


An Examination of the Sociodemographic and Clinical Characteristics of Cases Presenting to the Child Psychiatry Clinic after the Kahramanmaraş Earthquakes

Kahramanmaraş Depremi Sonrası Çocuk Psikiyatrisi'ne Başvuran Olguların Sosyodemografik Ve Klinik Özelliklerinin İncelenmesi

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Abstract

Background: On February 6, 2023, two devastating earthquakes with magnitudes of 7.7 and 7.6 struck Kahramanmaraş, Türkiye. Children and adolescents are among the most vulnerable groups to experience significant psychosocial impacts following such disasters. Given Türkiye's large pediatric population, understanding the mental health outcomes in this group is of national importance. Post-earthquake psychiatric symptoms and disorders in children may include depression, anxiety, post-traumatic stress symptoms, behavioral issues, cognitive regression, attention deficits, academic decline, and learning difficulties. This study aims to contribute to the literature by examining the sociodemographic characteristics, clinical profiles, psychiatric diagnoses, and treatment approaches among pediatric patients affected by the Kahramanmaraş earthquakes.

Materials and Methods: This retrospective study reviewed the medical records of 164 children and adolescents who were diagnosed under ICD code X34 (victims of earthquake) and presented to Elazığ Fethi Sekin City Hospital the child psychiatry outpatient clinic between February 2023 and February 2024.

Results: The most common presenting complaints were anxiety, school avoidance, and earthquake-related fears (31.1%). The most frequently identified psychiatric conditions were neurodevelopmental disorders (totaling 34.1%), including ADHD (17.6%), intellectual disability (7.3%), autism spectrum disorder (4.3%), and specific learning disorder (3.6%), as well as anxiety disorders (15.9%). Acute stress disorder, according to DSM-5, was diagnosed in 66% of the cases.

Conclusions: As expected, there was a high prevalence of neurodevelopmental and internalizing psychiatric disorders following the earthquakes. Prospective, long-term follow-up studies assessing the enduring impact of the Kahramanmaraş earthquakes on children and adolescents in Türkiye are warranted.

Keywords: Disaster, Trauma, Earthquake, Child psychiatry, Adolescent mental health, Türkiye

Öz

Amaç: 6 Şubat 2023 tarihinde, Türkiye'nin Kahramanmaraş ilinde 7.7 ve 7.6 büyüklüğünde iki yıkıcı deprem meydana gelmiştir. Çocuklar ve ergenler, bu tür afetlerin ardından en fazla psikososyal etkilenebilirlikten açık gruptan biridir. Türkiye'nin büyük çocuk nüfusu göz önüne alındığında, bu yaş grubundaki ruh sağlığı sonuçlarının anlaşılması ulusal düzeyde önem taşımaktadır. Deprem sonrasında çocuklarda depresyon, anksiyete, travma sonrası stres belirtileri, davranış sorunları, gelişimsel gerileme, dikkat eksikliği, akademik başarıda düşüş ve öğrenme güçlükleri gibi psikiyatrik semptom ve bozukluklar ortaya çıkabilir. Bu çalışma, Kahramanmaraş depremlerinden etkilenen çocuk ve ergenlerin sosyodemografik özelliklerini, klinik profillerini, psikiyatrik tanıları ve tedavi yaklaşımlarını inceleyerek literatüre katkı sağlamayı amaçlamaktadır.

Materyal ve Metod: Bu retrospektif çalışmada, Şubat 2023 ile Şubat 2024 tarihleri arasında Elazığ Fethi Sekin Şehir Hastanesi çocuk ve ergen psikiyatrisi polikliniğine başvuran ve ICD kodu X34 (deprem mağduru) tanısı alan 164 hastanın dosya kayıtları incelenmiştir.

Bulgular: En sık başvuru şikayetleri anksiyete, okuldan kaçınma ve depreme bağlı korkular (% 31,1) olarak belirlenmiştir. En yaygın psikiyatrik bozukluklar; dikkat eksikliği ve hiperaktivite bozukluğu (% 17,6), zihinsel yetersizlik (% 7,3), otizm spektrum bozukluğu (% 4,3) ve özgül öğrenme güçlüğü (% 3,6) gibi nörogelişimsel bozukluklar (toplam % 34,1) ile anksiyete bozuklukları (%15,9) olmuştur. Vakaların % 66'sında DSM-5 kriterlerine göre akut stres bozukluğu tanısı konmuştur.

