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Impact of the COVID-19 Pandemic on Psychiatric Emergencies in A Megacity

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ABSTRACT

Objective: To evaluate changes in the volume, demographic characteristics, diagnostic distribution, and clinical severity of prehospital psychiatric emergency presentations in İstanbul during the coronavirus disease 2019 (COVID-19) pandemic compared with a pre-pandemic reference period.

Methods: This retrospective observational time-period comparison study analyzed all psychiatric emergency encounters recorded in the emergency health events system between September 2018 and September 2021. Two equivalent 18-month intervals were compared: pre-pandemic (September 2018-March 2020) and pandemic (March 11, 2020-September 11, 2021). Descriptive statistics, chi-square tests, and relative percentage change analyses were performed.

Results: Among 91,803 eligible encounters, pandemic-period presentations increased by 18.7% compared with the pre-pandemic period. Male presentations rose by 41.6%, whereas pediatric encounters declined by 30.2%. Alcohol-related diagnoses demonstrated the most pronounced increase. Higher-acuity triage allocations became more frequent, and forensic case designations increased during the pandemic period.

Conclusion: The COVID-19 pandemic was associated with an increased number of psychiatric emergency encounters, shifts in demographic patterns, and greater clinical severity among presentations. These findings highlight the need for strengthened emergency psychiatric care capacity and improved access to early mental health interventions during large-scale public health crises.

Keywords: Psychiatric emergency, COVID-19, prehospital services

INTRODUCTION

The World Health Organization proclaimed the coronavirus disease 2019 (COVID-19) pandemic on March 11, 2020. It has become one of the most important global health crises of the twenty-first century, having a profound impact on healthcare systems all over the world (1). In addition to the direct medical effects of viral infection, the pandemic has caused unprecedented psychological distress among populations worldwide, with systematic reviews and meta-analyses indicating significant rises in the prevalence of depression, anxiety, and stress-related disorders (2,3). The enforcement of confinement measures, such as statewide lockdowns, social distance requirements, and economic limitations, has generated a distinctive array of psychosocial stresses that have significantly transformed the patterns of mental health treatment consumption (4).

Psychiatric emergency departments are essential entry sites for patients undergoing severe mental health crises, and alterations in their utilization patterns yield significant epidemiological insights into population-level mental health dynamics (5). International evidence has shown that the pandemic has had different consequences on the use of psychiatric emergency services. For example, there were fewer people using these services under stringent lockdowns, but more people started using them again after restrictions were lifted (6,7). A cross-sectional analysis examining almost 190 million emergency medical service encounters in the United States revealed that mental health-related visit rates rose during the pandemic period compared to 2019, despite an overall decline in total emergency medical service utilization (8). The pandemic has had a substantial impact on mental health, with a marked increase in symptoms of anxiety and depression. Meta-analytic estimates indicate that the prevalence of anxiety and depression was 31.9% and 31.4%, respectively, during the early phase of the pandemic (9). The COVID-19 mental disorders collaborators projected the emergence of 53.2 million new cases of major depressive disorder and 76.2 million new cases of anxiety

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disorders worldwide in 2020 (10). These data indicate how the pandemic has damaged people's mental health and how crucial it is to know how emergency psychiatric services have changed.

Some groupings and diagnostic classifications have changed a lot during the pandemic. Emergency medical service encounters due to alcohol have seen substantial proportionate increases, with research indicating rates 7-24% higher in 2020 compared to pre-pandemic baseline periods (11,12). The pandemic has also been linked to more domestic violence and intimate partner violence. Systematic evaluations have shown that reported cases have gone up a lot in several countries (13,14). Also, mental health in children and teens has become a major concern. Evidence suggests a complex pattern of fewer total visits but greater proportional representation in emergency medical service utilization (15,16). Türkiye reported its first incidence of COVID-19 on March 11, 2020, and then implemented a range of public health measures to stop the virus from spreading, including as partial lockdowns, curfews, and limits on public gatherings (17). İstanbul, which has more than 15 million people and is the largest metropolitan area in the country, is a great place to look at how the use of psychiatric emergency services changed during the pandemic. Because the city has a vast healthcare system and a diversified population, it is conceivable to get results that could help other larger cities with similar issues.

