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Psychiatric Manifestations Following the 2023 Kahramanmaras Earthquakes: A Focus on Children and Adolescents

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ABSTRACT

Background: The Kahramanmaras earthquakes occurred on February 6, 2023. Two powerful earthquakes, occurring 9 hours apart, resulted in over 50000 deaths and affected more than 14 million people. This study assessed different characteristics among affected children and adolescents and identified vulnerable groups. This study aimed to evaluate post-earthquake psychiatric symptoms among children and adolescents, determine the prevalence of acute stress disorder (ASD) and post-traumatic stress disorder (PTSD) among affected children and adolescents, and identify personal and event-related factors that influence these outcomes.

Methods: Patients admitted to the child psychiatry outpatient clinic or consulted from the emergency and pediatric inpatient clinics were evaluated for the effect of personal and event-related factors, including demographic variables, pre-event mental state, loss of relatives and assets owned, and medical/surgical requirements, on their mental health.

Results: The study revealed that sleep problems were prevalent as the primary psychiatric symptom among children and adolescents following the earthquake. The incidence of ASD remained similar between age groups, while PTSD was more commonly observed in adolescents. Patients experiencing the loss of family members or friends, as well as those whose homes collapsed or suffered extensive damage, and those who sustained physical injuries, exhibited a higher prevalence of ASD and PTSD compared to the other patients.

Conclusion: Current findings reveal that the delivery of intensive psychological support in the early stages is crucial to prevent further mental problems in vulnerable groups following an earthquake.

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INTRODUCTION

Disasters are categorized as natural, man-made, and hybrid, each with unique characteristics and the potential to trigger subsequent events.[1] Earthquakes, in particular, have profound physical, economic, social, and psychological effects on people. Pre-disaster preparedness and interdisciplinary planning play a crucial role in minimizing the psychological impact of earthquakes.[2]

Eleven provinces were severely affected by the "*2023 Kahramanmaras earthquake*," the deadliest earthquake in Türkiye's history regarding loss of life, physical destruction, and financial impact. On February 6, 2023, 2 earthquakes with magnitudes of 7.7 mW and 7.5 mW struck 9 hours apart. More than 14 million people were affected by these earthquakes, and more than 50,000 people died. Over 500,000 buildings were also damaged, leading to widespread displacement.[3] The traumatic impact of the earthquake was further exacerbated by its wide geographical scope and the inadequacy of policies related to pre-earthquake preparedness.

Anxiety, anhedonia, depression, post-traumatic re-experiencing, sleep disturbance, behavioral problems, externalizing symptoms, somatic complaints, regression, suicidal thoughts, and dissociative symptoms are frequently observed symptoms after disasters.[4-7] In a study conducted after the Kahramanmaraş earthquake involving 636 children, it was reported that depressive symptoms were present in all participants, as measured by the administered scales, and a significant portion of post-traumatic stress reactions was attributed to these depressive symptoms.[8] After an earthquake in Italy, children aged 6-10 showed significantly higher PTSD and anxiety scores.[9] In research investigating 12,500 children after the "*2011 Japan*

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earthquake," findings revealed a higher prevalence of sleep-related problems alongside trauma and anxiety. Furthermore, children whose residences underwent demolition exhibited more severe sleep disturbances than those of opponents.[10] In a study involving 867 children following the Kahramanmaraş earthquake, sleep problems were identified as a psychiatric symptom in 96.9% of the sample. The study highlighted the importance of early detection and treatment of these sleep disturbances.[11]

Emotional availability of parents was significant in terms of not developing post-disaster psychopathology in children and adolescents. Depressive symptoms in adolescents worsen parent-child relationships.[12] Children who lost a parent in the "Iran earthquake" showed significantly higher behavioral and emotional problems compared to those who did not, with the surviving parent's mental state, social support, and socioeconomic status being important factors.[13] Patients with PTSD commonly report attention problems and dissociative symptoms.[14]