Sonuç: Depremler sonrasında, öngörüldüğü gibi nörogelişimsel ve içselleştirilmiş psikiyatrik bozuklukların yaygın olduğu görülmüştür. Türkiye'de çocuk ve ergenlerin Kahramanmaraş depremlerinden uzun vadeli etkilenimlerini değerlendirecek ileriye dönük izlem çalışmalarına ihtiyaç duyulmaktadır.

Anahtar Kelimeler: Afet, Travma, Deprem, Çocuk psikiyatrisi, Ergen ruh sağlığı, Türkiye

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Introduction

Two major earthquakes, with magnitudes of 7.7 and 7.6, struck the province of Kahramanmaraş on February 6, 2023 (1). These earthquakes primarily affected eleven provinces, with Kahramanmaraş being the epicenter. The Kahramanmaraş earthquakes were the most devastating in Türkiye since the Erzincan (Mw: 7.9) and Kocaeli-Gölcük (Mw: 7.6) earthquakes of the 20th century (1). Nearly 50,000 people lost their lives, and approximately 200,000 were injured in these disasters (2). Beyond the significant loss of life and property, earthquakes also have profound psychological, social, physical, and economic consequences (3). Among those most vulnerable to the psychosocial impacts of earthquakes are children and adolescents. Given Türkiye's large child and youth population, this issue carries critical national importance (4). Earthquake-related factors—such as physical injury, bereavement, displacement, loss of home and possessions, educational disruption, separation from peers, and forced relocation—can have serious psychological effects on children and adolescents (5). The negative impact may persist both in the short and long term, with trauma symptoms potentially emerging even years after the event (6). Previous studies have documented a range of psychiatric symptoms and disorders in children following earthquakes, including depression, anxiety, post-traumatic stress disorder (PTSD), difficulties with anger, cognitive regression, attention problems, decreased academic performance, and learning difficulties (4,6–12). Research conducted after the 1999 Gölcük earthquake in Türkiye examined the sociodemographic and clinical characteristics, as well as psychiatric diagnoses, of affected children and adolescents (4,6,11). In a study by Kılıç et al., PTSD symptoms were evaluated in 800 children aged 8–14 and their families. The findings indicated a link between children's PTSD severity and the presence of PTSD in other family members, particularly paternal depression (11). Another study by Çelebi Oncu et al. used incomplete story tasks with 103 children—some exposed to the earthquake and some not—and found that trauma-related symptoms persisted even two years later among the exposed group (6). Similarly, Bal et al. reported that nearly 70% of 293 children and adolescents displayed moderate to severe PTSD symptoms following the earthquake (4).

The current study aims to contribute to the literature by investigating the sociodemographic features, clinical presentations, psychiatric diagnoses, and treatments of children and adolescents affected by the Kahramanmaraş earthquakes. It is expected that internalizing problems—such as anxiety, depression, acute stress disorder, and PTSD—will be common among this population. Furthermore, we anticipate a high prevalence of neurodevelopmental disorders, as these conditions frequently lead to referrals to child and adolescent psychiatry outpatient clinics.

Materials and Methods

Patient

Retrospective review of the archive files of 164 children and adolescents who presented to the child psychiatry outpatient clinic of Elazığ Fethi Sekin City Hospital between February 2023 and February 2024 was conducted. These individuals underwent complete diagnostic interviews and were subsequently diagnosed as victims of the earthquake under ICD code X34. Patients who met the inclusion criteria for this descriptive, cross-sectional, and retrospective study were selected. The inclusion criteria required that patients have a documented presenting complaint, a psychiatric diagnosis based on DSM-5, complete sociodemographic and clinical data necessary for the study, as well as disease severity and post-treatment improvement scores according to the Clinical Global Impression (CGI) Scale. Patients with missing sociodemographic or clinical data in their files were excluded from the study.

Study Procedures

The study was designed as a descriptive, cross-sectional, and retrospective study. Ethical approval was obtained from the Firat University Ethics Committee (approval letter number 2024/05-05, dated March 21, 2024) before the initiation of the study. Patient archive files were reviewed, and sociodemographic data, psychiatric diagnoses, treatments, pre-treatment and post-treatment disease severity using the Clinical Global Impression Scale, and post-treatment recovery scores were assessed.

Demographic Variables and Clinical Severity

The parameters examined in the patient archive files included: age, sex, city of origin, the presence of any loss in the nuclear family or among close relatives, a previous history of presentation to a child psychiatry clinic, any diagnoses and treatments provided, medical history, presence of any known psychiatric illness, psychiatric illnesses in the family, whether the individuals experienced the earthquakes, the extent of damage to the home (minor/moderate/severe), whether relocation to a different city occurred, the exhibition of acute stress disorder symptoms, psychiatric diagnoses following presentation, and treatments administered. Disease severity prior to and after treatment, as well as recovery scores post-treatment, were evaluated using the CGI Scale in patients who attended follow-up. All these parameters were routinely assessed in the patient files, and no additional parameters were utilized in the study.

