become a widespread problem in society (15-17). In addition, it is a common finding in the literature that women make more suicide attempts, but men have a higher suicide mortality rate (15,16). Although women attempt suicide more frequently, men tend to use more lethal methods, which may explain the higher suicide success rate in men. This difference is often related to gender roles, cultural norms and psychosocial dynamics. For example, a study by Parin (2020) found that women's help-seeking behaviour is more common and that suicide attempts can generally be seen as a cry for help. Men, on the other hand, may be more likely to use more lethal methods because of social pressures to be seen as 'strong' and 'emotionally in control' (6). In addition, men's greater risk-taking behaviour and easier access to violent methods may explain this difference (15,16). In women, it has been suggested that emotional factors such as depression, anxiety and other psychiatric disorders may influence suicide attempts. In men, factors associated with suicide have generally been found to be related to environmental stressors such as substance use, unemployment and social isolation (1-7). In this study, the majority of patients lived in urban areas. The literature often highlights that individuals in urban areas may be more vulnerable to suicide risk due to the fast pace of life, increasing competitive pressures, social isolation and economic stressors (4,6,15). In addition, the literature suggests that social support networks may be stronger in rural areas, but stigma towards suicide and help-seeking behaviour may be lower in these areas (6). It is important to determine the reasons behind this situation and to develop early detection and intervention strategies for individuals in this age group (13-15). Emotional and socio-cultural difficulties faced by people at risk of suicide need to be identified and intervened in a timely manner.

In this study, the patients were admitted to the intensive care unit with a prediagnosis of alcohol-substance abuse and drug intoxication in addition to suicide. In the literature, it has been reported that the majority of suicide cases are closely related to alcohol-substance abuse or drug intoxication. In this context, Baziki Çetin et al. (2024) found that alcohol and drug abuse increased the risk of suicide (18). In the study conducted by Delibaş and Erdoğan (2024), it was reported that drug intoxication cases were mostly suicidal (19). In line with the existing literature, these findings suggest that alcohol and substance abuse and drug intoxication are common risk factors in suicide cases. Alcohol and drugs are known to trigger suicidal thoughts and attempts by disrupting individuals' cognitive control and emotional balance (20). In this context, increasing early intervention programs for alcohol and substance abuse and providing psychological support to intoxication cases in intensive care units may be useful in preventing suicide (18,19).

According to Turkish Statistical Institute reports, the cause of 61.8% of suicide cases is unknown (4). Similarly, in this study, the cause of 21.2% of suicide cases could not be elucidated. In Turkey, reasons such as incomplete records of suicide cases in intensive care units, inadequate filling of forms, lack of a common language, writing the final cause of death and difficulty in determining the cause of death make it difficult to determine the exact causes of suicide (9). However, when the parameter coded as "unknown reasons" was excluded in this study, it was determined that the most common reasons were family and community pressure, economic problems, psychiatric problems, problems related to interpersonal relationships and loneliness. Consistent with the results of this study, Emiral et al. (2022) reported that disease states, economic problems, commercial failure and educational failure triggered suicide (21). Amiri & Khan (2023) stated that the most common cause of non-fatal suicide attempts was familial and psychiatric problems, while the most common cause of fatal suicides was unemployment and poverty (22). These data suggest that suicide is the result of a complex interaction between personal and environmental factors and that preventive interventions targeting different risk groups are necessary (23,24). In order to prevent suicide, economic support programs, policies to combat unemployment, expansion of counseling services for family problems, early diagnosis and treatment of psychiatric problems and strengthening social support networks against loneliness may be useful (9,21-24).

In this study, the most common methods used in suicide attempts were insecticide, pesticide and herbicide ingestion, hanging and firearms. While taking medication was the most common method of suicide, organophosphates, anti-inflammatory drugs, antidepressants and antipsychotics were found to be the most frequently preferred methods. This finding has been frequently emphasized in the national and international literature since the 1980s, and it has been reported that oral ingestion of drugs and chemicals is due to the easy accessibility of these substances (15,25,26). The prevalence of these methods in literature has often been associated with the inadequacy of how societies and health systems address this condition (15,25). According to the results of many studies, the limited adequate supervision and control mechanisms in the prescription and distribution processes of drugs in Turkey and the widespread use of pesticides increase easy access to these substances and thus the likelihood of their use in suicide attempts (8,9,14). This highlights the need to raise public awareness of such

chemicals and restrict their access. Thus, the diversity and long-term prevalence of suicide methods also highlights the ineffectiveness of measures and policies in this area (8,14).