The incidences of post-earthquake ASD and PTSD vary widely in the literature, such as 12-81% and 1-95%, respectively.[3,15,16] In a systematic review investigating 76,101 earthquake survivors, PTSD prevalence was reported as 23.66%.[17] In a study conducted with 321 children after the "*1999 Marmara earthquake*," the rate of PTSD was 25.5%, while it was 16.5% for ASD and 38% for adjustment disorder. The psychopathologies were more prevalent among children aged 7-12 years, particularly in the bereaved and physically injured ones. In contrast, children younger than 80 months showed lower rates of PTSD, ASD, and adjustment disorder.[18] In the "*2012 Italy earthquake*," where 27 people lost their lives, PTSD prevalence was around 5% among 600 children.[19] Psychopathology prevalence, financial impact, and loss of life varied between disasters, influenced by disaster characteristics, event severity, regional factors, health service access, and prevention policies. Few studies have assessed differences in psychiatric symptoms between children and adolescents following a disaster. Previous post-earthquake studies commonly evaluated psychiatric symptoms using questionnaires; however, very little was conducted using a standardized clinical interview. Our study compared the clinical features of children and adolescents admitted to our hospital affected by the earthquake with different severity. Our first hypothesis is that patients who experienced parental loss or significant physical trauma, such as amputations, will exhibit more acute and post-traumatic stress symptoms. This is consistent with previous studies showing that the severity of trauma correlates with increased psychopathological risk. We also hypothesize that adolescents, due to their unique developmental stage, will exhibit a higher prevalence of psychopathologies, thus requiring more intensive psychotropic interventions compared to younger children.

MAIN POINTS

- Natural disasters affect individuals in various psychological aspects.
- Children and adolescents are at high risk of developing mental health problems during earthquakes.
- Psychiatric symptoms may vary according to age group.
- Multiple factors influence the prevalence of acute stress disorder (ASD) and post-traumatic stress disorder (PTSD).
- Different medications are used to treat children affected by trauma.

MATERIAL AND METHODS

The study included pediatric patients who met the eligibility criteria and were referred to, or sought a referral for, the child psychiatry division from February 6 to August 6, 2023. Most patients had been affected by both earthquakes, which occurred 9 hours apart. Only patients younger than 18 years who came from the earthquake region and had directly experienced the trauma were included in the study. Patients who were indirectly affected by the earthquake or had not been referred to psychiatric services were excluded. The inclusion and exclusion process is shown in Figure 1.

The following data were extracted from the patient records: sociodemographic details, the condition of the house/residence post-disaster, history of entrapment under debris, loss of a parent or sibling, previous psychiatric diagnoses, inpatient or outpatient care, and the need

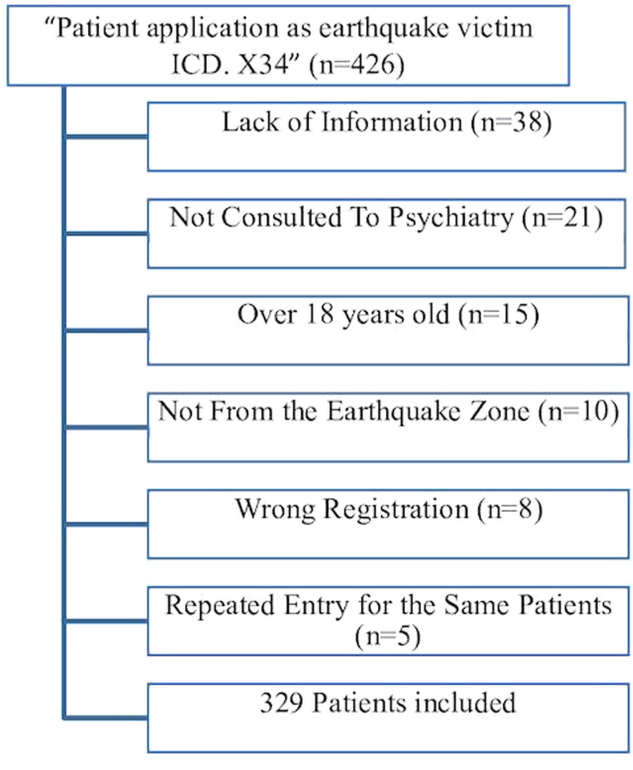


Figure 1. Flow chart of the inclusion process between February and August 2023.

for extensive medical interventions such as amputation, surgery, prosthesis, and physical therapy. Additionally, the presence of acute stress symptoms, dissociative symptoms, and prescribed medications were screened from the records. Pre-traumatic psychiatric diagnoses were confirmed via the National Diagnostic Bank (e-Nabız).

