The impact of the pandemic on completed suicides: A psychological autopsy study

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SUMMARY

Objective: The aim of this study was to examine the impact of the COVID-19 pandemic on completed suicides in Konya, Türkiye, using the psychological autopsy method, and to compare pre- and pandemic cases across demographics, risk factors, and associated causes.

Method: This cross-sectional, retrospective case-control study included all completed suicides in Konya, Türkiye, between March 11, 2018, and March 11, 2022. Cases after March 11, 2020, were classified as pandemic. Within the scope of the psychological autopsy method, data were collected from autopsy reports, prosecutor investigation files, medical records, suicide notes, and structured interviews with relatives the deceased. Statistical analyses were conducted using R software (version 4.4.2).

Results: During the pandemic, the incidence rate of completed suicides increased by 25%. No significant differences in age or gender distribution were identified; however, the proportion of university graduates was higher in the pandemic group. The overall prevalence of psychiatric disorders and untreated cases increased significantly during the pandemic. Gambling-related debts and substance-related and addictive disorders were found to be more frequent. Firearm suicides showed a non-significant upward trend. Help-seeking before suicide decreased significantly. Most pandemic cases had sleep disturbances (56.93%) and financial loss (44.93%).

Discussion: The pandemic period increased the risks associated with suicidal behavior and accentuated context-specific vulnerabilities. The findings indicate that psychiatric patients may be more vulnerable during crises and underscore the importance of support services. Accordingly, strengthening financial support, restricting access to online gambling, and expanding psychoeducational interventions are recommended as priority preventive strategies.

Key Words: Pandemic, Psychological Autopsy, Completed Suicide, COVID-19, Suicide

INTRODUCTION

The COVID-19 pandemic was a global crisis that profoundly affected not only physical but also mental health (1). Quarantine, social distancing, and economic uncertainty undermined psychological well-being (2,3). During this period, socially disadvantaged individuals were particularly vulnerable, as social isolation, contagion fears, unemployment, and difficulty accessing basic needs created fertile ground for mental disorders (4,5).

Numerous studies reported substantial increases in depression, anxiety, post-traumatic stress, obsessive-compulsive symptoms, and sleep disturbances during the pandemic (6,7). According to the World Health Organization (WHO), the global prevalence of depression and anxiety rose by approximately 25% during this period (1). This increase was pronounced among young adults, attributed to prolonged isolation, economic uncertainty, and concerns about health and safety (8). Reports indicate that in 2020 alone, the prevalence of anxiety disorders rose by 26%, largely driven by fear of infection, financial strain, and decreased social support systems (9). Vulnerable groups—women, people with low socioeconomic status, and those with prior psychiatric illness—were disproportionately affected (10,11). A study in Türkiye found that 44.6% of pregnant women attending antenatal services during the pandemic showed significant

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anxiety, mainly due to childbirth fears and COVID-19 mortality concerns (12). Furthermore, pandemic-related stressors were associated with a 25% increase in schizophrenia cases (13). The psychological effects of COVID-19 extended beyond the acute phase, with ongoing depression, anxiety, suicidal ideation, persistent fatigue, and cognitive disturbances (14,15).

Suicide is a serious but largely preventable public health issue worldwide. According to the WHO, approximately 720,000 people die by suicide each year, accounting for 1.3% of global mortality (1,16,17). Suicidal behavior is not solely linked to biological or psychiatric factors but is associated with a wide range of risk factors, including social isolation, economic hardship, trauma, substance use, and lack of social support (18,19). Psychiatric disorders are among the primary determinants of suicide, with depression, bipolar disorder, and substance use disorders constituting the highest-risk groups (20,21). The COVID-19 pandemic introduced new and complex risk factors for suicidal behavior. Thus, in addition to stressors such as social isolation, financial uncertainty, unemployment, and fear of illness and death, disruptions in healthcare access and insufficient psychosocial support negatively impacted resilience (22,23). Stigmatization, marginalization, and blame directed toward those perceived as infected also emerged as additional risk factors (24,25).

