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Determining the Relationship Between Earthquake Trauma Level and Self-Care Behaviors in Heart Failure Patients Living in the Earthquake Region Study: A Descriptive Study

Deprem Bölgesinde Yaşayan Kalp Yetmezliği Hastalarında Deprem Travma Düzeyi ile Öz Bakım Davranışları Arasındaki İlişkinin Belirlenmesi: Tanımlayıcı Çalışma

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ABSTRACT Objective: This study was conducted descriptively to determine the relationship between earthquake trauma level and self-care behaviors in heart failure (HF) patients living in an earthquake zone. **Material and Methods:** The study was conducted with 126 patients diagnosed with HF who applied to the cardiology clinic of a university hospital between August 20 and December 27, 2023. The data were collected using the "Person Identification Form", "Post-Earthquake Trauma Level Determination Scale (PETLDS)", and "European HF Self-Care Behavior Scale-9". In the statistical analysis of the data, number, percentage and mean, Kolmogorov-Smirnov normality test result, student t-test in independent groups, one-way analysis of variance, Mann-Whitney U, Kruskal-Wallis and Spearman correlation tests were used. In addition, multiple regression analysis was applied in the analysis. **Results:** It was determined that there was a weak positive significant relationship between the post-earthquake trauma score and the Self-Care Scale score ($p<0.05$). It was found that as the mean post-earthquake trauma score increased, the Mean Self-Care Scale score also increased ($p<0.05$). As a result of the regression analysis, it was determined that earthquake-related situations had a 28.7% effect on PETLDS mean scores ($R^2=0.287$, $p<0.001$). Current residence the earthquake was found to have a positive effect on the PETLDS mean scores (B=0,290; $p<0.001$). **Conclusion:** It is recommended to provide psychosocial support to reduce the trauma levels of HF patients who survived the earthquake, to increase the self-awareness of individuals so that they can use self-care behaviors positively, and to provide training in this direction.

Keywords: Earthquake; psychological trauma; heart failure; self care

ÖZET Amaç: Bu araştırma, deprem bölgesinde yaşayan kalp yetmezliği hastalarında deprem travma düzeyi ile öz bakım davranışları arasındaki ilişkinin belirlenmesi amacıyla tanımlayıcı olarak yapıldı. **Gereç ve Yöntemler:** Araştırmaya, 20 Ağustos-27 Aralık 2023 tarihleri arasında bir üniversite hastanesinin kardiyoloji kliniğine başvuran, New York Kalp Derneği (the New York Heart Association) sınıflamasına göre 4. evrede olmayan, ayaktan tedavi gören ve araştırmaya gönüllü olan 126 kalp yetersizliği hastası dâhil edildi. Araştırmanın verileri; "Kişi Tanımlama Formu", "Deprem Sonrası Travma Düzeyi Belirleme Ölçeği [Post-Earthquake Trauma Level Determination Scale (PETLDS)]" ve "Avrupa Kalp Yetmezliği Öz Bakım Davranış Ölçeği-9" kullanılarak toplandı. Verilerin istatistiksel analizinde sayı, yüzde ve ortalama, Kolmogorov-Smirnov normallik testi sonucu bağımsız gruplarda öğrenci t-testi, tek yönlü varyans analizi, Mann-Whitney U, Kruskal-Wallis ve Spearman korelasyon testleri kullanıldı. Ayrıca analizde çoklu regresyon analizi uygulandı. **Bulgular:** Deprem sonrası travma puanı ortalaması ile Öz Bakım Ölçeği puanı ortalaması arasında zayıf pozitif anlamlı ilişki olduğu belirlendi ($p<0,05$). Deprem sonrası travma puanı ortalaması arttıkça Öz Bakım Ölçeği puanı ortalamasının da arttığı bulundu ($p<0,05$). Regresyon analizi sonucunda depremle ilişkili durumların PETLDS ortalama puanları üzerinde %28,7'lik bir etkiye sahip olduğu belirlendi ($R^2=0,287$, $p<0,001$). Depremin yaşandığı mevcut ikametgâhın PETLDS ortalama puanları üzerinde olumlu bir etkiye sahip olduğu bulundu (B=0,290; $p<0,001$). **Sonuç:** Depremden sağ kurtulan kalp yetmezliği hastalarının travma düzeylerini azaltmak için psikososyal destek sağlamak, bireylerin öz bakım davranışlarını olumlu yönde kullanabilmeleri için öz farkındalıklarını artırmak ve bu yönde eğitim verilmesi önerilir.

