



Investigating the Impact of Psychosocial Problems in Parents Following an Earthquake on the Psychosocial Issues in Their Children and Their Relationship with Their Children

Deprem Sonrası Ebeveynlerde Görülen Psikososyal Problemlerin Çocuklarındaki Psikososyal Sorunlar ve Ebeveynlerin Çocuklarıyla İlişkileri Üzerine Etkisi

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ABSTRACT

Aim: This study aimed to determine the psychosocial status of parents and children one year after the earthquakes that affected 11 provinces in our country on February 6, 2023, and to identify the effects of parents' psychosocial problems on their health perceptions, the occurrence of psychosocial symptoms in their children, and parent-child communication.

Material and Method: The study had a cross-sectional descriptive design, and the sample included 204 individuals who volunteered to participate via online social media platforms between November 2023 and February 2024 and met the inclusion criteria. The data were collected using the "Parent and child information form" developed by the researchers based on the literature, the "Health Perception Scale," the "Beck Anxiety Inventory," the "Beck Depression Inventory," the "Parent-Child Relationship Scale," and the "Pediatric Symptom Checklist (PSC-17)" for children aged 6–16. Completing the data collection instruments took approximately 15–20 minutes.

Results: It was determined that 45% of parents had mild anxiety, while 35% had mild depression. Only 1% of children had a PSC-17 score of 12 or higher. There was no significant difference in communication with their children based on the parents' anxiety and depression levels ($p>0.05$). Children of parents experiencing anxiety and depression after the earthquake had statistically significant psychosocial problems. Parents' health perception scores varied according to their depression levels. Advanced analysis indicated that parents with moderate and severe depression scores had lower health perception scores compared to parents with low and mild depression scores ($p: 0.02$; $p: 0.012$).

Conclusion: Even one year after the earthquake, parents continued to experience anxiety and depression, and this situation affected the occurrence of psychosocial problems in their children. Additionally, parents with high levels of depression had lower health perception scores. These results demonstrate the continued need for psychosocial support for parents after an earthquake.

Key words: anxiety; depression; earthquake; health perception; parents; parent-child relation

ÖZET

Amaç: Bu çalışma, 6 Şubat 2023'te ülkemizde 11 ili etkileyen depremlerden bir yıl sonra ebeveynlerin ve çocukların psikososyal durumlarını belirlemeyi ve ebeveynlerin psikososyal problemlerinin sağlık algıları, çocuklarında psikososyal semptomların görülmesi ve ebeveyn-çocuk iletişimi üzerindeki etkilerini tespit etmeyi amaçlamaktadır.

Materyal ve Metot: Kesitsel ve tanımlayıcı tasarıma sahip bu çalışmanın örneklemini, Kasım 2023 ile Şubat 2024 tarihleri arasında çevrimiçi sosyal medya platformları aracılığıyla çalışmaya katılmaya gönüllü olan ve dâhil edilme kriterlerine uyan toplam 204 bireyden oluştu. Veriler, araştırmacılar tarafından literatür temel alınarak geliştirilen "Ebeveyn ve çocuk bilgi formu", "Sağlık Algısı Ölçeği", "Beck Anksiyete Envanteri", "Beck Depresyon Envanteri", "Ebeveyn-Çocuk İlişkisi Ölçeği" ve 6–16 yaş arası çocuklar için "Pediatrik Semptom Kontrol Listesi (PSC-17)" kullanılarak toplandı. Veri toplama araçlarını tamamlamak yaklaşık 15–20 dakika sürdü.

Bulgular: Ebeveynlerin %45'inde hafif anksiyete, %35'inde ise hafif depresyon olduğu belirlendi. Çocukların sadece %1'inde PSC-17 skoru 12 veya üzerinde bulundu. Ebeveynlerin anksiyete ve depresyon seviyelerine göre çocuklarıyla iletişimlerinde anlamlı bir fark bulunmadı ($p>0.05$). Deprem sonrası anksiyete ve depresyon yaşayan ebeveynlerin çocuklarında istatistiksel olarak anlamlı psikososyal problemler görüldü. Ebeveynlerin sağlık algısı puanları, depresyon seviyelerine göre değişiklik gösterdi. İleri analiz, orta ve şiddetli depresyon puanına sahip ebeveynlerin sağlık algısı puanlarının, düşük ve hafif depresyon puanına sahip ebeveynlere kıyasla daha düşük olduğunu gösterdi ($p: 0.02$; $p: 0.012$).