Psychological Measures

Clinical Global Impression Scale: Developed by William Guy in 1976, the Clinical Global Impression Scale consists of three items: disease severity, improvement, and side effects. Disease severity is rated on a scale from 1 to 7,

with 1 representing normal (not ill) and 7 indicating severe illness. The improvement score also ranges from 1 to 7, with 1 indicating much improvement, 4 representing no change, and 7 indicating very much worse. Side effect severity is rated from 1 (none) to 4 (side effects so severe that they impact the patient's life). In this study, CGI disease severity and improvement scores were utilized to assess the clinical outcomes. (13).

Statistical Analysis

Statistical analysis was performed using the Social Sciences Statistical Package version 21.0 (SPSS 21.0). Since the sample size was greater than 50, the Kolmogorov-Smirnov test for single samples was employed to assess the distribution of continuous variables. The chi-square test was used to compare categorical variables between two independent groups. The Student's t-test was applied for continuous variables that demonstrated a normal distribution, while the Mann-Whitney U test was used for those that did not follow a normal distribution. The paired-samples t-test was employed to compare normally

distributed continuous variables between two dependent groups, and the Wilcoxon signed rank test was used for non-normally distributed variables. A p-value of less than 0.05 was considered statistically significant for all analyses..

Results

A total of 164 earthquake victims were included in the study, with boys constituting 55.5% (n = 91) and girls 44.5% (n = 73). The mean age of the victims at the time of their first visit to the child psychiatry clinic was 10.87 ± 4.03 years. Of the 164 earthquake victims, 59.8% (n = 98) were from the city of Elazığ, while 40.2% (n = 66) had relocated from other cities. The demographic and clinical characteristics, including age, sex, city of origin, whether relocation occurred due to the earthquakes, medical history, and family history of psychiatric illness, are presented in Table 1.

Table 1. Earthquake victims' sociodemographic data

		Earthquake victims Mean ±SD
Age (years, n=164)		10.87 ±4.03
Sex	Female	73 (44.5%)
	Male	91 (55.5%)
City of origin	Elazığ	98 (59.8%)
	Malatya	49 (29.9%)
	Adıyaman	7 (4.3%)
	Kahramanmaraş	6 (3.7%)
	Hatay	4 (2.4%)
Did the victims have to change their city of residence?	Yes	67 (40.9%)
	No	97 (59.1%)
Medical illness	Yes	14 (8.5%)
	No	150 (91.5%)
Psychiatric illness in the family	Yes	9 (5.5%)
	No	155 (94.5%)

n= number of cases, SD: standard deviation

Among the victims, 14 (8.5%) had an accompanying medical condition, including 3 who developed compartment syndrome after being trapped under debris. The remaining 11 patients were diagnosed with various conditions, including type 1 diabetes mellitus, epilepsy, cerebral

palsy, neutropenia, type 2 diabetes mellitus, mitochondrial myopathy, and contact dermatitis. Additionally, psychiatric illnesses such as anxiety disorder or major depressive disorder were present in the mothers or fathers of 9 (5.5%) of the victims.

Table 2. Sociodemographic Data

		n(%)
Presentation to the child psychiatry clinic	Yes	89 (54.3%)
	No	75(45.7%)
Did the victim feel the earthquake?	Yes	163(99.4%)
	No	1(0.6%)
Did the home suffer moderate /severe damage?	Yes	58(35.4%)
	No	106(64.6%)
Acute stress disorder	Yes	109(66.5%)
	No	55(33.5%)

n= number of cases

Table 3. Presentation Complaints and Psychiatric Diagnoses

	n(%)
Presentation Complaints	
Language problems	1(0.6%)
Anger, behavioral problems	7(4.3%)
Anxiety, school phobia, fear of earthquakes	51(31.1%)
Sleep problems	4(2.4%)
Attention deficit, hyperactivity	4(2.4%)
Unhappiness, missing the deceased, grief	2(1.2%)
Prescription of medication	13(7.9%)
Skin picking, obsessions, hair pulling	1(0.6%)
Multiple complaints	81(49.4%)
Psychiatric Diagnoses	
Acute Stress Disorder	17(10.4%)
Anxiety Disorder, Selective Mutism, School Phobia, Conversion	26(15.9%)
Post-Traumatic Stress Disorder	9(5.5%)
Neurodevelopmental Disorders: Chronic Tic Disorder, Language Problems, ASD, ADHD, ID, SLD, Stuttering	56(34.1%)
Grief, Major Depressive Disorder	14(8.5%)
Sleep, Behavioral Problems, Anger, Infantile masturbation	9(5.5%)
Multiple Diagnoses	32(19.5%)
Trichotillomania, Skin Picking, OCD	1(0.6%)

n= Number of cases, ASD: Autism Spectrum Disorder, ADHD: Attention Deficit Hyperactivity Disorder, ID: Intellectual Disability, SLD: Specific Learning Disorder, OCD: Obsessive Compulsive Disorder