Anahtar Kelimeler: Deprem; psikolojik travma; kalp yetmezliği; öz bakım

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Heart failure (HF) is a chronic disease with multifactorial etiologies. It usually occurs as a result of dysfunctions in the myocardium, main artery, and valve system of the heart, causing changes in cardiac output and negatively affecting vital organs, and can be fatal.[1] Cardiovascular disease-related deaths are the leading cause of death in our country, accounting for 33.4% of all deaths. According to the World Health Organization report, heart diseases are responsible for 16% of all deaths worldwide, and it is estimated that they will be responsible for the deaths of 22.2 million people by 2030.[2,3]

Self-care involves the ongoing participation in behaviors necessary to protect and maintain one's own health and is closely related to the management of symptoms.[4,5] Except during attack periods, treatment and care in HF are mostly provided under the individual's own control and self-care. One of the factors affecting disease self-care is psychological effects.[4] As is known, natural disasters, especially earthquakes, are frightening, severe, and uncontrollable traumatic events.[6,7] Earthquakes affect individuals psychosocially, economically and physically depending on their intensity, size, destruction and losses.[7] The loss of life and dramatic scenes caused by earthquakes cause negative emotions such as fear, anxiety and helplessness in people who experience the earthquake. Such traumatic emotions negatively affect human psychology and trigger the body's stress mechanism. Due to the effect of hormones secreted in stress on the veins, it causes devastating effects in individuals with cardiovascular system diseases. The devastating effect of earthquakes, especially in patients with heart failure, causes the effects of the disease to progress negatively in these individuals.[6] Two earthquakes measuring 7.7 and 7.6 on the Richter scale occurred in Türkiye, causing great destruction in 11 provinces in the region, and more than 50,000 people lost their lives. According to the released data, about 14 million people have been affected by this disaster.[8] Those with chronic diseases are the most affected group in terms of self-care sustainability behaviors during and after the earthquake. Therefore, it is important to start interventions as soon as possible to protect and maintain health after the earthquake, reduce the level of earthquake trauma and increase self-care behaviors. For this reason, nurses who work one-on-one with heart patients affected by the earthquake have great duties and responsibilities. As a result of our literature review, no study was found that examined the effect of the level of trauma after the earthquake on self-care behaviors in HF patients who were victims of the earthquake. Therefore, this study was planned as a descriptive study to determine the relationship between earthquake trauma level and self-care behaviors in HF patients living in the earthquake region and to contribute to future studies.

Research Questions:

1. Do the sociodemographic characteristics of HF patients have an impact on the earthquake trauma level and self care behaviors of earthquake victims?

2. Do earthquake-related characteristics of HF patients have an impact on earthquake trauma level and self care behaviors?

3. Does the level of earthquake trauma have an effect on self care behaviors in earthquake victims with heart failure?

MATERIAL AND METHODS

TYPE OF RESEARCH, POPULATION AND SAMPLE

In this cross-sectional research, the minimum number required to find a statistically significant effect size of p=0.36 in the correlation between earthquake trauma level and self care behaviors in HF patients was determined as 55 (α=0.05; 1-β=0). ,80) [4] Power analysed in G*Power 3.9.1 software.

The universe of the study consisted of patients with HF who applied to the Cardiology Outpatient Clinic of Harran University Training and Research Hospital between 20 August-27 December 2023. To be included, patients had to be free of cognitive impairment, willing to communicate, not in stage 4 according to the New York Heart Association (NHYA) classification, treated as outpatients and consent to participate. Exclusion criteria for the study were determined as having cognitive impairment, not being willing to communicate, being in stage 4 according to the NHYA classification, and not consenting to participation. The research was conducted on 126 patients via face-to-face interviews, each lasting 25-30 minutes.

DATA COLLECTION TOOLS

Data of the Research: The data were collected using the "Patient Diagnosis Form", "Post-Earthquake Trauma Level Determination Scale (PETLDS)", and "European HF Self-Care Behavior Scale-9 (EHFScBS-9)".

Personal Identification Form: Created in light of the literature, this form includes sociodemographic characteristics of the patients (age, gender, marital status, education level, occupation, income level), disease-related characteristics (smoking, duration of disease, going to check-ups, and receiving education about the disease), and characteristics related to the earthquake (where the earthquake occurred, being trapped under rubble, losing a relative, current residence, and difficulties experienced with the disease during the earthquake).[9-11] It consists of 20 questions in total.

Post-Earthquake Trauma Level Determination Scale: Developed by Tanhan and Kyri in 2013, this scale has 20 items and uses a 5-point Likert format. Likert statements are graded from "I completely disagree" to "I completely agree". The 11th-12th items in the scale are reversed and scored. The scale ranges from 20 to 100. A score of 52.385±5.051 indicates traumatic experiences. Higher scores show greater impact from earthquakes.[6] The scale had a Cronbach alpha of 0.87; the present study's alpha was 0.93.