Studies from various countries have yielded conflicting findings on whether there was any increase in suicide rates during the pandemic. Thus, increased suicide rates were reported in countries such as Japan, South Korea, and the United States, while no significant change was reported in countries like Canada, Germany, and Chile (26,27,28). These discrepancies suggest that the impact of the pandemic on suicide may vary across countries depending on structural factors such as the capacity of the healthcare system, level of social support, and financial security.

In Türkiye, there is still a lack of comprehensive, multidimensional research examining completed suicides during the COVID-19 period. Therefore, the present study aimed to evaluate the effects of the pandemic on suicide cases in Konya. We analyzed individuals aged 18 years and older who died by suicide during the two years following the first confirmed national case (March 11, 2020–March 11, 2022) and compared them with those from the preceding two years (March 11, 2018–March 11, 2020).

To achieve this, we employed the psychological autopsy method—an approach rarely used in Türkiye—which integrates interviews with relatives, and reviews of medical and legal records to investigate demographic and psychosocial factors related to suicide (29,30). This study offers novel insights by applying this method on a large scale to identify context-specific risk factors that emerged under pandemic conditions.

Based on previous literature and the multifactorial nature of suicidal behavior, we hypothesized that the incidence of completed suicides increased during the COVID-19 pandemic compared to the pre-pandemic period, that the prevalence of psychiatric disorders—particularly substance-related and addictive disorders—was higher among individuals who died by suicide during this time, and that pandemic-related psychosocial stressors such as financial loss, bereavement, and sleep disturbances were significantly associated with an elevated risk of suicide.

METHODS

Study Design and Sample

This cross-sectional, retrospective case-control study included all completed suicides among individuals aged ≥18 years in Konya between March 11, 2018, and March 11, 2022, categorized as pre-pandemic (March 11, 2018–March 10, 2020) and pandemic (March 11, 2020–March 11, 2022). Comparative analyses were conducted between these two periods for demographic, psychosocial, and suicide-related variables. The cases were assessed using autopsy reports, investigation files, medical records, forensic documents, and interviews with the available relatives. Exclusion criteria entailed deaths that occurred outside Konya province, non-suicidal deaths (e.g., accidents, natu-

ral causes, homicide), and suicides conducted by individuals who were aged below 18 years. Ethical approval was obtained from the institutional ethics committee (blinded), with additional permissions from forensic and legal authorities (blinded). Procedures complied with ethical standards and the Declaration of Helsinki.

Study Procedure

The study was conducted at the relevant academic department (blinded). Data were collected between November 2023 and October 2024. Comprehensive data on demographics, family history, suicide-related factors, and pandemic impact were collected for eligible cases. The suicide-related investigation files were reviewed, including any suicide notes, witness statements, and pre-death criminal investigation findings. Contact details of the identity witnesses listed in the autopsy reports were used to conduct structured telephone interviews. Before each interview, verbal informed consent was obtained from the first-degree relatives. Additionally, medical records, death certificates, and available suicide notes were examined in detail.

Data Collection Tools

Sociodemographic Data Forms – 1 and 2: Data on completed suicides before and during the pandemic were gathered via interviews with first-degree relatives using two semi-structured forms (pandemic: 30, pre-pandemic: 25 questions). Both forms covered sociodemographic data, personal and family psychiatric history, prior suicide attempts, and suicide-related variables (e.g., method, suicide note, help-seeking behavior, recent medical visits), as well as financial factors such as income level, financial difficulties, and outstanding debts. The pandemic-period form also included COVID-19-related variables (infection, financial losses, changes in sleep patterns, participation in remote work/education).

Secondary Data Sources: Additional data were gathered from official forensic and medical sources, including autopsy reports, prosecution files, and medical records, under appropriate institutional and legal permissions. Medical data were accessed through authorized hospital archives and official record systems, including information on chronic diseases, previously documented psychiatric conditions, treatment history, and hospitalizations. Autopsy reports provided the cause of death, toxicology results, and physical findings (e.g., scars, tattoos, signs of malignancy). Prosecutor's files detailed the incident (time, method, and location), suicide notes, physical evidence, and witness or family testimonies, along with criminal and psychiatric histories.