The majority of the patients (84.2%) presented to the child psychiatry clinic within the first three months following the earthquake, with the remaining 15.8% presenting within nine months. However, nearly half of the patients (49.4%) did not attend any follow-up visits. A total of 30 (18.3%) patients attended the second follow-up, 17 (10.4%) attended the third, and 11 (6.7%) attended the fourth. Twenty-five (15.1%) patients attended the 5th-15th follow-up appointments.

Table 2 summarizes data regarding exposure to the earthquakes, whether the patients felt the tremors, the severity of damage to their homes, and whether they exhibited symptoms of acute stress disorder.

The most common complaints presented were anxiety, inability to attend school, and fear of future earthquakes

(31.1%). The most frequent psychiatric diagnoses observed were neurodevelopmental disorders, with a total frequency of 34.1%, including Attention Deficit Hyperactivity Disorder (ADHD) at 17.6%, Intellectual Disability at 7.3%, Autism Spectrum Disorder (ASD) at 4.3%, Specific Learning Disability at 3.6%, and Anxiety Disorders at 15.9%. The presenting complaints and psychiatric diagnoses of the victims are shown in Table 3.

Regarding pharmacological treatment, combination therapies (22.6%) were the most commonly prescribed, with selective serotonin reuptake inhibitors (SSRIs) being the most frequently used drug class (21.3%). The details of the drug therapies administered are summarized in Table 4.

Table 4. Treatments

	n(%)
Antipsychotic	27(16.5%)
SSRI (Sertraline Reuptake Inhibitor)	35(21.3%)
Methylphenidate/Atomoxetine/Clonidine/Guanfacine	18(11%)
Supportive/special education/Melatonin/language therapy	35(21.3%)
Combination	37(22.6%)
Propranolol	9(5.5%)

n= number of cases

The analysis revealed that loss among nuclear family members ($p < 0.001$), close relatives ($p < 0.001$), and friends ($p < 0.001$) was significantly higher in victims who had relocated from outside Elazığ compared to those from the city. These findings, as well as the follow-up

rates at the child psychiatry outpatient clinic, are presented in Table 5.

Finally, Clinical Global Impression (CGI) disease severity scores significantly decreased among victims who re-

ceived drug therapy ($p < 0.001$), with the majority benefiting from the treatment. The earthquake victims' pre-

and post-treatment CGI scores and improvement scores are shown in Table 6.

Table 5. Distribution of earthquake victims by province and child psychiatry outpatient clinic follow-up rates

		Elazığ (n:98)	Other Provinces(n:66)	X ²	p
		n(%)	n(%)		
Loss of nuclear family	Yes	3(3.06%)	40(60.61%)	67.511	p<0.001*
	No	95(96.9%)	26(39.40%)		
Loss of close relative	Yes	2(2.04%)	46(69.70%)	87.203	p<0.001*
	No	96(97.96%)	20(30.30%)		
Loss of friends	Yes	5(5.10%)	47(71.21%)	79.603	p<0.001*
	No	93(94.90%)	19(28.79%)		
Number of presentations to the child psychiatry clinic 1		41(41.8%)	40(60.6%)	5.558	P=0.018*
More than 1 (range 2-15)		57(58.2%)	26(39.4%)		

n= number of cases, p*= Pearson Chi-Square Test p value, p**= Fisher's exact test p value Note: Statistically significant results are shown in bold.

Table 6. Distributions of CGI pre- and post-treatment scores and CGI improvement score

Earthquake victims using drug therapy	CGI disease severity pre-treatment (n:77)	CGI disease severity post-treatment (n:77)	z	P
	Median (25%-75%)	Median (25%-75%)		
	4(4-4)	2(2-3)	-7.974	<0.001*
	CGI improvement scores	n(%)		
	1	15(9.1%)		
	2	44(26.8%)		
	3	16(9.8%)		
	4	2(1.2%)		

n=number of cases, p*= Mann-Whitney U test p value, p value Note: Statistically significant results are shown in bold.