Current psychiatric diagnoses were confirmed through clinical interviews based on DSM-5 diagnostic criteria. Each interview lasted approximately 1 hour. Structured or semi-structured interview forms were not used, as the clinical approach prioritized crisis management. Various interrelated symptoms that affected daily functioning and quality of life, and have been reported to be striking in previous studies, were primarily investigated in the current study.[20-24]Interviews were conducted when patients and their parents or legal guardians were present and provided informed consent.

The research protocol was approved by the Etlik City Hospital Ethics Committee (IRB Date/Number: 06.12.2023/2023-733) and adhered to the principles outlined in the Declaration of Helsinki.

Statistical Analysis

All statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS), Version 26.0 (IBM Inc., Armonk, NY). The normality of continuous data distribution was assessed using the Kolmogorov–Smirnov test. Descriptive statistics were presented as numbers and percentages (n [%]) or mean ± standard deviation (SD), which demonstrated the demographic and clinical characteristics. The Pearson Chi-square test (χ^2) was performed on categorical variables to explore group differences. Effect sizes were calculated using the Phi coefficient (ϕ) for 2 × 2 tables and Cramér's V for larger tables. The Phi coefficient measures the strength of association in binary variables, while Cramér's V is used for larger contingency tables. The significance level was set at $\alpha = 0.05$. A multinomial logistic regression analysis (in line with the "entered" method) was conducted to determine the predictors of ASD and PTSD. The univariate analysis of the variables associated with ASD/PTSD diagnosis was carried out using Chi-square or Fisher's Exact test. The model fit was assessed using Hosmer–Lemeshow goodness of fit statistics. Cox & Snell and Nagelkerke R^2 assessed the model's explanatory power.

RESULTS

Among the 329 cases (mean age of 10.21 years ± 4.4 years), there was a slight male predominance, with 157 females (47.7%) and 172 males (52.3%). Of the cases, 60.8% (n = 200) were 12 years of age or younger (prepubertal), while 39.2% (n = 129) were older than 12 years (postpubertal). Among the patients, 59.7% were outpatients in child psychiatry, whereas 40.3% were referred to psychiatry from emergency and pediatric inpatient units. The city where the patients were located at the time of the earthquake is shown in Table 1. Only 2 cases were outside the house at the time of the earthquake, while the rest of the patients were caught at home. Although the earthquake's epicenter was Kahramanmaraş, the distribution of patients based on their provinces of origin is as follows: The majority of patients, 121 individuals (36.7%), were from Hatay. Adıyaman was the origin for 66 patients (20.0%), while 55 patients (16.7%) came from Kahramanmaraş. Malatya was home to 32 patients (9.7%), and Gaziantep to 22 patients (6.6%). The remaining 30 patients (9.1%) were from other provinces.