Although international studies have documented heterogeneous changes in psychiatric emergency service utilization during the COVID-19 pandemic, large-scale population-based evidence from prehospital emergency medical systems in metropolitan settings remains limited. In particular, the epidemiological dynamics of psychiatric emergencies within centralized emergency medical service infrastructures in rapidly urbanizing regions have not been sufficiently characterized.

The present study aims to elucidate changes in prehospital psychiatric emergency service utilization within the centralized metropolitan emergency medical services system of İstanbul during the COVID-19 pandemic.

We hypothesized that the pandemic period would be associated with increased utilization of psychiatric emergency services, shifts in demographic distribution, and greater clinical acuity among presentations.

METHODS

This study employed a retrospective observational time-period comparison design, in which routinely collected electronic health records were used to characterize psychiatric emergency presentations across two predefined temporal intervals. This approach enabled the examination of historical patterns in service utilization, demographic distributions, and clinical characteristics within the study population, while facilitating a structured comparison of outcomes between the pre-pandemic and pandemic periods within a quasi-experimental analytical framework.

Study Setting

The study was carried out at the İstanbul Provincial Health Directorate, Department of Emergency Health Services, which coordinates prehospital emergency medical services for all 39 administrative districts of İstanbul, Türkiye's largest metropolitan area with a population exceeding 15 million. This institution was chosen for multiple strategic reasons: it has a comprehensive, centralized electronic database that records all prehospital psychiatric emergency encounters; the systematic data recording protocols guarantee consistency throughout the study period; and the institutional scope offers population-level representativeness for the İstanbul metropolitan area. The emergency health events system [ASOS (*acil sağlık olayları sistemi*)] database, established by the İstanbul Provincial Health Directorate, functioned as the main data source. This electronic platform integrates real-time documentation of emergency medical service encounters, encompassing demographic data, clinical assessments, preliminary diagnoses, triage classifications, and disposition decisions.

The analyzed dataset exclusively represents prehospital emergency medical service encounters recorded prior to hospital admission and does not include hospital emergency department clinical records.

Study Period

This analysis covered a period of 36 months, divided into two equal 18-month intervals: a pre-pandemic reference period from September 10, 2018, to March 10, 2020, and a pandemic period from March 11, 2020, to September 11, 2021. The date of March 11, 2020, was chosen to align with the World Health Organization's formal declaration of COVID-19 as a global pandemic. The use of equal-duration comparison periods aimed to reduce seasonal confounding effects and facilitate a balanced statistical comparison. This study analyzes historical data, reflecting conditions during the first 18 months of the pandemic. The temporal distance may restrict immediate clinical applicability; however, the findings offer important documentation of pandemic-era patterns that can guide future public health emergency preparedness planning.

Study Population and Eligibility Criteria

The target population comprised all individuals presenting to İstanbul Provincial Health Directorate, Emergency Health Services who received preliminary psychiatric diagnoses during the defined study period. Rather than employing probability sampling with predetermined sample size calculations, we adopted a population census methodology, systematically including all patients meeting the eligibility criteria. This comprehensive approach maximized statistical power and ensured complete representation of the population served by the emergency medical system.

Inclusion criteria: Were defined as follows: (1) presentation to İstanbul Provincial Health Directorate, Emergency Health Services during the study period (September 10, 2018 through September 11, 2021); (2) assignment of a preliminary psychiatric diagnosis by

emergency medicine physicians operating within the prehospital emergency medical service system, with consultation from other physicians when clinically indicated, and documented using provisional International Classification of Diseases, 10th revision (ICD-10) diagnostic codes, documented using ICD-10 diagnostic codes within the F00-F99 chapter (mental and behavioral disorders); and (3) availability of complete demographic data and clinical documentation necessary for analysis.

Exclusion criteria encompassed: (1) records with incomplete or missing essential data fields precluding accurate classification; (2) encounters documented with primary diagnoses outside the psychiatric spectrum; and (3) duplicate records representing the same clinical encounter.