Analysis of Suicide Notes: All available suicide notes—handwritten, digital, or social media—were examined to identify reasons for suicide, life context, and emotional state. They also helped determine whether the act was premeditated or impulsive and reveal contributing psychological and social factors.

Statistical Analysis

Means and standard deviations were calculated for the continuous variables, while frequencies and percentages were determined for categorical variables. Chi-square and Fisher's exact tests were used for analyzing categorical variables, and t-tests were applied for continuous variables. All analyses were carried out using R software version 4.4.2 (R Core Team, 2024), and statistical significance was set at $p < 0.05$.

RESULTS

Among 178 pre-pandemic and 222 pandemic cases, exclusions of non-suicidal deaths (13 and 10) and those under 18 years (4 and 7) resulted in 161 and 205 cases, respectively. Based on Konya population data, suicide incidence rose from 7.26 to 9.06 per 100,000 during the pandemic, a 25% increase (Incidence Rate Ratio [IRR]: 1.25, 95% Confidence Interval [CI]: 1.02–1.54, $p = 0.035$). Six-month interval analyses showed stable distributions in both periods ($p > 0.90$).

No significant differences were found in age, gender, marital status, children/siblings, employment,

Table 1. Comparison of Sociodemographic Characteristics and the Relationship Between Debt and Gambling in Completed Suicides Before and During the Pandemic

Variables	Pre-Pandemic Period	Pandemic Period	p-value
	(n=161)	*(n=205)*	
Age (years, mean – SD)	39.87–17.01	39.74–16.45	>0.9
Gender			0.7
Male	121 (75.16%)	158 (77.07%)	
Female	40 (24.84%)	47 (22.93%)	
Marital Status			0.9
Married	76 (53.15%)	89 (52.98%)	
Single	43 (30.07%)	54 (32.14%)	
Widowed	24 (16.78%)	25 (14.88%)	
Number of children (mean – SD)	1.60–1.62	1.56–1.68	0.8
Number of siblings (mean – SD)	4.01–1.94	4.17–1.85	0.5
Educational Status			0.001
Primary school graduate	69 (55.65%)	85 (61.15%)	
High school graduate	51 (41.13%)	35 (25.18%)	
University graduate	4 (3.23%)	19 (13.67%)	
Occupation			0.4
Worker	29 (22.31%)	23 (15.97%)	
Self-employed	24 (18.46%)	31 (21.53%)	
Civil servant	8 (6.15%)	15 (10.42%)	
Retired	14 (10.77%)	19 (13.19%)	
Unemployed	55 (42.31%)	56 (38.89%)	
Living Arrangement			0.5
Living alone	27 (21.60%)	38 (26.39%)	
With family	90 (72.00%)	100 (69.44%)	
With friends/others	8 (6.40%)	6 (4.17%)	
Income Level			>0.9
Low	42 (34.15%)	45 (32.61%)	
Middle	69 (56.10%)	79 (57.25%)	
High	12 (9.76%)	14 (10.14%)	
Debt Status			0.2
No	93 (73.23%)	95 (66.43%)	
Yes	34 (26.77%)	48 (33.57%)	
Gambling-related Debt			0.006
No	122 (99.19%)	126 (91.97%)	
Yes	1 (0.81%)	11 (8.03%)	

Note. Values are presented as n (%) for categorical variables and mean – standard deviation for continuous variables.
Statistical comparisons were performed using Pearsons Chi-squared test, Welchs two-sample t-test, or Fishers exact test.

cohabitation, occupational groups or income ($p > 0.05$, Table 1). In contrast, university graduates ($p = 0.001$) and online gambling-related debts ($p = 0.006$) were more frequent during the pandemic. Debt distribution by income did not differ ($p = 0.400$ pre-pandemic, $p = 0.059$ pandemic).