In this study, it was determined that suicide cases were mostly admitted to the hospital individually and due to nausea-vomiting, loss of consciousness/unconsciousness, respiratory distress or failure, most patients were discharged after treatment, and 8 individuals died. Ayaz et al. (2014) reported that short-term hospitalization after suicidal drug intake decreased the duration of hospitalization and mortality (25). These findings emphasize the importance of emergency medical intervention in suicide attempts and show that rapid hospitalization can reduce life-threatening situations.

The psychiatric history of people who attempt suicide is often complex. These individuals are affected by social and environmental factors as well as mental disorders. In a study, at least one axis-I disorder was detected in 93% of suicide victims as a result of psychiatric autopsy (27). In a study conducted by Erensoy et al. (2020), 82.98% of the patients received at least one psychiatric diagnosis and the diagnoses were frequently major depression, adjustment disorder, alcoholism and anxiety disorders (28). In this study, it was found that it was not known whether most of the patients had a comorbid illness, but the most common comorbid illness was depression. These findings emphasize the prevalence of psychiatric disorders and especially depression in individuals at risk of suicide. The prevalence and severity of depression highlights how critical an effective intervention and treatment strategy is. Therefore, it is clear that a comprehensive psychiatric assessment and appropriate treatment approaches should be prioritized to reduce suicide risk. In particular, early diagnosis of common and severe comorbid disorders such as depression is of great importance for the health of both individuals and society (18).

In this study, it was observed that annual suicide rates have fluctuated over the last decade; while rates were quite low in 2014 and 2015, there was a significant increase in 2017 and 2022. Suicide is a public health problem with legal, medical, economic, social and individual consequences. It is also a multidimensional phenomenon that needs to be analyzed in the context of cause-and-effect relationships from the perspective of psychology and sociology. (29). For this reason, it is important that it is handled carefully from every angle. When analyzed in terms of Turkey's sociopolitical and economic structure, the findings are quite striking. In July 2016, an anti-government attempt took place in Turkey. Hundreds of thousands of people were dismissed and prosecuted as a result of this event (30). During this period, the media frequently covered the suicides of many individuals who were dismissed from their jobs and were on trial. In these news reports, various expressions such as "the dismissed person, the accused person, the person on trial committed suicide" were used for the individuals who committed suicide. In other words, 2017 was a period of intense economic and political instability in Turkey following the coup attempt (30). This situation may have increased feelings of hopelessness and helplessness in society, which may have been reflected in suicide rates. In addition, existing economic problems have been exacerbated by the pandemic. The economic fluctuations that emerged in 2022 after the pandemic, especially the currency crises after 2018 and the increase in unemployment rates have created financial and moral pressure on individuals (31,32). It is thought that these conditions may be related to the increase in suicide rates.

In this study, it was determined that the highest rates of suicides occurred in the months of July, October, August and May, and most frequently at 23:00, 01:00, 17:00 and 11:00. The fact that suicide rates in the last decade peaked in July, October, August and May coincides with the seasonal suicide trends reported in the general literature (33). The increase in temperature, especially in summer and fall, can increase biological and psychological pressures on individuals. Although not investigated in previous studies, seasonal changes can lead to an increase in mental health problems such as restlessness, depression and anxiety, especially in hot weather (3, 6-10). This effect may be even more pronounced in a city like Şanlıurfa, which is located in the Southeastern Anatolia Region of Turkey and has very hot climatic conditions. In addition, in this city, which has an agriculture-based economy, these months are the planting and harvest months (34). Therefore, economic stress, livelihood problems, unemployment and easy access to chemical pesticides may have increased suicide rates. In addition, circadian rhythms are the 24-hour cycles of our biological clock that regulate our physical, mental and behavioral processes during the day. These rhythms affect many functions such as the sleep-wake cycle, hormone release and body temperature (35). Research shows that circadian rhythms play an important role in mental health. Depression and suicide attempts have been found to occur more frequently, especially early in the morning and late at night. This suggests that disruptions in circadian rhythms may have negative effects on mood and cognitive functioning and may lead to increased suicidal thoughts or behaviors. Thus, the role of circadian rhythms on mental health and suicidal behavior is considered to be an important factor contributing to the concentration of suicide attempts at certain hours (36).

