

Suicide among doctors in Turkey: Differences across gender, medical specialty and the method of suicide

Mesut Yıldız^{1,A–F}, Kerim Deniz Batun^{2,A–D,F}, Hakan Şahinoğlu^{2,A–D,F}, Muhammed Selim Eryılmaz^{2,A–D,F}, Bilge Özel^{2,A–D,F}, Beyzanur Ataoğlu^{3,A–D,F}, Seyhan Ergin Hidiroğlu^{3,A–F}

¹ Department of Psychiatry, Marmara University, Istanbul, Turkey

² Intern at the Faculty of Medicine, Marmara University, Istanbul, Turkey

³ Department of Public Health, Marmara University, Istanbul, Turkey

A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation;

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Address for correspondence

Mesut Yıldız

E-mail: mesutdr@gmail.com

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Abstract

Background. Doctors have higher rates of mental illness and suicide than the general population worldwide. Suicides of doctors are known to be underreported in developing countries. To the best of our knowledge, there are no studies investigating suicides among medical students and doctors in Turkey.

Objectives. To investigate the characteristics of suicides in medical school students and doctors in Turkey.

Materials and methods. In this retrospective study, newspaper websites and Google search engine were searched for information on medical school student and doctor suicides in Turkey between 2011 and 2021. Cases of suicide attempt, parasuicide or deliberate self-harm were not included in the study.

Results. Sixty-one suicides were reported between 2011–2021. There was a male predominance (45 (73.8%)), and more than half of the suicides (32 (52.5%)) occurred among specialist doctors. Self-poisoning, jumping from heights and firearms were the most common methods of suicide (18 (29.5%), 17 (27.9%) and 15 (24.6%), respectively). Cardiovascular surgery, family medicine, gynecology, and obstetrics specialties had the highest numbers of suicide deaths. Depression/mental illness was the most common speculated etiology. These results show that suicides among medical students and doctors in Turkey have characteristics that differ from both suicided among the general population in Turkey and doctor suicides in other countries.

Conclusions. In this study, we identified the suicidal characteristics of medical students and doctors in Turkey for the first time. The results help us to better understand this understudied topic and provide an avenue for future studies. The data also indicate that it is important to monitor the individual and systemic difficulties experienced by doctors, starting from the medical education stage, and to provide individual and environmental support to help decrease the risk of suicide.

Key words: suicide, medical student, doctor

Background

Although being a medical doctor is still one of the most respected and desired professions, medical education and working in the medical field can be both stressful and risky. Doctors generally work under stressful conditions, facing the increasing demands of patients and governments. The professionalism required for this job and some structural factors within the work environment increase the pressure on doctors, and this pressure continues to rise.¹ In recent years, the number of studies on mental health and suicide among physicians has increased.^{2,3}

Similarly to the general population, the most common mental disorders reported among physicians are depression and anxiety. In a meta-analysis that included over 17,500 resident physicians from 18 different countries, it has been reported that the rate of clinically significant depressive symptoms was 28.8%.⁴ It has also been reported that 13% of medical students were depressed, as compared to 7.8% in an age-matched control sample.⁵ Moreover, while depressive symptoms are reported by approx. 30% of the members of the general population, this rate is observed to be at 41% in doctors, and while anxiety is present in approx. 26% of the members of the general population, it has been reported at a rate of 40% in physicians.⁶

However, it has been questioned how accurate it is to compare the mental health of doctors with the general population, and it was decided that comparing it with other professional groups would yield better results.⁷ Indeed, studies have shown that estimates of depression and anxiety are higher when measured in occupational groups than in the general population, and that mental disorders in doctors are seen at rates close to other occupational groups.^{8,9}