Data Collection and Chart Review Process

Data extraction was conducted via a systematic review of electronic health records stored in the ASOS database. Before commencing data collection, we established a standardized protocol for data extraction that outlined all variables to be recorded, provided operational definitions for each data element, and detailed procedures for addressing ambiguous or conflicting information. This protocol was tested with a random sample of 100 records to evaluate feasibility and improve data collection methods. The chart review process was performed by two trained research personnel (MNS and EA), who independently extracted data from the electronic database. Both reviewers underwent standardized training on the data extraction protocol, which encompassed instruction on diagnostic coding conventions, triage classification criteria, and variable definitions. To ensure inter-rater reliability, a randomly selected subset of 5% of all records (n=4,590) was independently reviewed by both extractors. Discrepancies among reviewers were addressed through consensus discussions, with a senior investigator providing adjudication when required. The variables systematically extracted from each eligible record included: patient demographic characteristics (age at presentation, biological sex); temporal parameters (date and time of emergency service contact, day of week, season); clinical information (preliminary psychiatric diagnosis coded per ICD-10, triage category assignment using the national three-tier color-coded system, consciousness level assessment); and administrative data (forensic case designation, disposition outcome). Consciousness level was assessed by emergency medical personnel during initial patient evaluation using standard clinical judgment and categorized according to predefined operational definitions within the emergency medical service system. All extracted data were entered into a secure, password-protected electronic database, with access restricted to authorized research personnel.

These diagnostic classifications represent preliminary clinical assessments made in an emergency context and should not be interpreted as definitive psychiatric diagnoses.

Study Variables

Primary outcome variables included: (1) Frequency of psychiatric emergency presentations, quantified as the total number of encounters during each study period; and (2) distribution of psychiatric diagnoses, categorized according to ICD-10 diagnostic groupings.

Secondary outcome variables encompassed: Triage acuity classification (red code indicating life-threatening/critical status, yellow code indicating urgent status, green code indicating routine/non-urgent status); consciousness level (alert, altered, confused, unconscious, semicomatose); and forensic case designation (binary classification based on medico-legal involvement).

Independent variables included: Study period (pre-pandemic versus pandemic, treated as the primary exposure variable); patient age (analyzed both as a continuous variable and categorically in clinically meaningful groupings: <18 years, 18-30 years, 31-45 years, 46-59 years, ≥60 years); biological sex (male, female); and season of presentation (winter, spring, summer, autumn).

The absolute number of prehospital psychiatric emergency encounters increased during the pandemic period; however, the absence of denominator data on total emergency medical service utilization limits the ability to determine whether this reflects a proportional increase in psychiatric emergencies.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics software, version 20.0 (IBM Corporation, Armonk, New York, United States). The analytic approach proceeded through several sequential phases.

Descriptive statistics: Continuous variables were summarized using measures of central tendency and dispersion (mean ± standard deviation for normally distributed data; median with interquartile range for skewed distributions). Normality of continuous variable distributions was assessed using the Kolmogorov-Smirnov test. Categorical variables were expressed as absolute frequencies and percentages.

Comparative analyses: Comparisons of categorical variables between pre-pandemic and pandemic periods were conducted using Pearson's chi-square (χ^2) test for independence. When expected cell frequencies were less than five in more than 20% of cells, Fisher's exact test was employed as an alternative. For continuous variables, independent samples t-tests were used for normally distributed data, while the Mann-Whitney U test was applied for non-normally distributed variables.

Effect size estimation: Relative percentage change between periods was calculated using the formula: [(pandemic period value - pre-pandemic period value)/pre-pandemic period value]×100. This metric provides a standardized measure of the magnitude of change observed between the two study periods. Absolute differences were also reported to provide context regarding the actual numerical changes in patient volumes.

A two-tailed p-value threshold of <0.05 was established for determining statistical significance across all analyses. Given the large sample size, we emphasize interpretation of effect sizes and clinical meaningfulness alongside statistical significance, as even small differences may achieve statistical significance with sufficiently large samples.

Multivariable logistic regression analyses were conducted to estimate adjusted odds ratios for key outcomes. Covariates included in the models were age, sex, season of presentation, and triage category, selected based on clinical relevance and prior literature (theory-driven approach). All variables were entered simultaneously into the models using the enter method, without stepwise selection procedures.

Model fit was assessed using the Hosmer-Lemeshow goodness-of-fit test and Nagelkerke R^2 statistics. In addition, clinically plausible interaction terms, including sex×study period and age×study period, were tested; however, no statistically significant interactions were identified, and these terms were not retained in the final models.

Ethical Considerations

The study protocol obtained ethical approval from the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (approval no: 2022/260, decision no: 2022-17-02, date: 05.09.2022). The retrospective investigation employed pre-existing, de-identified administrative data, leading the ethics committee to waive the requirement for individual informed consent. All data handling procedures complied with relevant data protection regulations, with personal identifying information eliminated before analysis. The research adhered to the ethical guidelines established in the Declaration of Helsinki and its subsequent revisions.