European HF Self-Care Behavior Scale-9: Jaarsma et al. (2009) developed the 12-item EHFScBS-9, which was later reduced to 9 items. In 2017, Yıldız and Erci evaluated the scale's reliability and validity. The scale has 9 items and employs a 5-point Likert scale. Items are rated from 1 (complete disagreement) to 5 (complete agreement). The lowest score is 9, and the highest is 45. Higher scores indicate better self-care.[12] The Cronbach's alpha coefficient was 0.82 in this study and 0.83.

EVALUATION OF DATA

SPSS 22 package program was used. Descriptive statistics such as mean, standard deviation, number and percentage were used in the analysis of the data. Kolmogorov-Smirnov test was used to test the suitability for normal distribution in the study. Student t-test, one-way analysis of variance were used for normally distributed data as a result of this test, and Mann-Whitney U, Kruskal-Wallis and Spearman correlation tests were used for non-normally distributed data. "post hoc" tests included Tukey HSD and Tamhane's T2 tests. Multiple regression analysis was performed to examine the effect of earthquake-related conditions on PETLDS mean scores.

ETHICAL ASPECT OF RESEARCH

The research was conducted in accordance with the ethical standards set forth by the Harran University Clinical Research Ethics Committee (date: July 24, 2023; no: 2023/13/04) and the Harran University Hospital (permission number E-66063783-622.99-242567). Patients were informed and gave their consent. They then responded to survey questions. The research was conducted in accordance with the Declaration of Helsinki, and participant confidentiality was safeguarded.

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS AND EXAMINATION OF THESE CHARACTERISTICS WITH SCALE SCORE

It was determined that 44.4% of participants had a disease diagnosis period of 1-5 years, 70.6% of participants had another chronic disease, 81.7% underwent regular check-ups, and 55.6% lacked disease education. The mean total score for PETLDS was 56.04±17.18, while for EHFScBS-9 it was 26.86±7.87. The PETLDS score of participants who had completed primary school, had low income levels, attended regular check-ups, and received training was high ($p<0.05$). The EHFScBS-9 score of participants who received information was higher ($p<0.05$) (Table 1).When we look at the patients' education status regarding their disease, it was seen that the mean scores obtained from both scales were statistically higher than those who did not receive education ($p<0.05$) (Figure 1).

EVALUATION OF THE SITUATIONS EXPERIENCED BY PATIENTS REGARDING THEIR LIVES AFTER THE EARTHQUAKE

It was determined that 87.3% of the participants were at home during the earthquake, 10.3% were trapped under debris, and 50.8% had difficulty in receiving health care after the earthquake.

TABLE 1: Sociodemographic characteristics of the patients and examination of these characteristics with scale score averages

	X±SD	Maximum	Minimum		
Age (year)	59.47±13.87	88	20		
Characteristic	**n (%)**	**PETLDS X±SD**	**p test value**	**EHFScBS-9 X±SD**	**p test value**
Age groups					
18-35	8 (6.3)	50.50±9.87		26.25±6.08	
36-49	17 (13.5)	62.17±18.25	p=0.321	29.58±8.81	
50-65	47 (37.3)	55.91±17.57	KW=3.498	27.70±8.08	p=0.307 KW=3.610
65 above	54 (42.9)	55.03±17.25		25.37±7.46	
Gender					
Women	63 (50.0)	58.15±16.64	p=0.158	26.17±8.01	p=0.329 U=0.977
Men	63 (50.0)	53.84±17.45	t=-1.421	27.55±7.72	
Marital status					
Married	94 (74.6)	55.18±17.82	p=0.318	26.28±7.46	p=0.199
Single	32 (25.4)	58.40±14.86	t=-1.006	28.56±8.87	t=-1.302
Education					
İlliterate[a]	33 (26.2)	51.27±16.67[a]		25.03±7.53	
Literate[b]	32 (25.4)	54.62±18.07[b]	**p=0.049**	24.78±7.36	
Primary education[c]	22 (17.5)	65.31±15.95[c]	**KW=9.541**	29.09±7.81	p=0.069
Secondary education[d]	25 (19.8)	55.68±16.47[d]	**c>a,b,d,e**	27.68±8.37	KW=8.690
University and above[e]	14 (11.1)	54.83±16.22[e]		30.58±7.56	
Occupation					
Officer	10 (7.9)	55.00±15.68		27.40±7.02	
Employee	11 (8.7)	56.27±16.78		27.90±7.02	
Retired	21 (16.7)	60.95±14.24	p=0.227	28.09±9.36	
Self-employment	16 (12.7)	49.31±20.66	F=1.407	27.56±8.84	p=0.814 F=0.746
Housewife	46 (36.5)	58.50±18.17		26.21±7.94	
I Have No Job	22 (17.5)	51.22±14.27		25.77±6.15	
Income-expenditure status					
Income>expense[a]	9 (7.1)	48.44±15.41[a]	**p=0.046 KW=6.142**	27.66±7.68	
Income=expense[b]	62 (49.2)	53.69±16.77[b]	**c>a,b**	27.35±7.68	p=0.556 F=0.943
Income<expense[c]	55 (43.7)	59.83±17.18[c]	**b>a**	26.18±8.19	
Smoking status					
Yes	42 (33.4)	55.19±17.89	p=0.869	27.95±8.07	
No	58 (46.0)	55.93±16.45	F=0.869	25.62±7.70	p=0.298 F=1.152
I quit	26 (20.6)	57.46±17.90		27.88±7.80	
Duration of disease					
1-5/years	56 (44.4)	58.07±16.65		27.51±7.85	
6-10/years	36 (28.6)	52.27±18.81	p=0.281 F=1.182	25.61±7.51	p=0.517 F=0.663
10/years and above	34 (27.0)	56.52±15.83		27.11±8.32	
Other chronic disease					
Yes	89 (70.6)	57.50±17.07	p=0.127	27.10±8.00	p=0.594
No	37 (29.4)	52.37±16.93	t=1.544	26.93±7.60	t=0.531
Going for disease control					
Yes	103 (81.7)	57.43±17.43	**p=0.021**	27.07±8.15	p=0.690
No	23 (18.3)	49.56±13.41	**U=2.392**	25.91±6.48	U=-0.398
Have you received education about your disease?					
Yes	56 (44.4)	63.42±15.94	**p=0.000**	28.62±8.32	**p=0.027**
No	70 (55.6)	50.05±15.74	**t=4.703**	25.45±7.20	**t=2.247**
From whom did you receive training?					
Physician	28 (50.0)	59.67±14.17	p=0.078	27.75±8.11	p=0.437 t=0.784
Nurse	28 (50.0)	67.17±16.96	t=1.795	29.50±8.58	
Scale total score means X±SD	126 (100,00)	56,04±17,18		26,86±7,87	