Sonuç: Depremden bir yıl sonra bile ebeveynler anksiyete ve depresyon yaşamaya devam etmekte ve bu durum, çocuklarında psikososyal problemler görülmesini etkilemektedir. Ayrıca, yüksek depresyon seviyesine sahip ebeveynlerin sağlık algısı puanları daha düşük bulunmuştur. Bu sonuçlar, deprem sonrası ebeveynlerin psikososyal desteğe ihtiyaç duyduklarını göstermektedir.

Anahtar kelimeler: anksiyete; depresyon; deprem; sağlık algısı; ebeveynler; ebeveyn-çocuk ilişkisi

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Introduction

Disasters cause physical, social, economic, and cultural losses for individuals, disrupt or halt perceived life, and can be either human-made or natural¹. Unpredictable natural events, whose impact areas and levels of severity cannot be precisely known and that result in significant loss of life and property, are referred to as “natural disasters”². Among the most frequently encountered natural disasters are earthquakes. Due to its geological position, Türkiye is in a high seismic activity zone and is classified as a first-degree earthquake region³. In recent years, various earthquakes of different magnitudes have occurred, and in February 2023, two earthquakes with magnitude 7.8 and 7.6 affected 11 of our provinces, resulting in substantial loss of life and property⁴.

Natural disasters such as earthquakes are traumatic experiences that can cause acute stress due to the risk of death and the potential for harm to oneself or loved ones. Additionally, they can lead to ongoing stress due to housing and economic, social, and emotional issues. Consequently, individuals may be psychosocially affected and experience conditions such as post-traumatic stress disorder (PTSD), anxiety, and depression^{5,6}. Therefore, monitoring and supporting survivors’ psychosocial well-being after disasters like earthquakes is crucial. Studies have shown that if appropriate support is not provided to individuals affected by disasters, long-term and increasing psychological symptoms may develop⁷⁻⁹. Conversely, when proper support is given, individuals can more easily adjust to their loss, adapt to their environment, and return to their everyday lives¹⁰.

It is noted that traumatic events affect not only the individuals directly involved but also those with whom they interact¹¹. Therefore, supporting parents, who are the primary caregivers of children, is particularly important after traumatic experiences. Nelson et al.¹² stated that the effects and behavioral patterns passed from parents to children can occur in various forms. They explain the transmission of negative emotions from parents to children with the spillover hypothesis, which conveys the same intensity of emotion. Conversely, the compensatory hypothesis explains how parents protect their children from adverse effects. This emotional transmission can also occur in one parent’s stress affecting the other parent, which affects communication with the child, known as the crossover hypothesis^{9,12}. Numerous studies have investigated the effects of various disasters on children’s mental health, demonstrating the significant impact of parental approaches

on children¹³⁻¹⁶. For example, a study conducted in Australia after Cyclone Larry found that children from dysfunctional families exhibited more behavioral problems three months post-cyclone¹⁷.

Perceived health status is a subjective, multidimensional, and robust indicator that enables individuals to determine their overall health condition biologically, mentally, and socially. Health perception can vary according to individuals’ living conditions, life expectations, and perspectives^{18,19}. Although subjective, health perception is also considered a psychosocial health indicator. It is noted that the psychosocial dimension increasingly plays a significant role in determining health and illness perceptions^{20,21}. However, no studies have been found in the literature evaluating the impact of health perception on psychosocial problems that may develop after an earthquake. Additionally, there are no studies assessing parents’ health perceptions and the occurrence of psychosocial problems after disasters or the impact of these factors on their children’s psychosocial conditions and parent-child relationships. Therefore, this study addresses two critical issues. Firstly, it aimed to uncover how the earthquake affected parents and their children and identify psychosocial adversities. It sought to determine how these conditions affect parents’ health perceptions and communication levels with their children.