Discussion

This study predicted that internalizing problems such as anxiety, depression, acute stress disorder, and post-traumatic stress disorder (PTSD) would be commonly observed following the Kahramanmaraş earthquakes. It was also anticipated that neurodevelopmental disorders would be particularly prevalent, as these are frequently encountered in child psychiatry outpatient settings. In the present study, the most frequent presenting complaints were anxiety, school phobia, and fear of earthquakes (31.1%). These findings are consistent with previous research indicating that anxiety and depressive symptoms are among the most common post-earthquake complaints reported in child psychiatry clinics (8,14). Most patients in our sample presented with multiple co-occurring complaints. Psychiatric diagnoses made after the earthquakes under ICD code X34 included neurodevelopmental disorders (34.1%), anxiety disorders, selective mutism, school phobia, and conversion disorder (15.9%). In routine clinical settings, neurodevelopmental disorders are among the most frequently diagnosed conditions in child psychiatry (15). Moreover, 54.3% of the earthquake victims in our sample had a documented history of prior consultation with child psychiatry clinics. Given that neurodevelopmental disorders typically emerge in early childhood and require long-term follow-up and intervention, it is expected that they would remain a common diagnosis post-disaster. The elevated rate of post-disaster presentations among children

with neurodevelopmental disorders in this study highlights the psychological vulnerability of this group and underscores their increased need for psychological support.

Early intervention and sustained psychosocial support are particularly crucial for this population in the aftermath of disasters. Previous studies have identified acute stress disorder, PTSD, depression, and anxiety as the most common psychiatric conditions following earthquakes (9,11,14,16–22). The variations across studies may be attributed to differences in methodology, particularly the use of self-report scales, which can introduce bias. For example, studies following the 1999 Gölcük earthquake utilized scales such as the PTSD and anxiety-depression inventories (4,11) many of which relied on subjective self-reporting. In the present study, the most frequently prescribed medications were combination therapies, particularly selective serotonin reuptake inhibitors (SSRIs), which align with the predominant psychiatric diagnoses observed. Notably, 7.9% of the patients presented solely for medication refills and reported no current symptoms. These individuals had previously been under psychiatric care but were unable to access medications due to collapsed homes, displacement, or other earthquake-related disruptions. Acute stress disorder was diagnosed in 66.3% of the patients, a finding that is consistent with the 70% prevalence reported in post-earthquake studies (23). While 59.8% of the patients in this study were originally from Elazığ, 40.2% had relocated there from other affected provinces. Patients from

Elazığ had significantly higher rates of both initial presentation and follow-up. CGI disease severity scores decreased significantly among the victims using drug therapy, and the majority benefited significantly from the treatment. In contrast, those who had relocated from other provinces experienced significantly higher rates of bereavement involving nuclear family members, relatives, and friends. These losses, coupled with displacement and disruption of social networks, likely contributed to greater psychosocial difficulties and reduced continuity of care. The majority of patients (84.2%) sought psychiatric care within the first three months following the earthquakes. However, only about half (50.6%) continued with follow-up visits. Although most initial consultations occurred early in the post-disaster period, follow-up care extended over the course of one year. While psychosocial support and intervention programs following disasters typically span about six months (24), the current study suggests a need for extended services. Previous research has also demonstrated that the psychological impact of major earthquakes can persist for years (6).

A major strength of this study is its original contribution in capturing the post-earthquake mental health needs of children and adolescents in a region like Elazığ, which experienced significant in-migration following the disaster. The study also provides valuable insights into psychiatric service utilization over a one-year period. However, several limitations should be acknowledged, including its retrospective and single-center design, relatively small sample size, absence of structured diagnostic interviews, and exclusion of patients with incomplete records. These factors may limit generalizability and introduce sampling bias. Future prospective, multi-center studies with long-term follow-up are needed to better understand the enduring mental health effects of the Kahramanmaraş earthquakes on children and adolescents in Türkiye.

In conclusion, given Türkiye's geographic vulnerability to earthquakes, identifying the most common psychiatric complaints and diagnoses in children and adolescents post-disaster is essential for planning timely interventions and allocating resources effectively. In addition to post-disaster response, greater emphasis should be placed on preparing children and adolescents psychologically prior to disasters and ensuring the continuity of mental health care afterward.

Ethical Approval: The study was approved by Firat University Non-interventional Clinical Research Ethical Committee (Decision no: 2024/05-05, Date: 21.03.2024).

Author Contributions:

Concept: N.S.G.Ü.

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Design : N.S.G.Ü.

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Writing manuscript: N.S.G.Ü.

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