While the frequency of mental disorders is consistently higher in doctors than in the general population, findings on suicide rates seem to be a little more complex. In a recent study, it has been reported that doctors have a significantly higher suicide rate (average of 1.3%) than the general population (average of 0.8%).¹⁰ Other studies comparing suicide rates in doctors with the general population have yielded varying results; many studies have reported that suicide rates among doctors are 2.5–7 times higher than in the general population.^{11,12} In contrast, several studies have reported that doctor suicide rates are indistinguishable from the general population.¹³ There are also studies showing lower suicide rates among doctors compared to the general population.¹⁴ Although the findings are mixed, a systematic review and meta-analysis calculated an overall standardized mortality rate of 1.44 for suicides among physicians,¹¹ and another meta-analysis showed a significantly higher suicide mortality ratio (SMR) in female doctors compared with women in general, and a significantly lower SMR in male doctors compared with

men.¹⁵ The risk of suicide was higher in junior trainees compared to senior ones, in divorced doctors and in doctors without children.^{9,11}

There is also emerging evidence for a link between the area of specialty and the risk of suicide.¹⁵ Although an older study reported no differences between specialties,¹⁶ many studies have shown that suicide rates are higher in anesthesiology, psychiatry, general practice, and general surgery.^{1,15} It is unclear if these findings are due to these specialists having higher rates of poor mental health, increased access to suicide means (e.g., highly lethal drugs), more barriers to seeking help, or a combination of these and other factors.¹⁷

Many risk factors related to increased mental problems and suicide rates have been identified in the literature. It is emphasized that both individual and environmental risk factors contribute to the high incidence of mental disorders in doctors.¹ Individual risk factors for doctors include genetic predisposition, adverse childhood experiences, experiences of loss, and preexisting psychiatric disorders, which are similar in the general population.^{2,3} Neurobiological and neurophysiological abnormalities have also been shown to increase the incidence of suicidal behaviors.^{18–25} Abnormalities in the serotonergic system and aberrant functioning in specific brain areas such as the prefrontal cortex, orbitofrontal cortex, amygdala, and nucleus accumbens have been reported.^{8,26–28} A dysregulation of the immune system and inflammatory processes have also been linked to the pathophysiology of suicidal behavior.^{29–34} Moreover, relationships between neurodegenerative processes and both mental disorders and suicide are well known. In addition, it has been shown that coronavirus disease 2019 (COVID-19) increases complaints of anxiety, depression and suicidality in almost all age groups, especially in young people.³⁵

Traits that can be more common in doctors, such as perfectionism, obsessiveness, increased drive, feeling of inadequacy, individualism, and ambition, can also be associated with an increased risk of mental disorders.³⁶ In addition to these traits, situations such as an excessive workload, short rest periods, a lack of support, increasing demands, increased paperwork, financial difficulties, disruptions in the healthcare system, inability or lack of possibility to take time off or to relax, or a lack of safe spaces where doctors can refresh themselves also create the basis for mental disorders.^{1,3,37} It has been proposed that the modern lifestyle can decrease mental resilience and lead to the development of mental disorders.³⁸ In addition, the strain placed on doctors across the world during the COVID-19 pandemic has worsened this situation. Many studies have shown an increase in acute self-reported symptoms of depression and anxiety, as well as high rates of insomnia and distress.³⁹ Moreover, in many countries, physicians have faced increasing bureaucratic and administrative burdens and healthcare system constraints that

have tended to increase year over year, resulting in an erosion of their income and social status.⁴⁰

It has also been suggested that the increased suicide risk in doctors is associated with the increased access to more dangerous means of suicide.⁴¹ For example, an increased use of drugs for suicide by doctors has been reported in different countries.¹⁶ While it is known that the methods of suicide can vary according to geographical location and gender,^{15,42} the existing literature has also sought to identify the potential etiologies of doctor suicides.⁴³

It has been found that doctors who have died by suicide tended to have multiple complex problems, including mental health issues. Although mental disorders and suicidal thoughts in doctors are more prevalent than in the general population, it is also known that the likelihood of searching for professional help is relatively low.⁴⁴ Both medical students and doctors are usually resistant to help-seeking and treatment, and are unwilling to disclose their mental health problems.^{45–47} Barriers to accessing care include the fear of stigma, the perception that they should be able to look after themselves and that seeking help is often seen as a sign of weakness, as well as confidentiality issues and potential problems with licensing.^{1,48} These barriers constitute a risk for medical students, trainees, doctors, their patients, and the public as a whole.⁴⁹ Medical professionals usually prefer non-formal ways to receive support by informally consulting their friends, families, peers, and colleagues.⁵⁰ This generally results in a lack of care or delays in accessing healthcare, as well as in self-medication and, for some, harmful behaviors.⁵¹

Although the number of studies on suicide in Turkey is substantial, there are hardly any studies examining specific occupational groups. In a study covering the years 2009–2018, it was observed that the crude suicide rate in the general Turkish population was 3.61–4.37 for a population of 100,000, and that this rate was higher in men than in women (male: 5.03–6.30, female: 1.81–2.43).⁵² Despite the information on the general population, there are no known statistics or information about suicides among medical students or doctors in Turkey.