Materials and Method

Study type and aim

This cross-sectional descriptive study aimed to determine the psychosocial status of parents and children one year after the earthquakes that affected 11 provinces in our country on February 6, 2023, and to identify the effects of parents’ psychosocial problems on their health perceptions, the occurrence of psychosocial symptoms in their children, and parent-child communication. In line with this aim, the following research questions have been formulated. – What is the prevalence of anxiety and depression in parents and the level of occurrence of psychosocial problems in children one year after the earthquake? – Is there a difference between the anxiety and depression experienced by parents and their health perceptions after the earthquake? – Is there a difference between the anxiety and depression experienced by parents and their communication with their children after the earthquake? – Is there a difference between the anxiety and depression experienced by parents and the psychosocial problems of their children after the earthquake?

The population and sample

The study population comprised all parents in the 11 provinces affected by the February 6 earthquake. The study sample included all individuals who volunteered to participate via online social media platforms between November 2023 and February 2024 and met the inclusion criteria. During this period, 204 parents were reached without a sampling selection method. A post-power analysis was conducted to determine if this sample size was sufficient for the power of data analysis. According to the power analysis based on the Beck Anxiety Inventory, with an alpha error rate of 0.05 and an effect size of 0.38 for 204 parents, the study's power was 95%. The sample included parents with at least one child aged 6–16 who lived in the earthquake region, knew Turkish and agreed to participate in the study.

Data collection

The data collection form was prepared using Google Forms and distributed to participants via social media. In the initial phase of the data collection form, participants were informed that the Personal Data Protection Law would not share their data. The exact page also included information about the study's purpose, the fact that participation was entirely voluntary and that participants could stop filling out the form at any stage of the study. After reading all this information and consenting to participate in the study, participants were directed to pages containing the data collection instruments. Completing the data collection instruments took approximately 15–20 minutes.

Instruments

The data were collected using the “Parent and child information form” developed by the researchers based on the literature, the “Health perception scale,” the “Beck anxiety inventory,” the “Beck depression inventory,” the “Parent-child relationship scale,” and the “Pediatric symptom checklist (PSC-17)” for children aged 6–16.

Parent and child information form: This form, prepared by the researchers, consists of 26 questions to determine the demographic data of parents and children and the parents' situations related to the earthquake. The form is divided into two sections. The first section includes seven questions related to the socio-demographic data of the parents (age, gender, marital status, occupation, education, etc.) and eight questions regarding their location, living, and health conditions post-earthquake. The second section comprises 11

questions aimed at gathering information about the children. This section includes questions about the age and gender of the youngest child aged 6–16 and their psychological and social impact from the earthquake.

Beck anxiety inventory (BAI): Developed to measure the frequency of anxiety symptoms experienced by individuals,²² the Turkish adaptation of the BAI was conducted by Ulusoy, Şahin, and Erkmen²³. The BAI consists of 21 items. It is a four-point Likert-type scale, rated from zero (not at all) to three (severely). The total score can range from 0 to 63, with scores of 0–9 indicating minimal anxiety; 10–18, mild anxiety; 19–29, moderate anxiety; and 30–63, severe anxiety. A higher score on the scale indicates a higher level of anxiety. The Cronbach's alpha coefficient of the scale was determined to be 0.93²³. In this study, the Cronbach's alpha coefficient was found to be 0.95 and was used to assess the anxiety levels of parents following the earthquake.

Beck depression inventory (BDI): Developed by Beck and colleagues to measure the severity of individuals' depressive complaints²⁴. The inventory is a four-point Likert-type scale consisting of 21 items. It is scored between zero (not at all) and three (severely), with total scores ranging from 0 to 63. A higher score on the scale indicates a higher severity of depression. The inventory includes items related to emotions (2 items), behaviors (2 items), cognitive state (10 items), interpersonal symptoms (1 item), and physical symptoms (6 items). Scores are interpreted as follows: 0–9 indicating minimal depression, 10–18 mild depression, 19–29 moderate depression, and 30–63 severe depression. The reliability and validity of the scale were assessed by Hisli in 1989, with a Cronbach's alpha value calculated at 0.74²⁵. In this study, the Cronbach's alpha coefficient was determined to be 0.901, and it was used to assess the depression levels of parents following the earthquake.