No significant differences were found in comorbid medical conditions, surgery history, tobacco, alcohol or substance use, relationship problems, or family psychiatric/suicide history between periods ($p > 0.05$, Table 2).

All cases were evaluated for psychiatric history (diagnoses, treatment, hospitalization, prior suicide attempts; Table 3). Diagnoses, including mood, anxiety, psychotic, and substance/alcohol-related disorders, were formally established and documented in official medical or forensic records. In contrast, none of the individuals classified under gambling-related disorders had a formal diagnosis; these cases were identified through detailed interviews with first-degree relatives and corroborating social or legal information. In accordance with the psychological autopsy approach, such evaluations were used to describe probable psychiatric characteristics rather than to assign formal diagnoses. A psychiatrist reviewed these cases and classified them as probable gambling-related disorder based on behavioral patterns consistent with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria. Cases were grouped into five DSM-5 categories: mood, anxiety, psychotic, substance/alcohol/gambling-related, and other. Documented or probable psychiatric disorder was more frequent during the pandemic (67.36%) than before (55.56%, $p = 0.046$). Mood disorders were most common in both periods, while substance/alcohol/gambling-related disorders were higher during the pandemic (5.51% vs. 17.65%). The overall diagnostic distribution differed significantly ($p = 0.022$).

Treatment history was categorized as: (1) no disorder/treatment, (2) disorder without treatment, (3) individuals with disorder but no regular treatment

Table 2. Comparison of Pre-Pandemic and Pandemic Suicide Cases in Terms of Personal and Family History Characteristics

Variables	Pre-Pandemic Period	Pandemic Period	p-value
	(n=161)	*(n=205)*	
Medical history			0.5
None	86 (66.67%)	104 (73.24%)	
Chronic illness	26 (20.16%)	21 (14.79%)	
Neurological disorder	12 (9.30%)	10 (7.04%)	
Malignancy	5 (3.88%)	7 (4.93%)	
Surgical history			>0.9
None	91 (72.80%)	99 (72.26%)	
Present	34 (27.20%)	38 (27.74%)	
Habits			0.4
None	54 (43.55%)	52 (36.36%)	
Smoking	34 (27.42%)	42 (29.37%)	
Alcohol and smoking	27 (21.77%)	31 (21.68%)	
Alcohol, smoking, substance	9 (7.26%)	18 (12.59%)	
Marital/relationship problems			0.6
None	78 (61.42%)	86 (58.11%)	
Present	49 (38.58%)	62 (41.89%)	
History of criminal offense			0.7
None	104 (%84.55)	137 (%82.48)	
Present	19 (15.45%)	24 (17.52%)	
History of trauma			0.6
None	100 (80.65%)	115 (83.33%)	
Present	24 (19.35%)	23 (16.67%)	
Witnessed suicide			0.3
None	114 (92.68%)	122 (89.05%)	
Present	9 (7.32%)	15 (10.95%)	
Family history of psychiatric disorder			0.7
None	100 (81.30%)	114 (83.21%)	
Present	23 (18.70%)	23 (16.79%)	
Family history of suicide			0.3
None	116 (95.08%)	126 (91.97%)	
Present	6(4.92%)	11 (8.03%)	

Note. Values are presented as n (%) for categorical variables. Statistical comparisons were performed using Pearsons Chi-squared test or Fishers exact test.

in the past six months, and (4) individuals receiving regular psychiatric treatment. Pre-pandemic proportions were 44.09%, 13.39%, 21.26%, and 21.26%, respectively, compared to 31.97%, 28.57%, 14.97%, and 24.49% during the pandemic. This difference was significant ($p = 0.008$).

Findings on psychiatric history, treatment, and prior attempts are in Table 3. Psychiatric hospitalization was significantly more common in the pandemic group ($p = 0.046$). However, no significant differences were found between the periods in psychiatric consultations within the last month ($p = 0.400$), number of prior suicide attempts ($p = 0.800$), or methods used ($p = 0.600$).