RESULTS

Study Population and Overall Findings

Over the 36-month study period (September 10, 2018-September 11, 2021), 91,803 patients received preliminary psychiatric diagnoses. The pre-pandemic period included 41,969 patients (45.7%), while the pandemic period included 49,834 patients (54.3%), representing an 18.7% relative increase (χ^2=671.34, df=1, p<0.001, Cramer's V=0.086). The odds of psychiatric emergency presentation during the pandemic period was 1.19 [95% confidence interval (CI): 1.17-1.21]. Although statistically significant, the effect size indicates a small practical effect. These findings are summarized in Table 1.

Demographic Characteristics

Gender distribution: During the pre-pandemic period, female patients predominated (n=25,889, 61.7%), with a female-to-male ratio of 1.6:1. This ratio narrowed to 1.2:1 during the pandemic period (females: n=27,060, 54.3%; males: n=22,768, 45.7%). Multivariate logistic regression analysis, adjusting for age and season, demonstrated that male gender was significantly associated with pandemic-period presentation [adjusted odds ratio (aOR): 1.36, 95% CI: 1.32-1.40, p<0.001, Cramer's V=0.075], reflecting a 41.6% relative increase in male presentations.

Age distribution: The pediatric population (<18 years) showed a marked decline from 11.6% (n=4,875) to 8.1% (n=4,053) of presentations (aOR: 0.67, 95% CI: 0.64-0.70, p<0.001, Cramer's V=0.060), representing a 33% reduction in odds after controlling for gender and season. Conversely, elderly patients (≥60 years) demonstrated a modest increase from 10.2% (n=4,280) to 11.0% (n=5,480) (aOR: 1.09, 95% CI: 1.04-1.14, p<0.001). Young and middle-aged adults (18-45 years) remained stable at approximately 60% of total encounters across both periods. Detailed demographic data are presented in Table 2.

Table 1. Overall psychiatric emergency encounters by study period

Study period	n	%	OR (95% CI)	p-value	Cramer's V
Pre-pandemic	41,969	45.7	Reference	-	-
Pandemic	49,834	54.3	1.19 (1.17-1.21)	<0.001	0.086
Total	**91,803**	**100.0**	-	-	-

χ^2=671.34, df=1, p<0.001, OR: Odds ratio, CI: Confidence interval

Table 2. Demographic characteristics with adjusted odds ratios

Characteristic	Pre-n	Pre-%	Pan-n	Pan-%	aOR (95% CI)	p-value
Gender						
Female	25,889	61.7	27,060	54.3	Reference	-
Male	16,075	38.3	22,768	45.7	1.36 (1.32-1.40)	<0.001*
Age group						
<18 years	4,875	11.6	4,053	8.1	0.67 (0.64-0.70)	<0.001*
18-30 years	11,884	28.3	14,655	29.4	Reference	-
31-45 years	13,214	31.5	16,156	32.4	0.99 (0.96-1.03)	0.742
≥60 years	4,280	10.2	5,480	11.0	1.09 (1.04-1.14)	<0.001*

*: P<0.001 after Bonferroni correction, aOR: Adjusted odds ratio (adjusted for age, gender, and season), CI: Confidence interval

Distribution of Psychiatric Diagnoses

Anxiety disorders remained the most common diagnosis but declined proportionally from 46.3% (n=19,436) to 40.6% (n=20,237) (aOR: 0.79, 95% CI: 0.77-0.81, p<0.001, Cramer's V=0.058). Dissociative disorders showed a more pronounced decline from 22.2% (n=9,305) to 14.5% (n=7,223) (aOR: 0.59, 95% CI: 0.57-0.61, p<0.001, Cramer's V=0.099). Schizophrenia spectrum disorders remained stable at approximately 5% (aOR: 0.93, 95% CI: 0.88-0.98, p=0.008). Complete diagnostic data are presented in Table 3. The p-values reported correspond to comparisons between the pre-pandemic and pandemic periods for each diagnostic category, obtained from multivariable logistic regression models adjusted for age, sex, season, and triage category.