Pediatric symptom checklist (PSC-17): This (PSC-17) scale allows parents to evaluate their children's behaviors. It is used for the early diagnosis of psychosocial problems in children aged 6–16²⁶. The Turkish validity and reliability of the scale have been established, indicating it can be used with Turkish parents²⁷. This scale includes 17 items related to children's emotions and behaviors. It is a three-point Likert-type scale where 0=Not true/Never, 1=Sometimes or somewhat accurate, and 2=Very often true. Parents complete the scale based on their child's situation or the past six months.

All items on the scale are positive. The maximum score obtainable is 34, and the minimum score is 0. A total score of 12 or higher indicates the presence of a psychosocial problem, and such children need further evaluation for a definitive diagnosis²⁷. In the original study, the internal consistency coefficient for the subdimensions of the scale was determined to be $\alpha \geq 0.79$ ²⁶. In this study, Cronbach's alpha internal consistency coefficient was determined to be 0.773. The scale was used to identify the psychosocial and behavioral problems observed by parents in their children post-earthquake. The total score obtained from the scale was compared with the parents' levels of anxiety and depression to evaluate whether the psychosocial problems experienced by parents affected their children's psychosocial status.

Parent-child relationship scale (PCRS): The scale was developed by Aytaç et al.²⁸ (2018) to evaluate the relationship between parents and children. The scale consists of a total of 15 items and two subscales. The first subscale assesses the positive parent-child relationship, including warmth, interest, and sensitivity. The second subscale evaluates the negative parent-child relationship, including conflict, punishment, and negative emotions. It is a five-point Likert-type scale, with scores ranging from 1 to 5. Each subscale is evaluated separately. High scores on the first subscale indicate an increase in the positive relationship between the parent and child. The internal consistency coefficient for this subscale is 0.71. High scores on the second subscale indicate an increase in the negative relationship²⁸. The internal consistency coefficient for this subscale is 0.74. In this study, the total Cronbach's alpha internal consistency coefficient of the scale was found to be 0.907.

Health perception scale (HPS): The scale was developed by Diamond et al.²⁹ (2007) to evaluate individuals' perceptions of health. The adaptation of the scale into Turkish was conducted by Kadioğlu and Yıldız³⁰ (2012). It is a five-point Likert-type scale comprising 15 items and four sub-dimensions. These sub-dimensions are "Control Center," "Self-Awareness," "Certainty," and "Importance of Health." The items are scored between 1 and 5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. Items 2, 3, 4, 6, 7, 8, 12, 13, and 15 are negatively phrased and reverse-scored. The total score on the scale can range from a minimum of 15 to a maximum of 75. The Cronbach's alpha values for the subgroups of the scale

range from 0.82 to 0.91, with the total Cronbach's alpha coefficient being 0.70 or higher³⁰. In this study, the Health Perception Scale assesses individuals' health perceptions post-earthquake and determines if it impacts their psychosocial issues.

Ethical Considerations

The study received ethical approval from the University's Social and Humanities Ethics Committee (26.10.2023/09/02). An informed consent form was provided before parents filled out the online questionnaire. Only after they indicated their acceptance by marking the relevant field were they able to view the study questions. Parents were informed that their participation was voluntary, that no personal data would be recorded, and that they could withdraw from the study at any stage. The study adhered to the Declaration of Helsinki guidelines.

Data Analysis

The findings obtained in the study were evaluated using IBM Statistical Package for Social Sciences (SPSS) program version 26 (IBM Inc, Chicago, IL, USA) for statistical analyses. The normality of the distribution of variables was assessed with the Shapiro-Wilk test. Descriptive statistical methods such as mean/median, standard deviation, and frequency calculations were used to evaluate the study data. The Mann-Whitney U test, a non-parametric test, was used to assess the scores obtained from the scales to determine the difference between the two means. In comparison, the Kruskal-Wallis test was used to evaluate more than two means. The Mann-Whitney U test was used for post hoc analyses to determine the source of the differences between groups. The level of significance was planned to be set at $p < 0.05$.