Methods were grouped as hanging, firearm, jumping, chemical ingestion, and sharp injuries (Table 4). The use of firearms showed an increase during the pandemic approaching statistical significance ($p = 0.052$). The proportions of suicidal ideation (28% pre-pandemic, 34.2% pandemic) and suicide notes (26.09% pre-pandemic, 21.77% pandemic) did not differ significantly ($p = 0.2$ and $p = 0.4$). Help-seeking declined significantly, from 14.63% to 6.43% ($p = 0.029$).

To better understand the contextual factors contributing to completed suicides during the pandemic, the cases were examined in relation to stressors such as financial loss, bereavement, COVID-19 infection, sleep disturbances, and experiences with remote education or working from home. Among pandemic-period cases with financial loss, 95.16% were male and 68.85% had debt ($p < 0.001$), with no significant differences in age, marital status, income, or psychiatric disorder ($p > 0.05$ for all). Among pandemic-period cases, bereavement was reported in 18.98%; psychiatric disorders were significantly more prevalent in this group (88.46%) compared to those without bereavement (64.86%) ($p = 0.019$). Other variables, including age, gender, marital status, and household composition, did not differ significantly between the two groups ($p > 0.1$ for all). Among pandemic-period cases, 65.47% had no history of COVID-19 infection, 29.50% had non-hospitalized infections, and 5.04% had infections requiring hospitalization. In

Table 3. Comparison of Pre-Pandemic and Pandemic Completed Suicide Cases in Terms of Psychiatric Diagnoses, Treatment History, and Previous Suicide Attempts

Variables	Pre-Pandemic Period *(n=161)*	Pandemic Period *(n=205)*	p-value
Psychiatric disorder (overall)			0.046
None	56 (44.44%)	47 (32.64%)	
Present	70 (55.56%)	97 (67.36%)	
Type of psychiatric disorder			0.022
None	56 (44.09%)	47 (30.72%)	
Mood disorder	37 (29.13%)	53 (34.64%)	
Anxiety disorder	7 (5.51%)	7 (4.58%)	
Psychotic disorder	11 (8.66%)	10 (6.54%)	
Substance-related and addictive disorders	7 (5.51%)	27 (17.65%)	
Other psychiatric disorders	9 (7.09%)	9 (5.88%)	
Duration of psychiatric disorder (months)	36.14–46.67	29.02–32.25	0.3
Psychiatric disorder and treatment status			0.008
No disorder; no treatment	56 (44.09%)	47 (31.97%)	
Disorder present; never treated	17 (13.39%)	42 (28.57%)	
Disorder present; no treatment in past 6 months	27 (21.26%)	22 (14.97%)	
Disorder present; receiving regular treatment	27 (21.26%)	36 (24.49%)	
History of psychiatric hospitalization			0.046
No disorder, no hospitalization	56 (44.44%)	47 (32.41%)	
Disorder present; no hospitalization	56 (44.44%)	66 (45.52%)	
Disorder present; 1 hospitalization	11 (8.73%)	21 (14.48%)	
Disorder present; >1 hospitalization	3 (2.38%)	11 (7.59%)	
Mental health service use in last month			0.4
No	88 (71.54%)	91 (66.42%)	
Yes	35 (28.46%)	46 (33.58%)	
Number of previous suicide attempts			0.8
None	101 (80.80%)	112 (78.87%)	
One	19 (15.20%)	22 (15.49%)	
More than one	5 (4.00%)	8 (5.63%)	
Method of previous suicide attempts			0.6
None	101 (80.80%)	113 (80.14%)	
Non-violent	11 (8.80%)	17 (12.06%)	
Violent	13 (10.40%)	11 (7.80%)	

Note. Values are presented as n (%) for categorical variables and as mean – standard deviation (SD) for continuous variables. Statistical comparisons were performed using Pearsons Chi-squared test, Welchs t-test, or Fishers exact test.

the pandemic group, 12.41% (n = 17) of the cases were engaged in remote education or work. Changes in sleep patterns were observed in 56.93% of the cases, specifically emerging during the pandemic, and included insomnia, hypersomnia, and circadian rhythm disorders. Remote education or working from home was significantly more common among those with disrupted sleep ($p = 0.005$). Psychiatric disorders were also more prevalent in sleep-disrupted group compared to the non sleep-disrupted group (87.18% vs. 45.76%, $p < 0.001$).