Alcohol-related disorders: Alcohol-related presentations increased from 2.9% to 13.7% of all encounters. Multivariate analysis, adjusting for age, gender, season, and triage category, yielded an aOR of 5.34 (95% CI: 5.01-5.70, p<0.001), with a large effect size (Cramer's V=0.205). This finding was robust across gender-stratified analyses (males: aOR: 5.12; females: aOR: 6.01). The risk ratio was 4.74 (95% CI: 4.46-5.03), and the population attributable fraction was estimated at 81.2%. Complete diagnostic data are presented in Table 3.

Clinical Severity Indicators

Triage acuity: Ordinal logistic regression demonstrated a significant shift toward higher-acuity presentations (proportional OR: 1.68, 95% CI: 1.64-1.72, p<0.001; Brant test χ^2=2.34, p=0.126). Red code assignments increased from 18.2% to 20.1% (aOR: 1.13, 95% CI: 1.09-1.17), yellow code from 49.8% to 59.7% (aOR: 1.49, 95% CI: 1.45-1.53), while green code declined from 31.4% to 19.9% (aOR: 0.54, 95% CI: 0.52-0.56). The overall effect size was medium (Cramer's V=0.131). Sensitivity analysis excluding alcohol-related cases showed attenuated but persistent effects (proportional OR: 1.42, 95% CI: 1.38-1.46).

Forensic cases: Forensic case designations increased from 3.97% (n=1,667) to 5.83% (n=2,907) (aOR: 1.50, 95% CI: 1.41-1.60, p<0.001; risk ratio=1.47, 95% CI: 1.39-1.56; Cramer's V=0.045). Clinical severity data are detailed in Table 4.

Consciousness Level Assessment

Ordinal logistic regression revealed a significant association between pandemic period and impaired consciousness (proportional OR: 1.38, 95% CI: 1.28-1.49, p<0.001). Notably, confused consciousness increased from 0.9% (n=385) to 1.5% (n=732) (aOR: 1.60, 95% CI: 1.41-1.82, p<0.001). When alcohol-related presentations were included as a covariate, this association was attenuated but remained significant (aOR: 1.28, 95% CI: 1.12-1.47, p<0.001). Complete data are presented in Table 5.

Multiple Comparisons Correction

With 15 primary comparisons, the Bonferroni-adjusted significance threshold was α=0.0033. All reported significant associations maintained statistical significance after this correction (all p<0.001).

Table 3. Distribution of psychiatric diagnoses with adjusted odds ratios, effect sizes, and p-values

Diagnosis	Pre-n	Pre-%	Pan-n	Pan-%	aOR (95% CI)	p-value	Cramer's V
Anxiety disorders	19,436	46.3	20,237	40.6	0.79 (0.77-0.81)	<0.001*	0.058
Dissociative disorders	9,305	22.2	7,223	14.5	0.59 (0.57-0.61)	<0.001*	0.099
Schizophrenia spectrum	2,248	5.4	2,520	5.1	0.93 (0.88-0.98)	0.008	-
Bipolar disorder	1,732	4.1	1,929	3.9	0.94 (0.88-1.00)	0.006	-
Alcohol-related	**1,211**	**2.9**	**6,811**	**13.7**	**5.34 (5.01-5.70)**	<0.001*	**0.205**

Note: Percentages do not sum to 100% because only the most frequent diagnostic categories are presented. Less common diagnostic groups are not displayed to maintain clarity and readability
*: Statistically significant after Bonferroni correction (adjusted α=0.0033), aOR: Adjusted odds ratio, CI: Confidence interval

Table 4. Clinical severity indicators

Clinical feature	Pre-n	Pre-%	Pan-n	Pan-%	aOR (95% CI)	p-value
Triage category (proportional OR: 1.68, 95% CI: 1.64-1.72, Cramer's V=0.131)						
Red (critical)	7,649	18.2	10,024	20.1	1.13 (1.09-1.17)	<0.001*
Yellow (urgent)	20,904	49.8	29,757	59.7	1.49 (1.45-1.53)	<0.001*
Green (non-urgent)	13,174	31.4	9,899	19.9	0.54 (0.52-0.56)	<0.001*
Forensic status (Cramer's V=0.045)						
Forensic case	1,667	3.97	2,907	5.83	1.50 (1.41-1.60)	<0.001*
Non-forensic case	40,302	96.03	46,927	94.17	Reference	-

*: P<0.001 after Bonferroni correction, aOR: Adjusted odds ratio, CI: Confidence interval