Objectives

Suicide rates vary between countries and studies regarding the suicide of medical doctors remain rare.^{53,54} It has also been reported that doctor suicides are widely under-reported in developing countries.^{2,53} Although the topic has been widely covered in the Turkish press and media, to the best of our knowledge, there is no scientific study investigating suicide among Turkish doctors. There may be a lack of knowledge on this subject due to cultural factors, fear of the stigma related to suicide, and the lack of an association that systematically collects such data. Therefore, this study aimed to examine the descriptive

data on the suicides of medical school students and doctors in Turkey by using information reported in the national press and found on Google search engine. We aimed to determine demographic parameters such as age, gender, medical specialty, mortality rates, and the possible etiology of suicides.

Materials and methods

This retrospective descriptive study was conducted in adherence to the Declaration of Helsinki. The researchers were provided with fully anonymized data. The study was approved by the Marmara University Clinical Research Ethics Committee (approval date 05.11.2021, approval No. 09.2021.1275), and the need for written informed consent was waived.

Study design

The Turkish Statistical Institute (Türkiye İstatistik Kurumu (TÜİK)) has been collecting data on suicide events in the country since 1962; all the relevant data are available on the Institute's website. However, it is not possible to extract the suicide rates for doctors from these statistics. As it is not possible to obtain such data from official sources, and the literature mentions the use of newspaper news for this purpose,^{12,55,56} the use of online news portals seemed to be the only viable alternative to achieve the aim of this study.

After obtaining the approval from the ethics committee, the online data of doctors who were reported to have committed suicide in the national Turkish press over the last 11 years were collected retrospectively.

Setting

To obtain relevant data, the news reports found on Google and in the online archives of 10 major Turkish national newspapers based on circulation numbers were analyzed. The search was performed retrospectively using pertinent search words individually or in combination, and reports published in Turkish from January 2011 to December 2021 were taken into account. Both Google database and newspaper websites were thoroughly searched for applicable news using the following key words: “doctor suicide”, “doctor death”, “medical student suicide”, and “medical student death.” Three authors initially reviewed the links (MY, BA and SHE) and 4 authors (KDB, BÖ, HŞ, and MSE) extracted the data from relevant links. All news links were screened using eligibility criteria. Repetitive cases were examined and the repetition of data was prevented. Due to ethical concerns, name of cases, places of suicide and hospital information were not included in this study. A thorough content analysis of each suicide report was done.

Cases

Completed suicides committed by medical students and doctors reported on Google search engine or on newspaper websites between 2011 and 2021 were included in the present study. Our target population included suicide cases involving only medical students and doctors. Cases with a suicide attempt, parasuicide or deliberate self-harm were not included. We also excluded cases in which autopsy ruled out suicide, and dubious cases where a suicide, homicide or accident was suspected but not confirmed. In line with the literature, self-poisoning was defined as taking a drug overdose or ingesting substances never intended for human consumption, and self-injury was defined as causing physical injury by means such as cutting. It should be noted that the underreporting of suicide cases in medical students and doctors may be a major confounding factor in the present study.

Variables

The following information was taken from each report: sociodemographic variables (age, gender, specialty, and degree of expertise), suicide method, place of suicide, and other related variables.

Statistical analyses

All descriptive variables (sociodemographic and suicide-related variables) were analyzed using R software v. 4.1.2 (R Foundation for Statistical Computing, Vienna, Austria). Percentages were calculated and the Pearson's χ^2 test was used for comparisons. The level of significance was fixed at $p < 0.05$, at a 95% confidence interval (95% CI).