SD: Standard deviation; PETLDS: Post-Earthquake Trauma Level Determination Scale; EHFScBS-9; European Heart Failure Self-Care Behavior Scale-9; KW: Kruskal-Wallis test; t: Student t-test; U: Manny-Whitney U test; F: Analysis of variance test

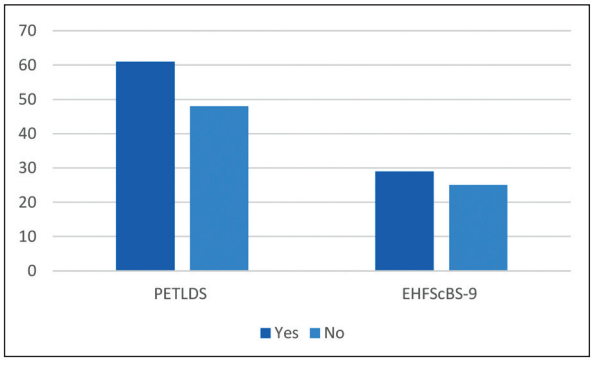

FIGURE 1: Comparison of mean scale scores of patients according to their education status about their disease

PETLDS: Post-Earthquake Trauma Level Determination Scale; EHFScBS-9; European Heart Failure Self-Care Behavior Scale-9

The PETLDS scores found to be higher for participants who experienced the earthquake outside their homes, were trapped under rubble, lost a 1st-degree relative and staying at a relative's house or container right now ($p<0.05$). It was observed that the trauma level of those currently living outside their own homes and the EHFScBS-9 scores of those living in a container outside their home were significantly higher than the other groups ($p<0.05$) (Table 2). Regarding the place where the patients lived after the earthquake, it was found that the mean scores of both scales of those living in containers were statistically higher than those staying at home ($p<0.05$) (Figure 2).

THE RELATIONSHIP BETWEEN PARTICIPANTS' TRAUMA LEVELS AND SELF CARE BEHAVIORS AVERAGE SCORES AFTER THE EARTHQUAKE

It was determined that there was a weak positive significant relationship between of the PETLDS score and the EHFScBS-9 score ($p<0.05$). It was deter-

TABLE 2: Evaluation of the situations experienced by patients regarding their lives after the earthquake