A subset of the pandemic-period cases involved individuals with gambling-related debt (n = 11), which offered further insight into the profiles of the high-risk cases. Among these 11 cases, all were male with a mean age of 36.82 years, and all debts were incurred through online platforms. 54.55% were married, 45.45% held a university degree, 36.36% were civil servants, and 72.73% were middle-income. Considering their psychiatric diagnoses, 90.91% had substance-related and addictive disorders (alcohol, drugs, gambling) and only one case (9.09%) involved a mood disorder; 90.91% had no history of psychiatric treatment. Prior suicide attempts occurred in 27.27% of cases, most often by hanging (63.64%), and suicide notes were found in 54.55%. Pandemic-related stressors were also more common in these specific cases: 90.91% reported financial loss, 27.27% had experienced bereavement, 81.82% had sleep disturbances, and 18.18% reported having to work or receive education remotely.

DISCUSSION

The COVID-19 pandemic profoundly disrupted daily life, healthcare access, and psychological well-being, likely reshaping the complex biopsychosocial structure of suicidal behavior. The current study aimed to compare completed suicides in Konya, Türkiye before and during the pandemic, using psychological autopsy alongside forensic and medical data to identify both general and pandemic-related risk factors within a broader psychosocial context. Consistent with our initial hypotheses, we expected to observe an increase in suicide incidence, a higher prevalence of psychiatric and addictive disorders, and the influence of pandemic-specific stressors such as financial loss, bereavement, and sleep dis-

Table 4. Comparison of Suicide Characteristics Between the Pre-pandemic and Pandemic Periods

Variables	Pre-Pandemic Period *(n=161)*	Pandemic Period *(n=205)*	p-value
Suicide method			0.052
Hanging	90 (55.90%)	90 (43.90%)	
Firearm	38 (23.60%)	65 (31.71%)	
Jumping from height	22 (13.66%)	36 (17.56%)	
Chemical method	11 (6.83%)	10 (4.88%)	
Sharp object	0 (0.00%)	4 (1.95%)	
Suicidal ideation/plan			0.2
Absent	90 (72.00%)	94 (65.28%)	
Present	35 (28.00%)	50 (34.72%)	
Help-seeking behavior			0.029
Absent	105 (85.37%)	131 (93.57%)	
Present	18 (14.63%)	9 (6.43%)	
Suicide note			0.4
Absent	97 (78.23%)	102 (73.91%)	
Present	27 (21.77%)	36 (26.09%)	

Note. Values are presented as n (%) for categorical variables.
Statistical comparisons were performed using Pearsons Chi-squared test or Fishers exact test.

turbance. Based on our findings, suicide incidence rate in Konya was 25% higher during the pandemic than in the pre-pandemic period, though rates remained unchanged in the first six months under strict lockdowns. Literature shows regional and temporal variability in suicide rates during the pandemic. Two meta-analyses indicated that suicide rates during the pandemic generally remained stable or declined (31,32). Declines were also observed in Germany during the early restriction phase (33), and no increase was reported in the UK after the national lockdown (34). Similarly, high- and upper-middle-income countries reported stable or reduced counts in the early months (35). By contrast, increases were documented in Hungary (36), while in Japan suicides rose particularly among women and younger individuals (37), and in Nepal a general increase was observed (38). In St. Petersburg, rates declined in the first month but rose in subsequent months, especially among young people (39). These discrepancies may reflect differences in how pandemic-related restrictions and socioeconomic burdens affected mental health across countries with varying income levels.