An estimated mortality rate (per 100,000 medical students/year or per 100,000 doctors/year) for deaths by suicide was calculated using publicly available total medical school student (<https://istatistik.yok.gov.tr/>) and doctor (<https://data.tuik.gov.tr/> and <https://sbsgm.saglik.gov.tr/>) data. In Turkey, between 2011 and 2021, the mean number of medical students was approx. 74,976 per year and the mean number of doctors was approx. 158,492 per year.

For the calculations, annual country-specific data were obtained from https://www.theglobaleconomy.com/rankings/doctors_per_1000_people/ and yearly population data were obtained using the Google search engine.

Results

Sociodemographic characteristics of suicide cases

While 16 (26.2%) of the 61 cases in our study were female, 45 (73.8%) were male. Sixteen (26.2%) of the cases were married, 1 (1.6%) was single and without a partner, 1 (1.6%) was single and had a partner, and 4 (6.6%) were widows or widowers. Data on marital/relationship status could not be obtained in 39 (63.9%) cases. With regard to age, 24 (39.3%) cases were under the age of 35 years, 17 (27.9%) were between the age of 35 and 49 years, 11 (18%) were between the age of 50 and 64 years, and 3 (4.9%) were over the age of 65 years (Table 1).

The entire study group was divided according to their academic rank into students (8 (13.1%)), assistants (10 (16.4%)), practitioners (32 (52.5%)), specialists (32 (52.5%)), and academics (6 (9.8%)) (Fig. 1).

Among all of the groups, drug/chemical ingestion emerged as the most common method of suicide (18 (29.5%)). Jumping from heights was the 2nd most common method of suicide (17 (27.9%)), followed by 15 cases (24.6%) involving firearms, 7 cases of hanging (11.5%), and 1 case

Table 1. Distribution of the age of healthcare providers who died by suicide

Age group	n (%)
<35	24 (39.3)
35–49	17 (27.9)
50–64	11 (18.0)
>65	3 (4.9)
No data	6 (9.8)
Total	61 (100.0)

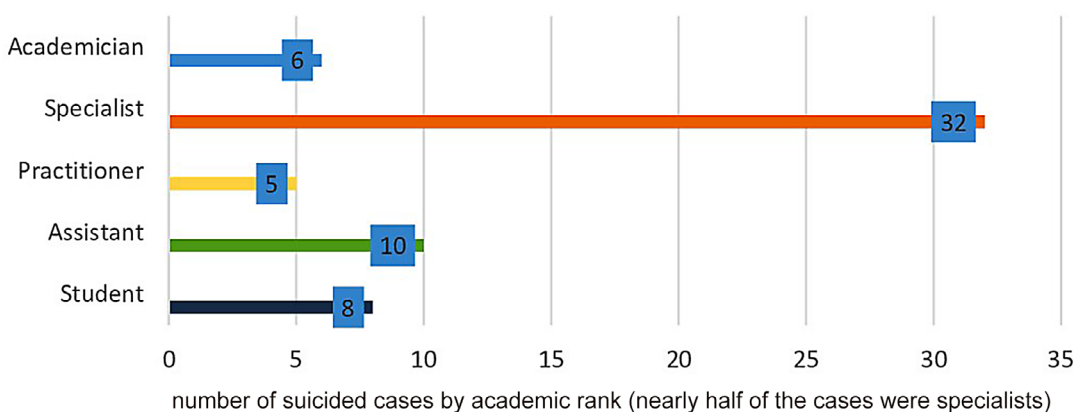


Fig. 1. Distribution of academic ranks across the medical doctor suicide cases

Table 2. Distribution of suicide methods

Method	n (%)
Drug/chemical use	18 (29.5)
Jumping from heights	17 (27.9)
Firearms	15 (24.6)
Hanging	7 (11.5)
Poisoning with natural gas	1 (1.6)
No data	3 (4.9)

(1.6%) of poisoning with natural gas. No data could be obtained in 3 (4.9%) cases (Table 2).