Results

A total of 204 parents participated in the study between November 2023 and February 2024.

When examining the characteristics of the parents who participated in the study, most were mothers (70.6%) aged 35–44 (46.6%). Most parents resided in Hatay province (80.9%), and 59.3% had lost at least one relative due to the earthquake. More than half of the parents reported experiencing disruptions in accessing health services post-earthquake (57.8%), primarily due to damaged hospitals (47.1%). Half of the parents

(50.5%) had relocated to a different city after the earthquake, while those who did not relocate mainly stayed in tents (22.1%). It was found that only 8.3% of parents received psychological support following the earthquake (Table 1).

Table 1. General characteristics of the parents

Characteristics of the parents		n	%
Gender	Male	60	29.4
	Female	144	70.6
Age	18–24	8	3.9
	25–34	56	27.5
	35–44	95	46.6
	45–54	38	18.6
	55–64	7	3.4
Education	Primary	28	13.7
	Secondary	19	9.3
	High school	47	23.0
	University	90	44.1
	Postgraduate	20	9.8
Marital status	Married	185	90.7
	Single	19	9.3
Chronic disease	Yes	27	13.2
	No	177	86.8
Working status	Employed	115	56.4
	Unemployed	89	43.7
City of residence	Hatay	165	80.9
	Adana	12	5.9
	Gaziantep	10	4.9
	Şanlıurfa	8	3.9
	Adıyaman	5	2.5
	Kahramanmaraş	2	1.0
	Malatya	2	1.0
Loss of relatives	Yes	121	59.3
	No	83	40.7
Degree of proximity to the deceased	1. degree	6	4.9
	2. degree	25	20.7
	3. degree	71	58.7
	Friend	19	15.7
Receiving health services post-earthquake	Yes	86	42.2
	No	118	57.8
Reasons for not receiving health services*	Hospitals being damaged	96	47.1
	Lack of transportation	53	26.0
	Lack of supplies	53	26.0
	Lack of healthcare workers	42	20.6
Relocation post-earthquake	Yes	101	50.5
	No	103	49.5
Post-earthquake accommodation*	In a tent	45	22.1
	In their own home	25	12.3
	At a relative's house	25	12.3
	In a rented house	14	6.9
	In a container	6	2.9
Duration of leaving the city post-earthquake	Within the first week	68	33.3
	After the first week	26	12.7
	After the first month	6	3.0
Receiving psychological support post-earthquake	Yes	17	8.3
	No	187	91.7

Table 2 presents information about the children who participated in the study. According to the data, 55.9% of the children were male, and 92.2% had no chronic illnesses. Only 11.8% of parents reported receiving psychological support for their children after the earthquake, with psychologists being the most consulted professionals (7.8%). When asked how their children reflected their emotional changes post-earthquake, most parents indicated that their children were afraid of being alone (57.4%) and overly reactive to sounds (41.2%). Nevertheless, 61.8% of parents reported that their children adapted well post-earthquake. Additionally, 49.5% of parents rated their children's communication with them as "good," and 45.1% rated their children's communication with friends as "good."

Table 2. Information about the children

Characteristics of the children		n	%
Gender	Male	114	55.9
	Female	90	44.1
Chronic disease	Yes	16	7.8
	No	188	92.2
Receiving health services post-earthquake	Yes	111	54.4
	No	93	45.6
Reasons for not receiving health services *	Hospitals being damaged	73	35.8
	Lack of transportation	45	22.1
	Lack of supplies	39	19.1
	Lack of healthcare workers	38	18.6
Receiving psychological support for a child after an earthquake	Yes	24	11.8
	No	180	88.2
Source of support*	Psychotherapist	16	7.8
	Psychiatrist	6	2.9
	Pedagog	6	2.9
	Teacher	4	2.0
	Pediatrist (Physician)	2	1.0
Children's ways of expressing emotional changes post-earthquake*	Fear of being alone	117	57.4
	Overreacting to sounds	84	41.2
	Talking	68	33.3
	Aggression	45	22.1
	Did not react	38	18.6
	Playing games	35	17.2
Adaptation status post-earthquake	Yes	126	61.8
	No	78	38.2
Parent-child communication post-earthquake	Very good	33	16.2
	Good	101	49.5
	Moderate	58	28.4
	Bad	8	3.9
Peer communication post-earthquake	Very bad	4	2.0
	Very good	31	15.2
	Good	92	45.1
	Moderate	71	34.8
	Bad	6	2.9
	Very bad	4	2.0

*Multiple answers.