In our study, the mean age of suicide cases remained stable across periods, consistent with national data showing peak prevalence in young adults in Türkiye (40), Most cases were male, supporting evidence that men more often complete suicide despite higher attempt rates among women (41). Although marriage is generally considered protective (42,43,44,45), more than half of cases were married, a pattern also reported in a Turkish psychological autopsy study (46). Educational level differed, with more university graduates during the pandemic, possibly reflecting greater vulnerability of educated individuals in economic uncertainty (47). Cohabitation status did not change, though living alone increased modestly, a known risk factor due to social isolation (48). Occupational status showed mild, non-significant differences: more public servants, more self-employed, and fewer manual laborers during the pandemic. However, in our study the persistently high unemployment rate across both periods underscores the role of joblessness and loss of financial independence in suicide risk, reflecting the unequal socioeconomic impact of the pandemic across occupational groups.

A well-documented link exists between financial debt and suicide risk (49). In our study, overall debt did not differ significantly, but gambling-related debt was notably higher during the pandemic. Gambling increases suicide risk through financial strain, shame, and co-occurring psychiatric or personality problems (50-53). All gambling debts identified in the current study were acquired via online platforms, suggesting that quarantine conditions and social isolation may have contributed to increased online gambling. Our interpretation is supported by recent research showing a shift from physical to online gambling during the pandemic. Increased participation in online casinos, sports betting, and skill-based games during the pandemic has been reported (54). Moreover, studies from Poland and the UK identified spikes in online gambling frequency and search trends for games like poker and slots (55,56). Unstructured free time and flexible work schedules most likely intensified engagement with short-term reward behaviors such as gambling, which in turn may have contributed to broader patterns of internet-related addictions (57,58).

Our study revealed a significant increase in psychiatric disorders during the pandemic, consistent with reports of more widespread and severe mental health symptoms (7,59). A Romanian psychological autopsy similarly linked severe depression and anxiety to suicide risk (60). Mood disorders were most frequent in both periods, but substance-related and addictive disorders—including alcohol, drug, and gambling use—rose sharply, becoming the second most common diagnosis during the pandemic. In contrast, anxiety and psychotic disorders showed no change between periods. Alcohol use is consistently linked to suicide risk (61), with studies showing that heightened consumption, especially binge drinking, was associated with suicidal ideation during the pandemic (62,63,64,65). Pandemic stressors such as social isolation and uncertainty further exacerbated substance use and behavioral addictions (66,67).

Another notable finding was that although more individuals received psychiatric diagnoses during the pandemic, many lacked access to treatment, likely due to isolation, stigma, and disrupted care. This aligns with reports of reduced psychiatric service use early in the pandemic (68,69). Psychiatric diagnoses with multiple prior hospitalizations were also more common, suggesting greater disorder severity, reduced care access, and limited social support during the pandemic.

A prior suicide attempt is a robust predictor of suicide completion (70); however, in our study the prevalence and methods did not differ between periods. Hanging remained the most common method in both periods, consistent with national data from Türkiye (71). We observed an increase in firearm use during the pandemic, suggesting a potential shift in the preferred method, although this trend did not reach statistical significance. Firearms are among the most lethal suicide methods, and their household availability significantly elevates risk (72,73). Increased firearm purchases during the COVID-19 pandemic in the U.S. (74,75) and recent reports of rising unregistered firearm possession in Türkiye (76) suggest that increased personal firearm ownership during this period may have contributed to greater firearm involvement in suicides.

Suicidal ideation and note frequency showed no period differences. In contrast, help-seeking behaviors prior to or immediately following the act declined significantly during the pandemic. This decrease may reflect the compounding effects of increased social isolation, reduced interpersonal contact, limited access to psychiatric care, and intensified psychological distress. It is also possible that a heightened intent to die may have decreased the likelihood of reaching out for help.