Specialty distribution

Of all the suicide cases, there were 7 (11.5%) cardiovascular surgeons, 7 (11.5%) family doctors, 6 (9.8%) gynecologists and obstetricians, 5 (8.2%) general practitioners and 5 (8.2%) pediatrics doctors, as well as 4 (6.6%) internal medicine and 4 (6.6%) emergency doctors. There were also 2 (3.3%) doctors of each of the following specialties: anesthesiology, orthopedics, psychiatry, radiology, and urology, and there was one case (each: 1.6%) from each of the following specialties: biochemistry, infection, physical therapy and rehabilitation, general surgery, and neurosurgery (Table 3).

Estimated suicide-specific mortality rates

Between 2011–2021, there were 8 student deaths and 53 doctor deaths resulting from suicide. The estimated suicide rate was 0.97^{-5} for students and 3.04^{-5} for doctors.

Table 3. Distribution of medical specialties

Specialty	n (%)
Cardiovascular surgery	7 (11.5)
Family medicine	7 (11.5)
Obstetrics and gynecology	6 (9.8)
General practitioner	5 (8.2)
Pediatrics	5 (8.2)
Emergency medicine	4 (6.6)
Internal medicine	4 (6.6)
Anesthesiology	2 (3.3)
Orthopedics	2 (3.3)
Psychiatry	2 (3.3)
Radiology	2 (3.3)
Urology	2 (3.3)
Biochemistry	1 (1.6)
Infectious diseases	1 (1.6)
Physical therapy and rehabilitation	1 (1.6)
General surgery	1 (1.6)
Neurosurgery	1 (1.6)
Student	8 (13.1)
Total	61 (100.0)

Table 4. Variability of suicide methods between surgeons and other groups

Method	Surgeon	Not surgeon	Total
Self-injury	10	29	39
Self-poisoning	10	9	19
Total	20	38	58

When we look at the relationship between the method of suicide and the victim being a surgeon or nonsurgical doctor, 10 of the 20 surgeons committed suicide by self-poisoning, while 9 out of the 38 nonsurgical doctors used this method (χ^2 test, $p = 0.042$; Table 4).

When we look at the environment in which the suicide occurred, there were 16 (26.2%) doctors who committed suicide in the hospital and 37 (60.7%) who committed suicide at home. While the place of suicide for 4 doctors was listed as a public space, there was 1 (1.6%) doctor who committed suicide in prison. For 3 (4.9%) cases there were no available data regarding location.

Speculated etiologies of suicide

After the examination of the news articles about the suicides, speculated etiology for 21 (34.4%) cases was listed as depression/mental illness. This was followed by family problems (6 (9.8%)) and mobbing (6 (9.8%)). The other listed etiologies were financial problems (1 (1.6%)), serious illness (1 (1.6%)) and other (1 (1.6%)). No etiology was speculated for 25 cases (41%) (Table 5).

Table 5. Distribution of speculated etiologies of suicides

Etiology	n (%)
Depression/mental illness	21 (34.4)
Family problems	6 (9.8)
Workplace problems/mobbing	6 (9.8)
Financial problems	1 (1.6)
Serious illness/cancer	1 (1.6)
Other	1 (1.6)
No etiology determined	25 (41)
Total	61 (100.0)

Discussion

The main objective of the present study was to examine the sociodemographic variables associated with cases of doctor suicides in Turkey. In this study, we describe the general characteristics of 61 suicide cases among medical doctors and students over an 11-year period (2011–2021). The majority of the cases included in our study were male, and more than half of them were specialist doctors. The 3 most commonly used suicide methods were self-poisoning, jumping from heights and firearms. The medical specialties with the highest number of suicides were

cardiovascular surgery, family medicine, and obstetrics and gynecology. Depression/mental illness was the most commonly speculated etiology for suicide cases among medical students and doctors.

While discussing the data, separating the student group from the doctors will make it easier to compare the current findings with other studies. In our study, it has been observed that there were 8 medical student suicides over a period of 11 years. Although there are few studies examining suicide in medical students, a study in the USA reported 6 suicides over 5 years,⁵⁷ a study in Austria reported 6 suicides over a 5-year period,⁵⁸ and a study in Canada reported 6 medical student suicides over 10 years.⁵⁹

Previous studies have reported rates of 0 to 39.6/100,000 completed suicides among undergraduate medical students.⁵⁹ When calculated over the 11-year period, the suicide rate among undergraduate medical students in Turkey was 0.97/100,000 medical students/year. When looking at relevant age comparison groups for medical students, the suicide rate for the age of 15–24 years was 5.58 in Turkey.⁶⁰ Based on our results, it is not correct to conclude that the suicide rate among medical school students is lower than that of the general population. The lower rate of suicide in medical faculty students compared to similar age groups could be due to an underreporting of suicides or due to the methodology of our study.