Table 5. Consciousness level at presentation

Consciousness	Pre-n	Pre-%	Pan-n	Pan-%	aOR (95% CI)	p-value
Alert	29,005	69.1	36,321	72.9	Reference	-
Altered	388	0.9	546	1.1	1.12 (0.98-1.28)	0.089
Confused	**385**	**0.9**	**732**	**1.5**	**1.60 (1.41-1.82)**	**<0.001***
Unconscious	76	0.2	93	0.2	0.98 (0.72-1.33)	0.876
Semicomatose	12	0.03	25	0.05	1.66 (0.83-3.32)	0.151

Proportional OR: 1.38 (95% CI: 1.28-1.49); *: P<0.001, CI: Confidence interval, aOR: Adjusted odds ratio

Table 6. Summary of key findings with effect sizes

Variable	aOR (95% CI)	Cramer's V	Effect size
Overall presentations	1.19 (1.17-1.21)	0.086	Small
Male gender	1.36 (1.32-1.40)	0.075	Small
Pediatric (<18 y)	0.67 (0.64-0.70)	0.060	Small-medium
Alcohol-related disorders	**5.34 (5.01-5.70)**	**0.205**	**Large**
Triage shift	1.68 (1.64-1.72)†	0.131	Medium
Forensic cases	1.50 (1.41-1.60)	0.045	Small

†: Proportional OR; effect size: V<0.1 small, 0.1-0.3 medium, >0.3 large all p<0.001 after Bonferroni correction (adjusted α=0.0033), aOR: Adjusted odds ratio, CI: Confidence interval

DISCUSSION

This population-based observational study of 91,803 prehospital psychiatric emergency encounters provides detailed insights into changes in service utilization patterns during the COVID-19 pandemic. The study employed a retrospective observational time-period comparison design to examine changes in psychiatric emergency service utilization across two predefined temporal intervals. Therefore, the observed changes should be interpreted as reflecting shifts in prehospital help-seeking behavior and emergency medical service utilization patterns rather than direct changes in hospital-based psychiatric emergency demand.

Within this context, our analysis revealed six key associations (Table 6): (1) 18.7% increase in overall presentations (OR: 1.19, small effect); (2) disproportionate increase in male presentations (aOR: 1.36, small effect); (3) 33% reduction in pediatric presentations (aOR: 0.67, small-to-medium effect); (4) 373.7% increase in alcohol-related disorders (aOR: 5.34, large effect); (5) shift toward higher-acuity triage (proportional OR: 1.68, medium effect); and (6) increased forensic cases (aOR: 1.50, small effect). Our data reveal numerous significant correlations that require careful interpretation within the context of the study's quasi-experimental design and the wider international literature. The 18.7% increase in psychiatric emergency medical service encounters throughout the pandemic era contrasts with certain international statistics showing initial decreases in psychiatric emergency utilization (6,18). This finding should be interpreted cautiously, as denominator data on total emergency medical service utilization were not available to determine whether the proportional burden of psychiatric emergencies changed during the study period. This conclusion aligns with data from other situations that demonstrated subsequent increases following the relaxation of early lockdown measures (7,19). A study conducted in Verona, Italy, documented significant reductions in psychiatric visits in 2020 (-23.3%) and 2021 (-16.3%) compared to 2019; nonetheless, increases were observed among specific groups, particularly young adults and individuals experiencing psychosis (20). The differing results from different healthcare systems and time periods show how important contextual factors are in affecting how often people use psychiatric emergencies. These findings should be interpreted within the context of a prehospital emergency medical service system, where patient selection, diagnostic processes, and clinical priorities differ from those of hospital-based emergency departments.

The absence of a contemporaneous control group in our pre-post design limits the ability to definitively attribute observed changes to factors related to the pandemic. Secular trends in the incidence of psychiatric disorders, alterations in healthcare-seeking behavior independent of the pandemic, and adjustments to service delivery models may all account for the observed differences. The observed increase in our study may reflect factors specific to the local healthcare environment, such as the structure of the emergency medical service system and potential changes in patient flow from other facilities. The reduction of the female-to-male ratio from 1.6:1 to 1.2:1 during the pandemic, primarily due to a 41.6% rise in male presentations, indicates a significant demographic change. International literature indicates elevated rates of anxiety and depressive symptoms among females during the pandemic (21,22); however, patterns of emergency medical service utilization

may diverge from population-based prevalence estimates. The rise in male presentations may indicate varying exposure to pandemic-related stressors, such as economic instability and job loss, which have been linked to negative mental health outcomes in previous economic crises (23). Other explanations include changes in how men seek treatment or differences in how easy it is for men and women to go to different mental health facilities, which may have affected male and female patients in different ways. In addition, the observed increase in presentations among older adults (≥60 years) warrants consideration. This trend may be attributable to several factors, including increased social isolation during pandemic-related restrictions, reduced access to routine outpatient care, and heightened caregiver burden. Furthermore, neuropsychiatric complications associated with medical illness, including COVID-19 infection, may have contributed to increased psychiatric emergency presentations in this population (24).