We also evaluated the pandemic-period suicide cases with respect to variables such as financial loss, bereavement, COVID-19 infection, disrupted sleep patterns, and remote work/education. The exacerbation of global economic pressures during the COVID-19 pandemic is well-established, which in turn may have affected suicide rates (77,78). Studies confirm that financial difficulties during this period contributed to suicidal behavior (79–81). In our study, financial loss was frequently linked to suicide during the pandemic, predominantly among men, aligning with literature showing that economic crises heighten male suicide risk (82).

During the pandemic, many individuals lost loved ones to COVID-19 or other causes, and disruptions in cultural and religious mourning rituals, as well as the inability to say goodbye in person, were shown to hinder healthy grieving processes (83). We observed that individuals who died by suicide during the pandemic often had recent bereavement, with psychiatric disorders more common in this group, suggesting greater vulnerability to bereavement among those with mental disorder.

Sleep disturbances were highly prevalent during the COVID-19 pandemic, with notable increases in insomnia, hypersomnia, and circadian rhythm disorders (84,85). In our study, many individuals who died by suicide experienced such disturbances, most of whom also had psychiatric disorder. These findings underscore the strong link between sleep disturbances and suicide risk, especially among individuals with psychiatric disorders.

We also examined the influence of pandemic-related lifestyle changes such as remote work and online education on suicide risk. Prior studies suggest these changes may foster isolation, sleep prob-

lems, and greater suicidality, especially among students (86,87). In our study, few suicide cases involved remote work or education, likely reflecting the limited presence of students or white-collar workers in the sample. Nonetheless, lifestyle changes during the pandemic, particularly the shift to remote modalities, have been linked to increased sleep disturbances. A study from India reported greater daytime sleepiness and longer sleep duration among those working or studying remotely (88), and our findings similarly indicated more frequent sleep disruption among individuals engaged in remote work or education.

Unlike most previous investigations that relied primarily on registry or epidemiological data, this study employed a comprehensive psychological autopsy integrating forensic, medical, and psychosocial sources. Only a limited number of studies in Türkiye have examined suicide during the COVID-19 pandemic—among them, a single case report (89) and a provincial retrospective analysis based solely on forensic records (71). These studies provided valuable preliminary insights but remained limited in scope and methodology. According to the available literature, the present research represents one of the first large-scale, multidimensional investigations in Türkiye comparing suicides before and during the pandemic through a psychological autopsy framework that integrates family interviews with official forensic and medical documentation. This approach identified pandemic-specific stressors—financial loss, bereavement, sleep disturbance, and online gambling—not captured in registry data. Although the association between pandemics and suicide remains uncertain, international organizations emphasize the long-term mental health consequences of COVID-19 and the urgent need for preventive strategies (90,91). By addressing this gap, our study contributes novel, context-specific evidence to the global literature on suicide risk during crises.

This study has several limitations. Identifying suicides is inherently difficult, and underreporting or misclassification may have excluded some, particularly firearm or overdose cases with unclear intent. Psychiatric evaluations before death were often unavailable, limiting analyses, and relatives' accounts may involve recall bias. Moreover, post-pandemic and longitudinal data are needed to clarify long-term trends. Despite these limitations, the integration of psychological autopsy with forensic, medical, and psychosocial data across multiple years provides valuable insight into suicide risk during a global crisis. Future studies should build on this framework through multicenter, prospective designs and include standardized psychiatric assessments to enhance reliability and generalizability.

The COVID-19 pandemic not only increased the suicide incidence in Konya, Türkiye, but also reshaped the psychosocial risk landscape. Financial losses, gambling-related debt, untreated psychiatric disorder, and sleep disturbances emerged as major contributors, while help-seeking declined. Substance-related and addictive disorders, particularly online gambling, rose sharply. Remote work and education played only a minor role. Overall, the pandemic both intensified established risks and highlighted emerging vulnerabilities, such as online gambling and economic instability. Accordingly, strengthening financial support, restricting access to online gambling, and expanding psychoeducational interventions are recommended as key preventive strategies.

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