Similar studies have reported lower suicide rates in medical school students compared to their age-matched counterparts.^{57,59} However, the major limitations of these 2 studies are that both used surveys which include questions directed only to deans of medical schools and had low participation rates.

In the current study, it was observed that there were 53 doctor suicides over 11 years, excluding the student group. Similar studies have reported 51 cases of suicide over 8 years in China, 233 cases of suicide over 10 years in India, 203 cases over 5 years in the USA, and 430 suicide cases in the UK over 5 years.^{59,61} The number of cases reported in the current study is comparable to the number of suicide cases reported in China over 8 years, but it is far below the numbers observed in the other studies. However, considering that the durations of the studies are different and that the number of doctors by country varies widely, the numbers across studies are not completely comparable. Thus, more valid measures of suicide rates are necessary for more meaningful comparisons across countries.

In this respect, when the results from the studies cited above are compared with the current study, the countries with the highest doctor suicide rates are the UK, the USA, Turkey, India, and China (47.7⁻⁵, 5.0⁻⁵, 3.0⁻⁵, 1.83⁻⁵, and 0.24⁻⁵, respectively). It should be kept in mind that officially recorded data were used in the studies undertaken in the UK and the USA, and online information and newspapers were used in the studies performed in China and India, as well as in the present study.

The crude suicide rate in Turkey varies between 3.61/100,000 and 4.37/100,000.⁵² In the current study, it was observed that the suicide rate among doctors over the 11-year period is 3.04/100,000. Based on this finding alone, it cannot be concluded that doctors are at a lower risk of suicide compared to the general population. The lower suicide rate in the current study could be associated with the methodology used, the lack of publicly available data on doctor suicides or an unwillingness of relatives to report doctor suicides. In addition to many studies reporting a higher suicide rate in doctors than in the general population,^{11,12} there are also studies reporting lower suicide rates in doctors compared to the general population, similar to our study.¹⁴

Despite the limitations of our data collection methods, one remarkable finding is that the estimated suicide rate among doctors is higher than among students. The higher suicide rates of doctors compared to students may be attributable to many factors, including the stress of the transition from medical school to residency, training difficulties, economic distress, a heavy workload, or many other general suicidal risk factors.

In the present study, there appears to be a male predominance (73.8% male, 26.2% female). In similar studies, it has been found that male suicide cases made up 57–85% of all cases. It has been suggested that the higher incidence of suicides among male doctors may be due to the fact that the number of male doctors is higher than that of women-doctors and that the financial burden on men is higher.⁶¹ Although the number of male doctor suicides is higher than for their female counterparts, a systematic review and a meta-analysis have shown that the relative risk of suicide for female doctors is higher than for male doctors.^{62,63}

Considering the age groups, the current study showed that suicide is most common in the group below the age of 35 years and that the number of suicides decreases with increasing age. In addition, when suicide cases are grouped by academic rank, it is seen that more than half of the cases are specialist doctors. A study exploring doctor suicides in England and Wales found no differences in terms of academic rank and period of employment.⁶⁴ However, in a meta-analysis that examined doctor suicides, the authors mentioned that the risk of suicide in male doctors is increased during early training – a time following competitive schooling when they have a heavy workload, when they are isolated, and when they are most professionally productive.⁶⁵

With regard to suicide methods, drug/chemical ingestion was the most commonly used method, followed by jumping from heights, firearms, hanging, and poisoning with natural gas. Studies in Turkey have shown that the most common suicide method in the general population is hanging, followed by firearms, poisoning, and jumping from heights.⁵² This difference between doctors and the general population may be associated with many factors and seems to change across different cultures. Since doctors have

knowledge regarding the use of lethal drugs and better access to them, self-poisoning has been suggested to be the most common suicidal means for doctors.^{65,66} However, it has also been reported that poisoning is the most common choice in Europe, while firearms and poisoning are the most common methods in the USA, Brazil and South Africa.¹⁵ Hanging is also used as a suicide method in different countries but it is never mentioned as the most common method.¹⁵

Interestingly, in the current study, working as a surgeon was associated with greater use of self-poisoning as compared to non-surgeons. This may be because surgeons may have easier access to lethal drugs in the operating room.