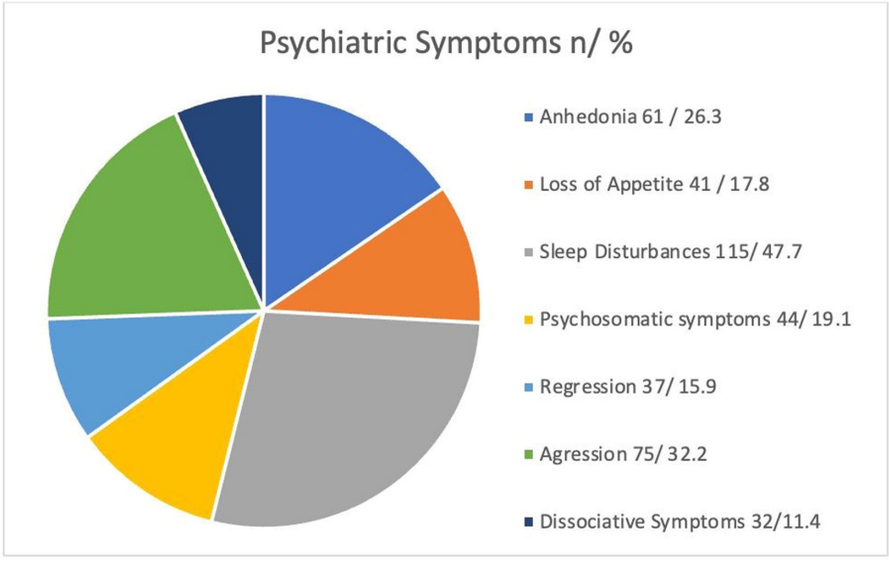
Table 1. Previous Psychiatric Disorders

Psychiatric Diagnosis	n	%
ADHD	37	11.1
GAD	27	8.1
SAD	2	0.6
Conduct disorder	9	2.7
OCD	7	2.1
Enuresis and/or encopresis	2	0.6
MDD	7	2.1
LD	2	0.6
ID	3	0.9
Autism	5	1.5
FND	2	0.6
Total patients with previous psychiatric diagnosis Total sample	82 329	24.9 100

Data presented as the number of clients along with frequencies (n,%) ADHD, attention deficit hyperactivity disorder; Autism, autism spectrum disorder; FND, functional neurological disorder; GAD, generalized anxiety disorder; ID, intellectual disabilities; LD, learning disabilities; MDD, major depressive disorder; OCD, obsessive compulsive disorder; SAD, socialaAnxiety disorder.

One hundred twenty-five cases were trapped under the rubble. While 48% (n = 60) of the patients were rescued by family members, 38.4% (n = 48) of those were rescued by means/vehicles owned, and 13.6% (n = 17) were rescued by search and rescue teams. Eighty-eight cases (30.7%) experienced the loss of a first-degree relative, including 31 who lost both parents, 26 who lost their mothers, 22 who lost their fathers, and 49 who lost their siblings. There were 112 patients with undamaged dwellings, 82 with damaged houses, and 133 with destroyed houses (the conditions of 60 patients' houses were unknown). Intensive care was required for 15.8% of patients (n = 52). Tissue and organ damage occurred in 39.2% of patients. Limb loss was present in 20 patients (6.6%), with 17 of these amputations performed at our hospital.

Surgical interventions were performed in 86 cases (25.8%). Among these interventions, fasciotomy was performed in 55 cases (16.5%), fracture fixation in 29 cases (8.7%), amputation in 17 cases (5.1%), and surgery for different



Note: Data presented as the number of clients along with the frequencies (n,%)

Figure 2. Psychiatric symptoms of the cases.

organ damage in 14 cases (4.2%). Sixty-six patients (19.8%) required physical therapy rehabilitation. One of the amputees died, and 16 patients needed a prosthesis.

There were 82 patients with a history of previous psychiatric diagnosis (24.9%). The rate of adolescents with a history of past trauma (23.3%) was significantly higher than that of children (6.7%) (χ^2: 13.131, P < .001, dF = 1, effect size: 0.24). 58.5% of the patients (n = 193) were evaluated within the first month after the earthquake. No significant difference was found between children and adolescents in terms of previous psychiatric diagnoses. The distribution of pre-earthquake psychiatric diagnoses, confirmed by the national diagnosis database, is summarized in Table 1.

Sleep-related problems were the most commonly reported psychiatric symptom among children and adolescents after the earthquake (n = 115, 47.7%), followed by anhedonia (n = 61, 26.3%). Figure 2 illustrates the distribution of current psychiatric symptoms that significantly impact patients' functionality throughout the majority of the day.

Anhedonia, loss of appetite, and dissociative symptoms were significantly more common in adolescents, while regression was more frequently observed in children under the age of 12 (Table 2).

Selective serotonin reuptake inhibitors (SSRIs) were prescribed to 24% (n = 81), melatonin to 22.5% (n = 75), antipsychotic treatment to 20.7% (n = 69), hydroxyzine to 1.8% (n = 6), propranolol to 1.2% (n = 4), and benzodiazepine to 1.5% (n = 5) of the patients. Medication use/requirement was significantly higher in adolescents. Melatonin was used in 65.2% of patients with sleep problems. Quetiapine was used in patients for whom melatonin was not effective. Different antipsychotic drugs were used in patients with behavioral problems and agitation. Information about medications is summarized in Table 3.