Table 3. Anxiety and depression status of parents and behavioral problems in children

Scales		N	%	Mean ± SD (Min-Max)
BAI	Minimal anxiety	60	29.4	19.78±14.62 (0–61)
	Mild anxiety	46	22.5	
	Moderate anxiety	48	23.5	
	Severe anxiety	50	24.5	
BDI	Minimal depression	61	29.9	15.35±9.76 (0–48)
	Mild depression	73	35.8	
	Moderate depression	53	25.9	
	Severe depression	17	8.3	
PSC 17	Under 12	202	99	1.83±2.35 (0–17)
	12 and above	2	1	

BAI: Beck anxiety inventory; BDI: Beck depression inventory; PSC 17: Pediatric symptom checklist.

Table 4. Parent-child relations, psychosocial problems in children, and health perception scores according to parental anxiety and depression

BAI	PCRS Total Mean ± SD (Mean Rank)	Positive Mean ± SD (Mean Rank)	Negative Mean ± SD (Mean Rank)	PSC 17 Mean ± SD (Mean Rank)	HPS Mean ± SD (Mean Rank)
Minimal anxiety	55.71±10.28 (101.03)	36.81±7.59 (107.96)	14.43±4.23 (96.84)	1.25±1.39 ^a (89.35)	48.10±3.57 (116.83)
Mild anxiety	55.67±9.56 (100.99)	36.36±7.07 (101.97)	14.82±3.74 (100.66)	1.10±1.46 ^b (82.49)	46.80±4.38 (99.79)
Moderate anxiety	54.83±8.90 (93.91)	35.97±6.62 (95.54)	14.25±3.95 (92.24)	2.35±2.13 ^c (121.10)	46.75±4.74 (102.22)
Severe anxiety	57.08±9.89 (113.90)	36.44±7.28 (103.12)	16.18±3.78 (120.83)	2.72±3.49 ^d (118.83)	45.98±4.66 (88.06)
Test*; p	2.955; 0.399	1.193; 0.755	6.918; 0.075	17.825 0.001**	6.669; 0.083
BDI					
Minimal depression	55.50±10.26 (98.79)	36.32±7.52 (103.10)	14.80±4.36 (102.09)	1.78±2.70 ^x (96.57)	47.95±3.82 ^m (116.07)
Mild depression	55.72±9.97 (105.36)	36.52±7.46 (104.73)	14.64±3.69 (99.14)	1.36±1.34 ^y (95.65)	47.68±3.70 ⁿ (109.31)
Moderate depression	56.90±7.60 (105.98)	37.20±5.79 (105.15)	15.09±3.71 (104.96)	2.16±2.86 ^z (108.18)	45.41±4.97 ^p (82.75)
Severe depression	54.11±12.23 (92.71)	33.94±8.11 (82.53)	15.82±4.86 (110.74)	3±2.26 ^t (135.47)	45.23±5.26 ^r (86.18)
Test*; p	1.067; 0.785	2.170; 0.538	0.668; 0.881	7.816; 0.049**	11.500; 0.009**

BAI: Beck anxiety inventory; BDI: Beck depression inventory; PCRS: Parent-child relationship scale; PSC 17: Pediatric symptom checklist.

*Kruskal-Wallis Test; ** p>0.05

a<c 0.004; a<d 0.007; b<c 0.001; b<d 0.002; x<t 0.020; y<t 0.006; m>n 0.002; n>p 0.012

Table 3 illustrates the depression and anxiety statuses of parents one year after the earthquake. Accordingly, it was determined that 45% of parents had mild anxiety, while 35% had mild depression. It was observed that only 1% of children had a PSC-17 score of 12 or higher.