In the present study, the medical specialties with the highest suicide numbers were cardiovascular surgery (7 (11.5%)), family medicine (7 (11.5%)), obstetrics and gynecology (6 (9.8%)), general practitioners (5 (8.2%)), pediatrics (5 (8.2%)), emergency medicine (4 (6.6%)), and internal medicine (4 (6.6%)). While an older study reported no differences in the suicide rates between specialties,¹⁶ more recent studies have shown that certain branches of medicine have higher risks of suicide. Specialties associated with a higher risk of suicide include psychiatry and anesthesiology, followed by radiology, rehabilitation medicine, community health, and general practitioners.¹⁵ While anesthesia and psychiatry have been identified as riskier specialties in the literature, these branches are not among the first 6 places in the current study. Turkey has the lowest number of psychiatrists in the Organisation for Economic Co-operation and Development (OECD) countries compared to the overall population (Turkey: 3/100,000, OECD countries: 10–20/100,000).⁶⁷ Similarly, the number of anesthesiologists per population in Turkey is low compared to other European countries.⁶⁸ Therefore, varying results in different studies in terms of the specialties with the highest suicide rates may be due to the differences in the distribution of specialists across countries. Interestingly, the fact that the number of cardiovascular specialists per population in Turkey is twice that of Europe provides a better understanding of the numerical distributions in the present study.⁶⁹ Providing psychoeducation about suicide to doctors working in specialties with higher suicide rates and implementing supportive measures in the workplace may be effective in preventing self-inflicted deaths. Considering the vulnerability of medical students and doctors, some countries require an annual assessment and report from medical trainees, trainers and general practitioners on many issues, including mental health.⁷⁰ The development of a similar program suitable for the conditions of our country could help prevent suicide cases.

It is noteworthy that the number of suicides appears to be higher in the specialties of cardiovascular surgery, family medicine, and obstetrics and gynecology, which have not been identified as related to particular suicide risk in the previous studies. It is not known whether these

differences are due to methodological differences between studies, the healthcare system differences between countries (workload, etc.), or cultural differences across different populations.

It was observed that the majority of suicide cases (37 (60.7%)) described in the present study took place at home. However, one point to be considered is that 16 cases (26.2%) occurred at the workplace. Thus, it may be argued that hospital environments should be reviewed in terms of the safety of healthcare workers.

In terms of the speculated etiologies for suicide, the 3 most common were depression/mental illness, family problems and workplace problems/mobbing. Having a psychiatric disorder (mainly depression) has been reported as a risk factor for doctor suicide in different studies.^{66,71} Although it has not been specified as a specific risk factor for doctor suicides, it is known that family problems are one of the main psychosocial risk factors that increase the risk of suicide. Additionally, a heavy workload and isolation are risk factors for doctor suicides.⁷¹ However, it is necessary to keep in mind that the results reported here are only speculated etiologies that have been reported in the news.

We believe that the current study makes an important contribution to the literature and increases the knowledge in this area. Among the most striking findings in this study are that more than half of the suicides were committed by specialist doctors, and, although younger doctors are stated to be at a higher risk for suicide in the current literature, the suicide rate among specialist doctors in our study was higher than that of students. These findings may be due to the high patient burden of specialist doctors in our country, the psychosocial changes that come with age, or the loss of reputation and the financial standing of doctors that has occurred in our country over the years. Future research should be carried out to identify the factors that contribute to poor mental health during the transition from student to specialist and to determine what measures can be taken to mitigate these effects.