Table 2. Comparison of Psychiatric Symptoms Between Age Groups

Psychiatric Symptoms	Children			Adolescent			χ^2/dF	*P*	Effect Size
	Exist n (%)	Not Exist n (%)	Total n (%)	Exist n (%)	Not Exist n (%)	Total n (%)			
Anhedonia	17 (13.1)	113 (86.9)	130 (100)	44 (43.1)	58 (56.9)	102 (100)	25.1211	**< .001**	0.339
Loss of appetite	16 (12.4)	113 (87.6)	129 (100)	25 (24.8)	76 (75.2)	101 (100)	5.085 1	**.024**	0.160
Sleep disturbance	60 (44.1)	76 (55.9)	136 (100)	55 (52.4)	50 (47.6)	105 (100)	1.6221	.203	
Somatic symptoms	20 (15.5)	109 (84.5)	129 (100)	24 (23.8)	77 (76.2)	101 (100)	1.9921	.158	
Regression	28 (21.1)	105 (78.9)	133 (100)	9 (9)	91 (91)	100 (100)	5.3381	**.021**	0.163
Aggression	41 (31.5)	89 (68.5)	130 (100)	34 (33.0)	69 (67)	103 (100)	0.0571	.811	
Dissociative symptoms	11 (6.9)	149 (93.1)	160 (100)	21 (17.4)	100 (82.6)	121 (100)	6.4971	**.011**	0.163

Data presented as the number of clients along with frequencies (n,%). Chi-Square Tests (χ^2) were used for comparison of groups. P < .05 indicates statistical significance, and the significant values are in bold.

Table 3. Prescribed Medications

n %	Children			Adolescents			χ^2/dF	*P*	Effect Size
	Used (%)	Not Used (%)	Total (%)	Used (%)	Not Used (%)	Total (%)			
Medication initiation	70 (35)	130 (65)	200 (100)	73 (56.6)	56 (44.4)	129 (100)	14.8741	**< .001**	0.213
SSRI	33 (18.8)	143 (81.2)	176 (100)	48 (40)	72 (60)	120 (100)	16.211	**< .001**	0.234
Antipsychotics	34 (19.4)	141 (80.6)	175 (100)	35 (29.4)	84 (70.6)	119 (100)	3.931	**.047**	0.116

Data presented as the number of clients along with frequencies (n,%). Chi-Square Tests (χ^2) were used for comparison of groups. *P* < .05 indicates statistical significance, and the significant values are in bold. SSRI, selective serotonin reuptake inhibitors.

In 58.5% of the patients (n=193), the first psychiatric application was within 1 month after the earthquake. Acute stress disorder was diagnosed in 61.3% (n=114) of the patients who were admitted in the first month. 40.2% (n=53) of the patients admitted after the first month were diagnosed with PTSD (Table 4).

While the rate of ASD was similar between children and adolescents, the rate of PTSD was significantly higher in adolescents. The initial assessments were detailed, and the psychiatric diagnoses were assessed at the first evaluation. There was no significant difference between genders in terms of ASD and PTSD prevalence, however, with slightly higher numbers in girls. A notable elevation in the prevalence of ASD and PTSD was observed among individuals who experienced physical trauma (69.7%) (χ^2=20.914, *P* < .001, dF=1, effect size=0.264). The occurrence of ASD/PTSD was noted in 68.7% of individuals whose residences collapsed, in contrast to 41% of those whose homes remained intact or sustained partial damage (χ^2 = 19.93, *P* < .001, dF=2, effect size=0.274). Acute stress disorder/PTSD was diagnosed in 70.6% (n=24/34) of the patients with a history of previous trauma; however, it was 48.6% (n=105/216) for the patients without a history of previous trauma (χ^2=5.681, *P*=.017, dF=1, effect size=0.151). The prevalence of ASD was found to be significantly higher in those who underwent surgery (χ^2=22.59, *P* < .001, dF=1, effect size=0.273)

In the multivariate analysis, the possible associated factors identified with univariate analyses were further entered into the logistic regression analysis to determine the independent predictors (child/sdolescent, limb loss, necessity of ICU, previous psychiatric disorder, loss of sibling or parent, being trapped under the rubble, necessity of prosthesis, surgery) of patient outcome. The model fit was assessed using Hosmer–Lemeshow goodness of fit statistics (*P*=.853). The model's explanatory power was assessed using Cox & Snell and Nagelkerke R^2 (0.162-0.216) (Table 5).