Table 4 illustrates the relationship between parents' anxiety and depression levels post-earthquake and their communication with their children, it was found that there was no significant difference in communication

with their children based on the parents' anxiety and depression levels ($p>0.05$). However, when examining the presence of psychosocial problems in children, it was found that children of parents experiencing anxiety and depression after the earthquake had statistically significant psychosocial problems. Advanced analysis to determine the source of this difference revealed that the PSC-17 scores of children of parents with mild anxiety were statistically significantly lower than those of children of

parents with moderate and high anxiety levels (moderate anxiety $p: 0.046$; high anxiety $p: 0.004$). Similarly, children of parents with high depression scores had statistically significantly higher PSC-17 scores than those of children of parents with low and moderate depression scores (moderate depression $p: 0.02$; high depression $p: 0.006$). When examining parents' health perceptions based on their anxiety and depression levels, it was found that parents' health perception scores varied according to their depression levels. Advanced analysis indicated that parents with moderate and severe depression scores had lower health perception scores compared to parents with low and mild depression scores ($p: 0.02$; $p: 0.012$).

Discussion

Experiencing a natural disaster like an earthquake can profoundly impact society, leading to mental health problems such as stress, anxiety, and depression³¹. This study aimed to uncover how the earthquake affected parents and their children, identify the existing psychosocial adversities, and determine how these conditions influenced parents' health perceptions and communication levels with their children. Research indicates that mental health problems such as anxiety, depression, and post-traumatic stress disorder (PTSD) can increase in individuals after natural disasters like earthquakes. Thapa et al.³² (2018) assessed anxiety, depression, and PTSD among 198 individuals following the 2015 earthquake in Nepal and found that 20% of participants exhibited significant anxiety symptoms, while 8% displayed considerable depression symptoms. A systematic review investigating the prevalence of depression and PTSD in mothers after natural disasters found that 38% of mothers experienced depression post-earthquake³³. Similarly, Xi et al.³⁴ (2020) evaluated the prevalence of mental health problems such as anxiety and depression three months after the 2017 Jiuzhaigou earthquake and reported an anxiety prevalence rate of 53.8% and a depression prevalence rate of 69.6%. A study conducted six months after the 2005 Pakistan earthquake with 361 participants found anxiety and depression prevalence rates of 77.3% and 70.9%, respectively. In the current study, it was determined that 28.9% of parents had high anxiety, and 8.3% had high depression. These findings not only align with existing literature but also indicate that anxiety and depression remain prominent one year after the earthquake. However, because the levels of anxiety and depression in parents before and immediately after the earthquake were not known, comparisons with post-earthquake levels could not be made. This

complicates the interpretation of whether there were differences in parents' anxiety and depression levels before or after the earthquake.

Natural disasters significantly impact not only parents but also children. Exposure to earthquakes is well-known to lead to an increased prevalence of psychological disorders in children and adolescents, including post-traumatic stress disorder (PTSD), depressive disorder, substance abuse, anxiety, and somatization disorders³⁵⁻³⁷. Emotional and behavioral difficulties (e.g., fears, depressive mood, and behavioral problems) affecting daily life (e.g., peer relationships, academic performance) are significant for children and adolescents. Recent research has observed that earthquakes can delay emotion processing,³⁸ coping strategies,^{39,40} and the psychosocial functions of children and adolescents^{41,42}. In this study, parents assessed their children's emotional changes. When asked to express their observations on how their children reflected their emotional changes post-earthquake, most parents reported being afraid of being alone (57.4%) and were overly reactive to sounds (41.2%). Nevertheless, parents stated that their children adapted post-earthquake (61.8%), and their communication with both parents (49.5%) and friends (45.1%) was "good." When the occurrence of behavioral problems in children was evaluated using the PSC-17 scale, it was found that 99% of children scored below 12, indicating no behavioral issues. This is a positive indicator for children in the earthquake-affected region. However, despite these results being obtained through a scale, they are based solely on parents' observations, lacking children's self-assessments, making the evidence insufficient to draw definitive conclusions.