The 30.2% drop in pediatric presentations is in line with findings from around the world that show fewer children going to the emergency room during the pandemic (15,25). A report from the Centers for Disease Control and Prevention indicated that the number of children who went to the emergency room for mental health reasons dropped by 43% between March and October 2020. However, the percentage of these trips went up a lot (26). The decline in pediatric presentations noted in our study must be interpreted with caution, as it may indicate diminished access to care, parental hesitance to pursue emergency services during the pandemic, or authentic fluctuations in the incidence of acute psychiatric crises among children and adolescents. School closures, which removed a significant avenue for recognizing mental health issues, may have led to postponed or missed treatment (27). The diagnostic distribution variations we saw in our study show complex patterns that need to be carefully thought about. Anxiety disorders continued to be the predominant diagnostic category; however, their proportionate decline (46.3% to 40.6%) coincided with absolute increases in case numbers, indicating a shift in the general makeup of psychiatric emergency presentations during the pandemic period. This conclusion is consistent with meta-analytic findings indicating a high frequency of anxiety (31.9%) and depression (31.4%) during the pandemic (9), but the correlation between population prevalence and emergency medical service utilization is complex. The diagnostic distribution observed in this study should be interpreted in light of the preliminary nature of emergency setting diagnoses, which may differ from diagnoses established through comprehensive psychiatric evaluation. This limitation is particularly relevant in prehospital emergency medical service settings, where diagnostic classification is primarily based on rapid clinical assessment and ICD-10 coding practices rather than comprehensive psychiatric evaluation. Interestingly, the proportional representation of anxiety disorder presentations decreased during the pandemic period. Several factors may explain this pattern. First, elevated baseline levels of anxiety in the general population during the pandemic may have led to a relative normalization of anxiety symptoms, reducing the likelihood of emergency service utilization for milder cases. Second, concerns about infection risk and avoidance of healthcare settings may have discouraged individuals with anxiety disorders from seeking emergency care unless symptoms were severe.

In addition, disruptions in outpatient mental health services and a shift toward alternative care modalities, such as telemedicine, may have altered help-seeking pathways and reduced reliance on emergency medical services for anxiety-related conditions. These findings suggest that changes in healthcare utilization patterns, rather than a true reduction in anxiety prevalence, may underlie the observed decrease in emergency presentations.

A notable finding of this study was the marked increase in alcohol-related presentations, rising from 2.9% to 13.7% of all encounters. This magnitude substantially exceeds that reported in most international studies and should therefore be interpreted with caution (11,28). Several factors may contribute to this observation, including a true increase in alcohol consumption and related harms during the pandemic, disruptions in access to routine addiction services, and shifts in help-seeking behavior leading to greater reliance on emergency medical services (29,30). In addition, the prehospital emergency medical service context may influence diagnostic classification, as alcohol-related presentations are often more readily identifiable during rapid clinical assessment compared to other psychiatric conditions. Furthermore, changes in service availability and referral patterns during the pandemic may have resulted in a higher proportion of alcohol-related cases being managed within emergency systems. Taken together, these findings likely reflect a combination of behavioral, healthcare system–related, and methodological factors rather than a single underlying cause. The rise in red (+31.0%) and yellow (+42.4%) triage codes and the drop in green code presentations (-24.9%) during the pandemic suggest that those who came in during that time may have had more severe clinical symptoms. This outcome corresponds with theories positing that pandemic-induced barriers to care may have led to delayed presentation with exacerbated symptoms (31). International data has also shown that psychiatric emergency presentations had more severe symptoms during the pandemic, with studies showing higher rates of suicidal thoughts, psychotic symptoms, and the need for hospitalization (32,33). Nonetheless, other possible reasons for the change in severity must be considered. Changes in triage approaches, patient self-selection (with those exhibiting milder symptoms potentially forgoing emergency care during the pandemic), and modifications to the accessibility of alternate care pathways may all impact the reported trends. In addition, changes in consciousness level observed during the pandemic period warrant further consideration. Increased rates of altered or impaired consciousness may be partly explained by substance-related conditions, including acute intoxication and withdrawal states, particularly in the context of the marked rise in alcohol-related presentations observed in this study. Delirium associated with acute medical illness, including COVID-19 infection, may also have contributed, especially among older adults.