Seasonal fluctuations in deaths by suicide have been widely studied, but much less is known about patterns related

to time of day. A less extensively studied area of research concerns the effects of time of day on suicides. According to Freichel and O'Shea (2023), both attempted and completed suicides are influenced by daily and circadian rhythms (33). Several studies on suicide attempts in various populations have shown that suicide attempts occur most frequently in the evening and at night, while the number of completed suicides peaks in the morning (35-39). On the other hand, the interpersonal-psychological theory of suicide suggests that suicidality is associated with isolation and a sense of thwarted belonging, both of which may be exacerbated when individuals are awake and alone at night. Therefore, the high prevalence of suicides at night (23:00 and 01:00) is consistent with the time periods when individuals are alone and psychologically most vulnerable, indicating that feelings of depression, loneliness and helplessness may intensify during these hours.

Study limitations

This study has several limitations. Firstly, as a retrospective descriptive study based on data from a single region, the findings may not be applicable to other areas with different socioeconomic, cultural, or healthcare contexts. The reliance on medical records for data collection may have led to missing or incomplete information, particularly regarding suicide causes, as many cases had unknown reasons. This could affect the accuracy of the findings. Additionally, the study focused only on patients admitted to intensive care units, potentially excluding those who did not require hospitalization. This limits the study's ability to capture the full spectrum of suicide attempts. The reliance on medical diagnoses may also overlook underlying psychosocial factors or the complexity of psychiatric comorbidities, as many patients' mental health histories were poorly documented. Finally, while seasonal and circadian rhythms were noted, the study did not consider other factors, such as social or economic policies, that might have contributed to the fluctuations in suicide rates. Future research should address these gaps.

Conclusion

This retrospective descriptive study examines the sociodemographic and clinical characteristics of patients admitted to an intensive care unit in Turkey for suicide attempts over the last ten years and provides important findings on how suicides may be associated with country- specific socioeconomic and cultural factors. The study found that suicide attempts were common among young adults and women, but that men used more lethal methods. Comorbid conditions such as alcohol and substance abuse and drug intoxication were also found to play an important role in suicide attempts. The fact that most of the reasons for suicide were recorded as unknown draws attention to the deficiencies in record keeping and monitoring processes, while the most frequently reported reasons were family, economic and psychiatric problems. In addition, the easy accessibility of chemicals such as insecticides, pesticides, herbicides and pharmaceuticals have a significant impact on the preferred methods of suicide attempts. It was concluded that seasonal and circadian rhythms contribute to the increase in suicide cases, especially in hot summer and fall months and at night.

In light of these findings, it is important to develop a comprehensive strategy to prevent suicide attempts in the community. First of all, mental health education programs should be organized for young adults and women, and awareness should be raised to reduce suicide attempts in these groups. Rehabilitation services for alcohol and substance abuse should be strengthened to minimize the impact of these comorbid conditions. To better understand the causes of suicide, an effective registration system that encourages data sharing among health institutions should be established. Support mechanisms for family, economic and psychiatric problems should be developed to provide timely assistance to individuals. Furthermore, controlling access to insecticides and other chemicals would be a critical step in reducing the diversity of suicide methods. Finally, considering the impact of seasonal changes, the accessibility of mental health services should be increased during summer and autumn and special intervention programs should be implemented during these periods. Implementation of these recommendations will make a significant contribution to reducing suicide attempts.