In this study, the suicide methods used by doctors in our country and the specialties with the highest number of suicides were identified for the first time. As the current findings are different from the previous literature regarding suicides across medical branches, the high number of suicides identified in specialties such as cardiovascular surgery, family medicine, and obstetrics and gynecology needs explanation. Although we consider cardiovascular surgery and obstetrics and gynecology to be specialties related to higher suicide risk in our country, the numbers in family medicine in particular need to be further examined. Future studies may help to better understand factors that contribute to the differences in the number of suicides across these specialties.

The current results indicate that it is important to develop programs to increase doctors' self-awareness and help them cope with stressful situations during and after

medical school education, and to take steps to reduce the stigma associated with mental disorders to facilitate getting help. Perhaps, instead of developing theoretical courses, the development of online channels (e.g., online support portals) where doctors could get support and protect their privacy should be considered. Special mental health services for doctors have been created in some countries and it has been proven that those who make use of these services show positive results.^{72,73}

Thus, both follow-up and supportive studies should be carried out at universities to help medical students and doctors with mental health screening and the development of preventive measures. However, it may not be easy to establish the necessary infrastructure and overcome bureaucratic obstacles. Moreover, in some studies, it has been emphasized that administrators may be reluctant to provide data about their students.⁵⁹ In addition, instead of getting these data from newspapers and Google, collecting them in a pool as it is done in developed countries (e.g., via common software) may allow for better follow-up studies and may help to identify changes over the years.

Lastly, in addition to increasing individual mental resilience and facilitating support, it seems necessary to review policies in the healthcare system in order to develop new measures and institute necessary improvements.

Limitations

The number of doctor suicides identified in this study is not accurate, as all recorded suicides were collected from websites or the media. The data in the present study were collected from 10 major Turkish newspapers and Google, thus other online media or newspapers that do not have websites were excluded from the study. Although the number of suicide cases not included in major newspapers or Google is thought to be relatively low, such exclusion is still a limitation. It should also be taken into account that news sites may not accurately reflect the facts, especially with regard to the etiology of the suicide.

A common limitation of studies in this area is the fact that suicide is generally less often reported on in developing countries such as Turkey, both for the general population and among doctors. In addition, some of the cases listed as suicide attempts in newspapers or online platforms may turn into completed suicides during follow-up, and the difficulty in accessing these data should be taken into account. Moreover, it was not possible to retrieve the sociodemographic information or other variables for some suicide cases, which will probably be a common limitation for similar studies in this field. Although the study included data from the last 11 years, it should be kept in mind that these data may not fully reflect the whole doctor population in Turkey. In the future, a prospective study involving all students and doctors may enable us to obtain more reliable data on this subject.

Conclusions








To the best of our knowledge, this is the first study investigating the characteristics of suicides in medical students and doctors in Turkey. There was a male predominance in the suicide cases and more than half of the suicides occurred among specialist doctors. Self-poisoning, jumping from heights and firearms were the most common methods of suicide. Cardiovascular surgery, family medicine, and obstetrics and gynecology were the specialties with the highest number of suicides. The most common speculated etiology for suicide was depression/mental illness. Considering the current findings and the existing literature and taking into account that medical training is relatively stressful as well as the increasing intensity of working conditions for doctors in recent years, it seems reasonable that some precautions should be taken to protect healthcare providers. Providing individual support to medical students and doctors and making systemic adjustments will reduce the pressure on physicians, can help support them in terms of mental difficulties, and can prevent undesirable events such as suicide.

Despite its limitations, the current study provides valuable descriptive information about this understudied topic. As the present study is a retrospective study that included online newspapers and Google searches, there is a need for further studies to clarify the rates of suicides for medical students and doctors.

Data availability

The dataset is available from the corresponding author upon request.

ORCID iDs

Mesut Yıldız  <https://orcid.org/0000-0002-6965-370X>
 Kerim Deniz Batun  <https://orcid.org/0000-0002-9944-6998>
 Hakan Şahinoğlu  <https://orcid.org/0000-0001-8094-9109>
 Muhammed Selim Eryılmaz  <https://orcid.org/0000-0002-1079-7362>
 Bilge Özel  <https://orcid.org/0000-0003-1036-3449>
 Beyzanur Ataoğlu  <https://orcid.org/0000-0001-5202-0458>
 Seyhan Ergin Hidiroğlu  <https://orcid.org/0000-0001-8656-4613>

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