Furthermore, delayed healthcare-seeking behavior and reduced access to routine medical care during the pandemic may have resulted in patients presenting at more advanced stages of illness, thereby increasing the likelihood of impaired consciousness at the time of emergency evaluation. Comorbid medical conditions and polypharmacy may represent additional contributing factors. The 46.9% increase in forensic cases aligns with global data showing rises in domestic violence and intimate partner violence during the pandemic (13,14,34); nevertheless, our observational methodology precludes causal conclusion. Several mechanisms may underlie this increase. Pandemic-related restrictions, including lockdown measures and social isolation, may have intensified interpersonal conflicts within households, contributing to higher rates of domestic violence. Economic stressors, unemployment, and uncertainty during the pandemic have also been associated with increased risk of aggression and violence. In addition, increased substance use particularly alcohol consumption—may have further exacerbated the likelihood of forensic incidents.

Reduced access to social support services, legal protection mechanisms, and community-based interventions during the pandemic may have limited opportunities for early intervention, potentially resulting in more severe cases requiring emergency medical attention. These findings are consistent with emerging international literature documenting increased rates of violence and forensic-related presentations during the COVID-19 period (35).

Study Limitations

This study has several strengths, including a large sample size of 91,803 patients, a three-year observation period encompassing both pre-pandemic and pandemic phases, and the use of a comprehensive population-based emergency medical service database. The application of standardized data extraction procedures and independent data review further enhances the reliability and internal validity of the findings. In addition, the metropolitan setting of İstanbul provides valuable insights that may be relevant to other large urban healthcare systems.

However, several limitations should be acknowledged. First, the quasi-experimental pre-post design without a concurrent control group limits the ability to attribute observed changes directly to the pandemic, as underlying temporal trends in psychiatric morbidity and healthcare utilization cannot be fully accounted for. Second, the absence of denominator data representing total emergency medical service utilization restricts the interpretation of proportional changes, and the findings should therefore be understood as reflecting absolute encounter numbers. Third, although season was included as a covariate in the multivariable analyses, detailed seasonal distributions were not presented, which may limit the full assessment of potential seasonal effects.

Fourth, the use of retrospective administrative data introduces the possibility of misclassification and incomplete documentation. Fifth, psychiatric diagnoses were based on preliminary assessments conducted in a prehospital emergency setting, which may limit diagnostic accuracy compared with comprehensive psychiatric evaluation. Finally, the findings are derived from a single metropolitan emergency medical service system and may not be fully generalizable to different healthcare systems, cultural contexts, or pandemic trajectories.

Future studies may benefit from integrating diagnostic categories with triage-based severity measures to provide a more comprehensive understanding of clinical presentation patterns within emergency medical service systems.

CONCLUSION

This observational study highlights significant changes in prehospital psychiatric emergency presentations within the İstanbul emergency medical service system during the COVID-19 pandemic. Key findings include increased overall utilization, demographic shifts towards male and elderly patients, a marked rise in alcohol-related disorders, and a trend towards higher clinical acuity. These findings must be understood as associations, given the constraints of a quasi-experimental design lacking a control group. The data presented do not establish causal relationships between the pandemic and the observed changes; however, they offer descriptive evidence that can inform the planning of emergency psychiatric services and identify areas that require further investigation using more rigorous methodologies.

Ethics

Ethics Committee Approval: The study protocol obtained ethical approval from the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (approval no: 2022/260, decision no: 2022-17-02, date: 05.09.2022).

Informed Consent: The retrospective investigation employed pre-existing, de-identified administrative data, leading the ethics committee to waive the requirement for individual informed consent.

Footnotes

Author Contributions: Surgical and Medical Practices - M.N.S., Concept - M.T., K.A.T., Design - M.N.S., E.M., K.A.T., Data Collection and/or Processing - E.M., Analysis and/or Interpretation - M.T., Literature Search - M.N.S., Writing - M.N.S., M.T., E.M., K.A.T.

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