Experiencing stress during childhood is associated with an increased risk of emotional and behavioral problems, which may be linked to psychopathology later in life^{43,44}. Extremely stressful experiences, such as living in war zones and being exposed to natural disasters, have been associated with these changes⁴⁵⁻⁴⁷. Under normal circumstances, it has been indicated that stress experienced by parents for various reasons is related to developmental problems in their children⁴⁸⁻⁵⁰. A study conducted two years after the 2012 earthquake in Italy involved 682 children aged 9-14 and aimed to identify predictors of post-traumatic stress disorder (PTSD) and emotional and behavioral problems in children and adolescents. Three significant factors affecting emotional and behavioral problems were identified: the number of traumatic events experienced,

the severity of exposure to the event, and parental psychopathology³⁷. During Hurricane Katrina, a study examining the relationship between anxiety symptoms in children aged 6–17 before and after the hurricane found that perceived parental styles of acceptance and over-control affected anxiety levels¹⁴. Additionally, dysfunctional parental attitudes have been reported to be associated with poor mental health in children¹⁵. A study conducted three years after the magnitude nine earthquake in eastern Japan showed that parenting styles influenced behavioral problems among children post-earthquake¹⁶. In this study, when examining the occurrence of psychosocial problems in children based on parents' anxiety and depression levels, it was found that children of parents who experienced anxiety and depression after the earthquake had a statistically significant higher incidence of psychosocial problems. Specifically, children of parents with mild anxiety levels had lower PSC-17 scores compared to children of other parents. Conversely, children of parents with high depression scores had higher PSC-17 scores compared to children of parents with low and moderate depression scores. This result is consistent with the literature and shows that children are affected by the negative mental processes of their parents.

How health is perceived affects an individual's acquisition and maintenance of healthy living behaviors and thoughts about their health status⁵¹. Accordingly, those with a high health perception are expected to exhibit more health-protective and health-enhancing behaviors. However, considering that health is defined as a state of complete physical and mental well-being,⁵² it is crucial that health perception is related to physical and psychological health. The literature also indirectly explains the relationship between health perception and mental problems. Studies have shown that individuals with mental issues such as depression are affected in their health utilization^{53,54}. Individuals with high levels of depression may perceive their health negatively. As a result of depression, their health perception can deteriorate, affecting all areas of life and leading to withdrawal from even daily activities⁵⁵. When examining the health perceptions of parents based on their anxiety and depression levels, it was found that parents with moderate and high depression scores also had lower health perception scores compared to other parents (low depression $p: 0.029$; and mild depression $p: 0.012$). The differences observed in this study between levels of depression and health perception can be considered indicative of the amount of the need for psychosocial support.

Limitations of the Study

This study is significant in examining parents' mental problems post-earthquake and their impact on their relationships with their children, the occurrence of behavioral problems in children, and parents' health perceptions. However, an important limitation of the study is the lack of knowledge about the anxiety and depression levels of parents before the earthquake. As a result, comparisons with post-earthquake anxiety and depression levels could not be made. Additionally, not knowing the initial levels of anxiety and depression immediately after the earthquake makes it difficult to interpret whether there has been a reduction in these levels among parents. Another limitation is that the behavioral problems in children were assessed based on proxy reports from parents. None of these children were medically evaluated for behavioral issues.

Conclusion and Recommendations

This study aimed to identify parents' psychosocial problems and evaluate their impact on their health perception, relationships with their children, and the presence of psychosocial symptoms in their children. The findings indicate that even one year after the earthquake, parents continued to experience anxiety and depression, albeit at mild levels, and this situation affected the occurrence of psychosocial problems in their children. Additionally, parents with high levels of depression had lower health perception scores. These results demonstrate the continued need for psychosocial support for parents after an earthquake. Psychosocially supported parents are more likely to raise children without psychosocial problems, who, in turn, will become adults without psychosocial issues in the future.

Considering that the physical and psychosocial health of parents, who constitute a significant portion of the population, has crucial impacts on both community health and their children's health, nurses must fulfill their roles in health protection and education. During this process, nurses should promote, protect, and instill proper health behaviors in individuals, families, and the community. Nurses need to be aware of the needs of each family member, the smallest unit of society. Nurses should be supportive in helping individuals cope with potential and existing problems. To support parents and help them cope with psychosocial issues, nurses must first be aware of the existing or possible symptoms.

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