Acknowledgements: *None.*

Ethical Approval: *This Study approval was obtained from the Harran University Faculty of Medicine, Non-Interventional Clinical Research Ethics Committee (number: 2023/13/02236. date: 24.07.2023).*

Author Contributions: *Concept: Ö.K, M.K.E. Literature Review: Ö.K, M.K.E. Design: Ö.K, M.K.E. Data acquisition: Ö.K, M.K.E. Analysis and interpretation: Ö.K, M.E.D, M.K.E. Writing manuscript: Ö.K, M.E.D, M.K.E. Critical revision of manuscript: Ö.K, M.K.E.*

Conflict of Interest: *The author(s) do not have any potential conflict of interest regarding the research. authorship and/or publication of this article.*

Financial Disclosure: *No financial support was received for this study.*

References

1. Knipe D, Padmanathan P, Newton-Howes G, et al. Suicide and self-harm. Lancet. 2022;399(10338):1903–16.
2. World Health Organization. Suicide. 2023. [cited 12 May 2024]. Available from: https://www.who.int/news-room/fact-sheets/detail/suicide
3. Parmentier ML, Weiss K, Aroua A, et al. The influence of environmental crisis perception and trait anxiety on the level of eco-worry and climate anxiety. J Anxiety Disord. 2024;101.
4. Türkiye İstatistik Kurumu. İntihar İstatistikleri: Neden, cinsiyet ve aya göre intiharlar. 2024. [cited 12 May 2024]. Available from: https://data.tuik.gov.tr/Search/Search?text=intihar
5. Ceylan MF, Tural Hesapcioglu S, Kasak M, et al. High prevalence of nonsuicidal self-injury, tattoos, and psychiatric comorbidity among male adolescent prisoners and their sociodemographic characteristics. Asian J Psychiatr. 2019;43:45–9.
6. Parin S. Kadın intiharları üzerine bir araştırma: Van örneği. Soc Sci Stud J. 2020;6(56):624–33.
7. Kavaklı M. Türkiye'de intiharın sosyo-ekonomik ve sosyo-psikolojik belirleyicileri: düzey 2 için bir panel veri çözümlemesi. Bursa Uludağ Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 2023:42(1):55-71.
8. Boğan M, Bekïrcan E, Boğan F, et al. Retrospective study on suicide attempts among psychiatric emergencies admitted to the emergency department of a regional hospital in Turkey. Curr Psychol. 2024;26503–10.
9. Öztürk M, Köylü R, Köylü Ö, et al. İntihar girişimi nedeniyle takip edilen hastaların sosyodemografik özellikleri, laboratuvar bulguları ve tıbbi durumları ile depresyon skorunun değerlendirilmesi. Med Rec. 2020;2(3):70–5.
10. Erol M, Karahan M, Büyükfırat E, et al. Yoğun bakım ünitesinde antidepresan ilaç kullanımına bağlı akut zehirlenme tanılı olguların geriye dönük analizi. Harran Üniversitesi Tıp Fakültesi Derg. 2018;15(3):226–9.
11. Muhammedoğlu N, Başaranoğlu G, Gül YG, et al. Evaluation of suicide and intoxication cases admitted to our newly opened intensive care unit. Haseki Tip Bul. 2014;52(3):153–7.
12. Benchimol EI, Smeeth L, Guttmann A, et al. The REporting of studies conducted using observational routinely-collected health Data (RECORD) Statement. PLoS Med. 2015;12(10):1–22.
13. Al Khatri M, Al Huseini S, Almaqbali M, et al. Sociodemographic Characteristics and clinical profile of suicide attempters attending the emergency department at a tertiary care hospital in Oman: A Retrospective study. J Psychiatr Pract. 2023;29(5):390–402.
14. Demir S, Yazar ME, Kurtuluş Dereli A, et al. Denizli'deki intihar ölümlerinin analizi 10 yıllık retrospektif otopsi çalışması. Bull Leg Med. 2018;23(2):93–9.
15. Andriessen K, Rahman B, Draper B, et al. Prevalence of exposure to suicide: a meta-analysis of population-based studies. J Psychiatr Res. 2017; 88:113–20.
16. Chamarro A, Díaz-Moreno A, Bonilla I, et al. Stress and suicide risk among adolescents: the role of problematic internet use, gaming disorder and emotional regulation. BMC Public Health. 2024;24(1):1–11.
17. Twenge JM. Increases in depression, self-harm, and suicide among U.S. adolescents after 2012 and links to technology use: Possible mechanisms. Psychiatr Res Clin Pract. 2020;2(1):19–25.
18. Baziki Çetin S, Peker İ, Atılan Fedai Ü. Effect of severity of depression and perceived social support on suicidal ideation among patients hospitalized with substance use disorder. Bağımlılık Derg. 2024;25(3):262–70.
19. Delibaş DH, Erdoğan E. Sociodemographic and clinical characteristics of patients with suicide attempt to a training and research hospital emergency department; A retrospective study. Van Med J. 2018;25(4):514–9.
20. Grove JL, Yeager AL, Kleiman EM. Social support as protective factor for suicidal ideation during treatment for substance abuse: Differential effects across treatment modalities. Curr Res Behav Sci. 2022;3:100087.
21. Emiral E, Emiral GO, Cevik ZA, et al. Investigation of suicide deaths in Turkey between 2015 and 2019. J Mens health. 2022;18(3):1–9.
22. Amiri S, Khan MAB. Prevalence of non-suicidal self-injury, suicidal ideation, suicide attempts, suicide mortality in eating disorders: A systematic review and meta-analysis. Eat Disord. 2023;31(5):487–525.
23. Ries RK, Livengood AL, Huh D, et al. Effectiveness of a suicide prevention module for adults in substance use disorder treatment: A Stepped-wedge cluster-randomized clinical trial. JAMA Netw Open. 2022;5(4): E222945.
24. Wang X, Chen Y, Hu Y, et al. Exploring suicide resilience experiences in chinese youth after self-poisoning: A qualitative study. Arch Psychiatr Nurs 2024;50:67–73.
25. Ayaz T. İntihar amaçlı ilaç zehirlenmelerinin değerlendirilmesi. Konuralp Tıp Derg. 2015;7(1):53-6
26. Chynoweth R, Tonge JI, Armstrong J. Suicide in Brisbane: A retrospective psychosocial study. Aust New Zeal J Psychiatry. 1980;14(1):37-45.
27. Henriksson MM, Aro HM, Marttunen MJ, et al. Mental disorders and comorbidity in suicide. Am J Psychiatry. 1993;150(6):935-40.
28. Erensoy H, Aytaç HM, Berkol TD, et al. Frequency of axis-i diagnosis and clinical features of suicide attempters drug overdose. Genel Tıp Derg. 2020;30(4):224–34.
29. Ladikli N, Tarı Cömer I. An etymological and terminological review on suicide. J Ibn Haldun Stud. 2024;9(1):77–99.
30. Alpdoğan FF. Türkiye Cumhuriyeti'nin ekonomi politiği bir döngünün içerisinde mi? Kırılgan türk ekonomisinin son otuz yıldaki krizleri. Sosyolojik Düşün. 2023;8(1):35–64.