	n (%)	PETLDS X±SD	p test value	EHFScBS-9 X±SD	p test value
Where did you experience the earthquake?					
At home	110 (87.3)	54.40±17.34	**p=0.006**	26.55±7.64	p=0.211
Out of home	16 (12.7)	66.93±10.85	**U=-2.749**	29.00±9.26	t=-1.265
Have you been trapped under debris?					
Yes	13 (10.3)	73.84±11.17	**p=0.000**	29.53±9.22	p=0.281
No	113 (89.7)	53.94±16.51	**t=5.738**	26.55±7.68	t=1.121
Loss in earthquake					
No I didn't[a]	45 (35.7)	45.28±14.55[a]	**p=0.000 F=19.348**	27.00±7.85	
1st degree close[b]	6 (4.8)	77.83±11.46[b]	**b>a,c,d**	33.50±11.11	
2nd degree close	53 (42.1)	64.13±14.18[c]	**c>d, d>a**	26.01±7.93	p=0.180
Neighbor, friend[c]	22 (17.5)	52.36±14.46[d]		26.81±6.47	F=1.656
Where are you staying right now?					
In my house[a]	79 (62.7)	50.39±15.56	**p=0.000 F=13.652**	25.20±7.58[a]	**p=0.000**
At a relative's house[b]	11 (8.7)	65.36±18.68	**b>a**	23.54±6.26[b]	**F=10.425**
Container[c]	35 (28.6)	65.44±14.73	**c>a**	31.52±7.05[c]	**c>a,b**
Difficulty measuring blood pressure after the earthquake					
Yes	53 (42.1)	54.50±17.16	p=0.252	27.27±7.84	p=0.43
No	73 (57.9)	58.05±17.01	t=-1.152	26.30±7.94	KW=-0.777
Difficulty in adapting to diet after the earthquake					
Yes	54 (42.9)	57.12±15.81	p=0.524 t=0.652	25.48±7.82	p=0.088
No	72 (57.1)	55.15±18.10		27.90±7.95	t=1.722
Difficulty in complying with medication after the earthquake					
Yes	61 (48.4)	57.03±16.62	p=0.513	27.49±7.87	p=0.358
No	65 (51.6)	55.03±17.65	t=0.656	26.19±7.87	t=0.923
Difficulty in obtaining health care after the earthquake					
Yes	93 (50.8)	57,60±17,4	p=0.088	26,74±8,18	p=0.769
No	33 (49.2)	51,66±15,89	t=-1.717	27,21±7,02	t=0.294

PETLDS: Post-Earthquake Trauma Level Determination Scale; SD: Standard deviation; EHFScBS-9; European Heart Failure Self-Care Behavior Scale-9; U: Manny-Whitney U test; t: Student t-test; F: Analysis of variance test; KW: Kruskal-Wallis test

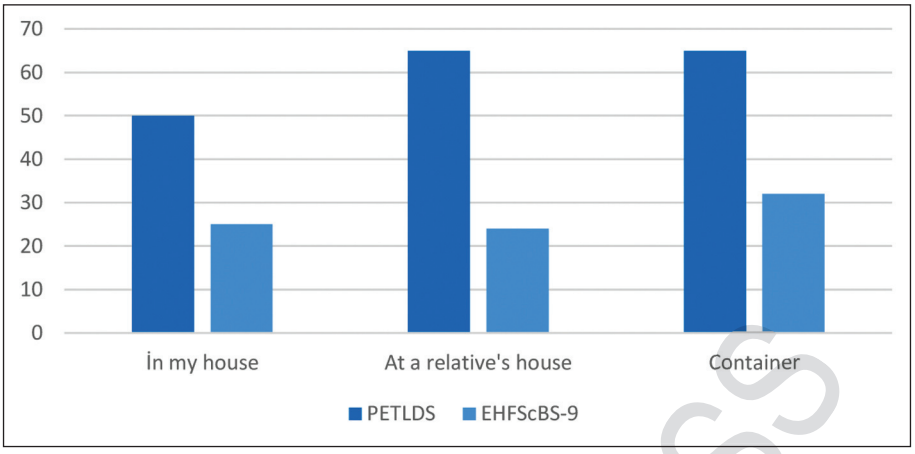

FIGURE 2: Comparison of the average scores of the patients on the scales according to where they lived after the earthquake
PETLDS: Post-Earthquake Trauma Level Determination Scale; EHFScBS-9; European Heart Failure Self-Care Behavior Scale-9

TABLE 3: The relationship between participants' trauma levels and self care behaviors average scores after the earthquake

Scales	PETLDS
EHFScBS-9	p=0.001 r=0.290

PETLDS: Post-Earthquake Trauma Level Determination Scale; EHFScBS-9; European Heart Failure Self-Care Behavior Scale-9

mined that as the PETLDS score average increased, the EHFScBS-9 average score also increased ($p<0.05$) (Table 3).

REGRESSION ANALYSIS OF SCALE AVERAGE SCORES

In multiple linear regression analysis, a model was created in line with the purpose of the research and the effects of earthquake-related situations on PETLDS mean scores were evaluated. PETLDS mean scores were taken as dependent variables. The place where the earthquake occurred, being buried under debris due to the earthquake, losing relatives in the earthquake and current residence status were taken as independent variables with statistical significance. As a result of the regression analysis, it was determined that earthquake-related situations had a 30.4% effect on PETLDS mean scores ($R^2=0.304$, $p<0.001$). Status of losing relatives in the earthquake was found to have a positive effect on the PETLDS mean scores (B=3,948; $p<0.001$) (Table 4).