Table 4. Acute Stress Disorder/ Post-Traumatic Stress Disorder

	Children Diagnosed (%)/ Total	Adolescent Diagnosed (%)/ Total	χ^2/dF	*P*	Effect Size
ASD	63 (57.8)/109	51 (67.1)/76	1.64 /1	.200	
PTSD	26 (31)/84	27 (56.3)/48	8.135 /1	**.004**	0.248

Data presented as the number of clients along with frequencies (n,%). Chi-Square Tests (χ^2) were used for comparison of groups. *P* < .05 indicates statistical significance, and the significant values are in bold ASD, acute stress disorder, PTSD, post-traumatic stress disorder.

DISCUSSION

Data on post-earthquake psychiatric findings in the pediatric population is limited. Most previous research has relied on screening methodologies, with a general absence of psychiatric interviews. The sample size was notably small in studies where child and adolescent psychiatrists conducted diagnostic assessments. In the current study, all participants were clinically evaluated by expert child and adolescent psychiatrists, and the same psychiatrist followed each participant. The study revealed that following the earthquake, sleep problems were prevalent as the primary psychiatric symptom among children and adolescents. The incidence of ASD remained similar between age groups, whereas PTSD was more common in the adolescent group. Several studies in the literature have found that the incidence of PTSD is higher in adolescents than in children.[18]

Upon research on quake-related psychiatric results in the pediatric population, ASD and PTSD rates vary widely. In a recent meta-analysis, the prevalence of post-earthquake PTSD was reported as 23.66%, but this is affected by many factors, such as proximity to the center zone of the disaster, socioeconomic status, parental loss, and physical damage.[17] Post-traumatic stress disorder rates ranged from 1% to 95%, while ASD rates ranged from 12% to 81%.[3,22-29] Acute stress disorder was diagnosed in 57.8% of the children and 67.1% of the adolescents, according

Table 5. Variables That May Be Associated with the Diagnosis of ASD/PTSD

Independent Variables	B (SE)	Sig.	Exp (B)	95% CI
Age	−0.654 (0.298)	0.028	0.520	0.290-0.933
Necessity of ICU	−1.138 (0.559)	0.042	0.321	0.108-0.958
Being Trapped under the rubble	0.742 (0.323)	0.022	2.100	1.116-3.954

The model's explanatory power was assessed using Cox & Snell and Nagelkerke R^2, and was found to be between 16.2% and 21.6%.
CI, confidence interval; ICU, intensive care unit.

to current findings. This ratio is higher than the previous findings of the "*1999 Marmara earthquake"* (16% ASD, 26% PTSD).[18] The high rates in our sample may be due to the large geographical area affected, ongoing aftershocks, and the fact that all participants were from the earthquake zone, many of whom were severely impacted. Post-traumatic stress disorder rates were 31% in children and 56.3% in adolescents. It is known that children of different ages are affected differently by earthquakes, and in our study, although ASD was observed at similar rates, PTSD was significantly higher in adolescents. Various studies in the literature have found that the incidence of PTSD is higher in adolescents than in children.[18] The higher ASD rates in our sample may depend on some differences, such as the larger region affected by the earthquakes, the continuation of severe aftershocks in many affected areas, receiving all applications from the central earthquake zone, and the majority of the sample being severely affected. Post-traumatic stress disorder rates were 31% in children and 56.3% in adolescents. The impact of earthquakes tends to be more severe in developing countries due to limited resources and slower disaster recovery efforts. Post-traumatic stress disorder prevalence among teenagers in China after the "*Wenchuan earthquake"* was 5.7%, significantly lower than our findings. This difference may be attributed to the higher levels of home destruction, familial losses, and physical injury observed in our sample.[28] The "*2010 Haiti earthquake"* showed how low socioeconomic status increases the psychological impact of the earthquake.[29] The increased severity of losses is associated with a heightened risk of developing PTSD, implying that a greater awareness of intangible losses in adolescents may amplify this risk. For preadolescents, effectively managing situations such as PTSD can be achieved by promptly eliminating concrete losses and providing reassurance. However, considering the advanced cognitive development of the adolescent age group, it is conceivable that addressing tangible deficits alone may not suffice, and prolonged psychotherapeutic intervention may be necessary. Future studies on how cognitive attributions predict the risk of psychopathology in different age groups and different individuals would be helpful.