31. Bürüngüz N. Yokluktan intihara: Türkiye'de COVID-19'un ilk kısıtlama döneminde yazılı basına yansıyan intiharlar. Çalışma ve Toplum. 2022;3(74):1935–58.
32. Kelley HH, Lee Y, LeBaron-Black A, et al. Change in Financial Stress and Relational Wellbeing During COVID-19: Exacerbating and Alleviating Influences. J Fam Econ Issues. 2023;44(1):34-52.
33. Freichel R, O'Shea BA. Suicidality and mood: The impact of trends, seasons, day of the week, and time of day on explicit and implicit cognitions among an online community sample. Transl Psychiatry. 2023;13(1):1–9.
34. Oğuz E, Oğuz K. Şanlıurfa ili yağış ve sıcaklık trend analizi. 2020;(1):26–31
35. de Leeuw M, Verhoeve SI, van der Wee NJA, et al. The role of the circadian system in the etiology of depression. Neurosci Biobehav Rev. 2023; 153: 105383
36. Daut RA, Fonken LK. Circadian regulation of depression: A role for serotonin. Front Neuroendocrinol. 2019; 54:100746
37. Akkaya-Kalayci T, Kapusta ND, Waldhör T, et al. The association of monthly, diurnal and circadian variations with suicide attempts by young people. Child Adolesc Psychiatry Ment Health. 2017;11(1):1–7.
38. Nakamura JW, McLeod CR, McDermott JF. Temporal variation in adolescent suicide attempts. Suicide Life Threat Behav.1994;24(4):343–9.
39. Preti A, Miotto P. Diurnal variations in suicide by age and gender in Italy. J Affect Disord. 2001;65(3):253–61.