DISCUSSION

EXAMINATION OF PARTICIPANTS' SOCIODEMOGRAPHIC CHARACTERISTICS THROUGH SCALE SCORE AVERAGES

Earthquakes, occurring suddenly, give rise to additional problems due to destruction, death, and injuries. They also hold a distinct place among natural

TABLE 4: Regression analysis between participants' situations related to earthquake and PETLDS

	PETLDS			
Situations related to earthquake	**B**	**SD**	**t value**	**p value**
Constant	3.171	0.503	6.301	<0.001
The place where the earthquake occurred	2.744	2.034	-0.213	0.180
Status of being buried under debris due to earthquakes	-13.602	4.238	-3.209	<0.05
Status of losing relatives in the earthquake	3.948	1.082	0.279	<0.001
Current residence	3.360	0.989	3.397	<0.05
$R^2=0.304$ F=13.088 p<0.001				

PETLDS: Post-Earthquake Trauma Level Determination Scale; SD: Standard deviation

disasters due to the potential for chronic effects caused by aftershocks.[6] Therefore, natural disasters like earthquakes are fundamental stress factors for individuals with cardiovascular diseases. In the event of natural disasters such as earthquakes, individuals with cardiac arrhythmias and HF experience a worsening of symptoms and signs that persist for up to 6 months from the onset of the event.[13] Additionally, some studies report an increase in the incidence and mortality rates of cardiovascular diseases such as congestive heart failure, stress cardiomyopathy, myocardial infarction, high blood pressure, ventricular arrhythmias, and atrial fibrillation after disasters.[14,15]

EXAMINATION OF PARTICIPANTS' POST-EARTHQUAKE TRAUMA LEVELS

Bearing witness to a natural disaster is an experience that profoundly impacts individuals, resulting in anxiety and stress. Initially appearing as a normal response, these reactions can turn into a serious mental health issue when the initial stress and anxiety levels persist over time.[16] Particularly in the case of large-scale natural disasters, factors such as relocation to other dwellings, difficulties in obtaining water and food in temporary shelters, and limitations in obtaining materials can lead to excessive mental stress in individuals. Additionally, post-earthquake mental health outcomes are related to displacement, post-disaster housing type, the number of relocations after the disaster, and the duration spent in temporary shelter.[17] Kukihara et al. identified concerning symptoms of depression and post-traumatic stress disorder (PTSD) in participants placed in temporary housing after the earthquake. PTSD was reported in 53.5% of the participants, with clinically significant symptoms in 33.2%.[18] Similarly, in affected areas, Yabe et al. stated that 43.2% of participants experienced mental health issues, and 25% experienced social disability due to trauma symptoms.[19]

Karabacak Çelik conducted a study with individuals who experienced the earthquake in Türkiye and determined the post-earthquake trauma level total score to be 71.47±16.61.[20] Similarly, Tüccar and Yavuz found a high average score of 2.95±0.73 on The Post-Earthquake Trauma Level Assessment Scale. In this study, it was identified that being female, being in the 30-40 age range, having severe damage to one's home, and experiencing loss in family and close circles were significantly associated with higher post-earthquake trauma scale total scores.[7] In our research, participants' Post-Earthquake Trauma Level Scale score was found to be 56.04±17.18, exceeding the threshold value of 52.385±5.051. From this perspective, similarities can be observed with other studies. In the study by Tanhan and Kayri, who conducted the validation and reliability assessment of the Post-Earthquake Trauma Level Assessment Scale, the average score of the scale was found to be 48.435±14.814.[6] The research was conducted after the 2011 Van earthquake. Therefore, it can be suggested that the proximity of the earthquake in time may have influenced the post-earthquake trauma level. Negative effects such as trauma, changes in living conditions, witnessing the death of relatives and acquaintances, and stress in people exposed to natural disasters that cause major changes, such as earthquakes, and who experience their negative consequences most severely, may be more pronounced in both healthy people and especially in people with cardiovascular diseases; in addition, the fact that the study data were collected as early as 6 months after the earthquake and the visual activities of the disaster were still ongoing may be related to the high level of trauma. Considering the studies that have been carried out, our study is in line with the literature.