The majority of the patients experienced the earthquake very severely; according to current findings, almost half of the participants were trapped under the rubble and lost 1 or both parents. Acute stress disorder/PTSD was found to be significantly higher in patients with physical trauma and those whose houses collapsed. In a recent study on children admitted to a university hospital in the earthquake zone after the "Kahramanmaras earthquake," the ASD rate was 81.6%.[3] The ASD rate may decrease when patients are moved away from the earthquake zone and are saved from the effects of ongoing aftershocks and disaster-related psychosocial stressors. Ensuring a sense of safety, promptly addressing basic needs, and swiftly providing access to health services are believed to decrease the likelihood of further psychopathology.

Studies investigating gender-related differences in PTSD symptoms have proposed conflicting findings. In some studies, girls had more post-traumatic symptoms following disasters, while in others, no difference by gender.[27,30] However, no significant difference was found between genders according to current results. Rather than gender-specific psychosocial differences, individual coping mechanisms and supportive family systems may be more critical. Consistent with the literature, ASD/PTSD was significantly higher in patients with a history of previous trauma.[31] Most individuals with a history of prior trauma (70%) received a diagnosis of ASD/PTSD following the earthquake. Consequently, it is recommended that patients with a pre-existing trauma history undergo more vigilant and comprehensive follow-up procedures after a new traumatic event. Selective serotonin reuptake inhibitors and antipsychotics are preferentially recommended for PTSD.[32] Although there is no significant difference in the use of psychotropic drugs in the long term after the earthquake, drugs were prescribed at high rates in the acute period.[33] Previous studies rarely reported the use of psychotropic medication in earthquake-affected patients. In the current pediatric sample, 43.3% of the patients required medication. A more recent study conducted in the earthquake region reported the medication requirement as 61.7% after the same earthquake.[3] The sense of safety provided by relocation may have contributed to managing patients without initiating medication. Our study used significantly more SSRIs and melatonin in adolescents than in children. This may be related to the higher incidence of PTSD in adolescents or to the fact that doctors more easily prescribe medication to this age group.

Previous studies have investigated the relationship between PTSD and dissociative symptoms.[34] However, research on dissociative symptoms specifically related to earthquakes is limited, with reported rates ranging between 25% and 77.7%.[35,36] The findings in the study, as mentioned above, solely considered scale-based evaluation results. Upon conducting interviews and evaluating the impact of dissociative symptoms on their lives during examinations, the prevalence was determined to range from 6.9% to 17.4%. The presence of dissociative symptoms may increase the incidence of post-traumatic stress.[37] In the current study, dissociative symptoms were significantly higher in adolescents than in children after the earthquake. In a study conducted with adolescents after the Kahramanmaraş earthquake, involving the evaluation of 947 adolescents using standardized scales, it was found that factors such as the adolescents' age, the total number of losses they experienced in the earthquake, the time they spent under the rubble, the duration they waited for their siblings to be rescued, and their experience of loss

due to the earthquake accounted for 74.4% of the post-traumatic stress reactions.[38] A significant prediction was identified between being trapped under debris and the incidence of ASD/PTSD. Furthermore, a study suggests that the duration of being trapped under debris may lead to variability in psychiatric symptoms. Among many variables, being trapped under rubble emerged as the only statistically significant predictor of PTSD/ASD, indicating that this factor has a notably greater impact compared to others.[39]