In our study, there were statistically significant differences in the PETLDS scores among groups based on education level, income-expenditure status, frequency of medical check-ups, receiving education related to illness, the location of experiencing the earthquake, being trapped under debris, losing a loved one in the earthquake, and current place of residence. Kun et al. in their study conducted in two provinces on PTSD, observed that common situations and less frequent symptoms were similar between both genders. Prevalence was found to be higher in individuals with no household income, those living in shelters or temporary houses, those who experienced death in their families, and those who incurred property and home damage or borrowed money from banks or relatives.[21] Onose et al. in their study with

patients having post-earthquake cardiovascular diseases, associated female gender, property loss, poverty, and use of sleep medication with post-traumatic stress disorder. The experience of the earthquake, suffering from physical illnesses, and the absence of a stable income were found to be associated with PTSD symptoms.[22] Nobakht et al. in their study examining the risk factors of post-earthquake stress among survivors, found that the earthquake explained a significant portion of post-traumatic stress, and socio-demographic factors such as being female and having higher education increased the risk of being in need after the earthquake.[23] Valladares-Garrido et al. in their study on the relatively smaller-scale Peru earthquake, found that the prevalence of PTSD was statistically higher in the group with lower household income.[16] Zhang and Ho, in their study investigating the psychological responses and risks of earthquake survivors, found that stress disorder symptoms affected 84.8% of those who survived 1 to 2 months after the earthquake. The most commonly encountered traumatic experiences related to PTSD symptoms were losing one's home, being trapped under collapsing buildings, witnessing the death of 1 or more family members, witnessing someone's death, and physical injuries. Characteristics associated with PTSD symptoms included being female, aged 30-40, and experiencing more traumatic events.[24] Nakaya et al. in their study, found that participants who could not make any plans for their future homes had statistically higher Psychological Distress Risk Scale scores than those with small-scale damage in their homes and those who had not moved into permanent residences. Although our research shows similarities with these studies, it also exhibits differences with some other studies.[25] For example, Thapa et al. observed a statistically significant increase in the risk of PTSD among earthquake survivors under the age of 30 and those who were unmarried. Anxiety and depression risk were also higher in women compared to men.[26] Maya Mondragón et al. found that PTSD and depression were more common in women and participants aged 40 and older.[27] Baral and Bhagawati revealed in their study that PTSD was prevalent in 24.10% of surviving adults. Elderly individuals (60 and older), women, illiterates, and those injured in the earthquake were at a higher risk.[28] Guo et al. found in their study that female gender, age between 35-55, family members injured in the earthquake, and low social support were associated with PTSD and depression.[29] Particularly in terms of age, our research showed differences as well. In our study, based on age, gender, and marital status, the scores for post-traumatic stress level were higher for women, participants aged 36-49, and unmarried participants. However, no statistical difference was found in the analysis. Additionally, our research indicated that individuals with lower education levels had higher earthquake trauma levels. Studies related to education levels, as mentioned in the literature, vary. One of the major problems in earthquakes is shelter, and the fact that temporary shelters are not suitable living spaces for both healthy and chronically ill people, the cramped conditions, variables and difficulties of communal living, difficulties in accessing basic needs, and the high rate of post-traumatic stress disorder in people with heart failure, who are more sensitive to stress and changes in living conditions, both psychologically and physiologically, may be related to these reasons. In addition, in patriarchal societies, responsibilities such as maintaining order in the home, childcare, housekeeping and cleaning tend to fall on women. However, in the aftermath of earthquakes with high destructive power and high mortality rates, acting with the awareness of trying to survive, which is the basic instinct of life, can be explained by the equal, similar and high prevalence of post-traumatic stress disorder scores between the sexes.

EXAMINATION OF SELF CARE BEHAVIORS IN PARTICIPANTS WITH HEART FAILURE

Natural disasters can affect patients with cardiovascular diseases for weeks or months. The earthquake-induced stress can lead to increased fluid retention and high blood pressure, trigger inflammatory processes, disrupt access to medical care, hinder medication access, prevent the maintenance of a healthy diet, result in the loss of patients' medical records, damage transportation routes, and introduce environ-

mental stress factors related to the disaster. These factors worsen symptoms and signs in patients.[13,30]

In the study conducted by Doğu Kökçü and Tiryaki, the mean European HF Self Care Behavior Scale-12 (EHFScBS-12) version was utilized. The EHFScBS-12 total score was found to be 33.14±9.41, categorized as sufficient.[9] In the study conducted by Baba Sarı and Özdelikara, the total scale score was found to be 31.2±5.6, and patients' self-care behaviors were considered to be at a sufficient level. This study revealed significant differences in self-care behaviors based on gender and marital status, with individuals living alone having higher self-care behavior scores.[4]

Sedlar et al. categorized participants' self-care behaviors as good in terms of the total scale score. In this study, the most commonly mentioned factors related to self-care in HF patients included self-care confidence (53%), coping strategies (88%), dyspnea (56%), comorbidities (81%), family/caregivers (59%), and financial difficulties (50%).[31] In our research, the EHFScBS-9 had a total scale score of 26.86±7.87. Considering that the lowest possible score is 9 and the highest is 45, it can be inferred that self-care behaviors are good. In this regard, our study aligns with the findings of these studies in the literature.

Gallagher et al. found a scale score of 25.59±6.16. The scale score in this study is relatively lower compared to other studies. No demographic or clinical characteristics were correlated with self-care behavior.[32] In the study conducted by Oksel et al. using the Chronic HF Patients' Self Care Behavior Assessment Scale, the total score obtained from the scale for evaluating patients' chronic HF self-care behaviors was 50.21±8.37, and it was considered low. There were statistically significant differences in Self-Care Behavior Scale total and subgroup scores based on occupation, marital status, and the reason for not working.[8] Seid et al. reported that only 22.3% of HF patients adhered well to self-care recommendations in their study with 310 participants. Additionally, 74.8% of the participants were identified as having a weak level of knowledge and self-care management for HF.[33] In a study conducted by Aghajanloo et al. aiming to systematically review the self-care status in patients with heart failure, it was found that the application was inadequate in all 3 dimensions of the Heart Failure Index Scale, which are personal care, care management, and self-confidence.[34] Our study differs from these findings. Furthermore, in our research, a statistically significant difference was found in the EHFScBS-9 score based on the participants' education about the disease and the current place of residence groups. In this aspect, our study reached different conclusions compared to other research.

In our study, there is a statistical difference in the trauma level and Hf Self-Care Behavior Scale concerning the participants' current place of residence. Individuals living in containers or temporary housing, such as relatives' homes, outside their own homes, have a higher level of earthquake trauma compared to those living in their homes. In parallel with this finding, another result obtained in the research indicates that individuals living in containers have better self-care abilities. This also supports the weak positive correlation found in this study between the post-earthquake trauma score and the Self-Care Scale score. As the average post-earthquake trauma score increases, the average Self-Care Scale score also increases. This finding aligns with the results of Nadrian et al.'s path analysis study, which aimed to determine the cognitive determinants of self-care behaviors in HF patients. In their study, knowledge, perceived barriers, and sensitivity were found to have a direct positive effect on self-care.[35] Previous studies have shown that the self-care ability of people with HF is generally moderately high. This finding shows that our study is consistent with the literature. The moderately high level of self-care among HF patients in the earthquake region may indicate that awareness and understanding of the fact that many conditions, such as psychological well-being, shelter and will to live, are effective in self-care, and that HF is a multi-symptom disease that requires a disease management approach in which the care of each system should be provided with care, may result from the trainings given by nurses, doctors and psychological support units in the region after the earthquake.

CONCLUSION

In patients with heart failure, it was determined that the PETLDS score and the EHFScBS-9 score were high. A weak positive significant relationship was found between the PETLDS score and the EHFScBS-9 score. It was observed that as the PETLDS score increased, the EHFScBS-9 score also increased.

HF is a medical condition that profoundly affects individuals' lives, necessitating ongoing medical treatment. It is known that the disease not only impacts individuals physically but also leads to disruptions in psychological balance. Self-care behaviors in the management of the disease are a crucial parameter that positively influences the clinical course of the illness. Earthquakes, with their high destructive power, deeply affect individuals both physiologically and psychologically. Given the potential increase in the workload on hospitals due to earthquakes, especially for groups requiring continuous monitoring, it is anticipated that reduced utilization of services may lead to disruptions in patient treatment, adversely affecting the prognosis of the disease. Accordingly, patients need to be quickly identified in the aftermath of earthquakes, ensuring access to necessary health services.

Moreover, trauma in these patients, such as fear, anxiety, and increased cardiac workload, can exacerbate the severity of the disease, leading to negative outcomes. In this context, providing psychological support to patients is essential. The destruction caused by earthquakes can create difficulties in individuals' daily routines and treatment habits, affecting patients' self-care and contributing to the occurrence of negative symptoms. To prevent this, rapid identification of individuals with the relevant disease in earthquake-prone areas is essential, and suitable environmental conditions must be established. To reduce the trauma levels of surviving HF patients after an earthquake, it is crucial to provide psychological and social support, promote self-awareness for positive self-care behaviors, and offer education in this regard.

The earthquake in Türkiye had a devastating impact on 11 provinces. Our study was conducted in one of the cities most affected by the earthquake. The most significant limitation of the study is that it could not cover all HF patients in the provinces affected by the earthquake. Another limitation of the study is that it was conducted by looking at people with high, low and moderate levels of PTSD symptoms together. Another important limitation of the study is that 6 years have passed since the earthquake. Additionally, different levels of impact were observed in the affected provinces, and it was not possible to determine and compare the trauma levels of HF patients in less affected areas according to the severity of the earthquake. Given the time-related nature of the relationship between trauma levels and self-care behaviors, repeating the study at different time intervals may provide more reliable results in identifying problems. Not reapplying the research questions after a certain period may also be another limitation.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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