Aggression was observed in 31-33% of PTSD patients. No significant difference was found in preadolescent and adolescent groups.[40] In a study conducted in China, the relationship between PTSD and anhedonia was examined in patients followed up after the earthquake. In the studies conducted after the Kahramanmaraş earthquake with children, depressive symptoms were observed in 100%, and sleep problems were observed in 96.9%. These studies used only scales, without psychiatric interviews, and did not assess the impact of symptoms on functionality.[8,11] In our study, anhedonia was found to be 13.1% in the preadolescent age group and 43.1% in the adolescent age group.[41] Sleep problems, loss of appetite, and somatic symptoms were reported to persist up to 42 months after the tsunami in high school students,[42] and the rates of these symptoms were also high in our study. In accordance with our hypothesis that different symptoms may be more common in different age groups, anhedonia, loss of appetite, and dissociative symptoms were significantly higher in adolescents, while regression was more frequent in the child group. Sleep disturbances after the earthquake have been emphasized in previous studies[43-45] and were the most frequently observed symptom in our sample.

Certain limitations should be taken into account when considering the implications of the current findings. Although the lack of standardized scales or structured psychiatric assessments is the most obvious limitation, all diagnoses were made by a qualified child and adolescent psychiatrist and a unique psychiatrist for each patient. Due to the inaccessibility of certain data, adjustments to the sample size were necessary during the analysis, potentially limiting the generalizability of the findings. Patients were assessed at different time points post-earthquake, which is essential to consider as the trajectory of post-traumatic stress symptoms can evolve. This variation in timing may have influenced the severity or type of symptoms identified during the evaluations. The sample included participants who were admitted to the psychiatry clinic. Therefore, the most affected population by the earthquake could be selected to investigate, which limits the generalizability of the current findings. Future studies with a community-based sample will be more informative regarding the actual psychopathological results of earthquakes in the pediatric population. The psychopathology of the parents was not evaluated; the psychological availability of the parents may affect the child's psychopathology after trauma. The study could have explored a more comprehensive range of psychiatric symptoms, but it specifically chose to investigate only specific selected symptoms. Research utilizing standardized scales and structured psychiatric assessments is essential. Additionally, follow-up studies are needed to assess the efficacy of the medication. Lastly, the cross-sectional design of the study limits the ability to track the progression of psychiatric symptoms over time. Longitudinal studies would provide more insight into how these symptoms evolve and whether early interventions have long-term benefits.

In conclusion, the current study has contributed to the literature on psychiatric symptoms, diagnoses, and treatments of children and adolescents after a severe earthquake. The findings emphasize the diversity and intensity of psychiatric symptoms observed in pediatric groups. Anhedonia, loss of appetite, and dissociative symptoms were more common in the adolescent group, whereas regression was more common in the children's group. Sleep problems emerged as the symptom with the most significant impact on daily life in both groups. A higher prevalence of PTSD and increased psychotropic drug prescriptions were observed in the adolescent age group. Patients experiencing the loss of family members, relatives, or friends, as well as those whose homes collapsed or suffered extensive damage, and those who sustained physical injuries, exhibited a higher prevalence of ASD and PTSD. These findings show that more intensive psychological support should be provided for these vulnerable groups of patients following an earthquake.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics Committee Approval: This study was approved by the Ethics Committee of Etlik City Hospital (Approval No: AEŞH-EK1-2023-733, Date: 06.12.2023).

Informed Consent: Verbal/written informed consent was obtained from the patients, and their parents or legal guardians provided informed consent and were present.

Peer-review: Externally peer reviewed.

Author Contributions: Concept – Y.Ç., A.E., M.K., Y.Ö.; Design – Y.Ç., A.E., B.A., E.AA., M.C, M.K., Y.Ö.; Supervision – A.E., M.K., Y.Ö.; Resources – Y.Ç., A.E., B.A., E.AA., M.C., M.K., Y.Ö.,; Materials – Y.Ç., B.A., Y.HY., R.DT., M.K.; Data Collection and/or Processing –Y.Ç., Y.HY., R.DT., M.K.,Y.Ö.; Analysis and/or Interpretation – Y.Ç., Y.HY., R.DT., M.K.,Y.Ö.; Literature Search – Y.Ç., M.K.; Writing – Y.Ç., E.AA., M.C, M.K.; Critical Review – A.E., B.A., M.K., Y.Ö.

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