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Determining the Effect of Women's Earthquake Fear on Earthquake Risk Perception

Kadınların Deprem Korkusunun Deprem Risk Algısına Etkisinin Belirlenmesi

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ABSTRACT

Increasing women's resilience against earthquake fear and educating them about disaster risks, promoting gender equality (SDG 5) and strengthening women's leadership are seen as important approaches in disaster management. This study aims to investigate the effect of women's fear of earthquakes on their perception of earthquake risk. It was designed as a cross-sectional, descriptive, and correlational study, conducted with women aged 18 and older living in Türkiye. Data for the study were collected between April 28, 2024, and August 15, 2024, using the "Socio-Demographic Information Form," the "Fear of Earthquake Scale," and the "Earthquake Risk Perception Scale." According to the results, employed participants had lower earthquake fear scores. Participants with moderate economic status had higher earthquake fear scores compared to those with better economic status. A strong positive ($r=0.752$) and significant ($p<0.05$) relationship was found between fear of earthquakes and earthquake risk perception. The fear of earthquakes and earthquake risk perceptions of the participants increase significantly together, demonstrating a strong correlation. Researchers examined the effects of earthquake fear on the earthquake risk perception of women living in Türkiye from various perspectives and the important findings can guide policy makers in creating gender equality (SDG 5) policies in disaster management.

Anahtar Kelimeler
Kadınlar, deprem korkusu, risk algısı, toplumsal cinsiyet eşitliği, afet yönetimi.

ÖZ

Kadınların deprem korkusuna karşı dayanıklılıklarının artırılması ve afet riskleri konusunda eğitilmeleri, toplumsal cinsiyet eşitliğinin teşvik edilmesi (SKH 5) ve kadın liderliğinin güçlendirilmesi afet yönetiminde önemli yaklaşımlar olarak görülmektedir. Bu çalışmanın amacı, kadınların deprem korkusunun deprem riski algıları üzerindeki etkisini incelemektir. Türkiye'de yaşayan 18 yaş ve üzeri kadınlarla yürütülen kesitsel, tanımlayıcı ve ilişki arayıcı bir çalışma olarak tasarlanmıştır. Çalışmanın verileri 28 Nisan 2024 - 15 Ağustos 2024 tarihleri arasında "Sosyo-Demografik Bilgi Formu", "Deprem Korkusu Ölçeği" ve "Deprem Riski Algısı Ölçeği" kullanılarak toplanmıştır. Sonuçlara göre çalışan katılımcıların deprem korku puanları daha düşüktü. Orta düzeyde ekonomik duruma sahip katılımcıların deprem korku puanları, daha iyi ekonomik duruma sahip olanlara göre daha yüksekti. Deprem korkusu ile deprem riski algısı arasında güçlü, pozitif ($r=0,752$) ve anlamlı ($p<0,05$) bir ilişki bulunmuştur. Katılımcıların deprem korkusu ve deprem riski algıları birlikte önemli ölçüde artmakta olup, güçlü bir korelasyon göstermektedir. Araştırmacılar, deprem korkusunun Türkiye'de yaşayan kadınların deprem riski algısı üzerindeki etkilerini çeşitli perspektiflerden incelemiş olup bulgular, afet yönetiminde cinsiyet eşitliği (SDG 5) politikaları oluşturmada politika yapıcılara rehberlik edebilir.

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1. Introduction

The frequency and impact of disasters are increasing globally (Usta, 2023; Gündüz and Atalay, 2024:4). Among these disasters, earthquakes can cause significant loss of life and property in affected areas (CRED, 2024; Ao et al., 2021; Mavrouli et al., 2023; Joshi et al., 2024). Earthquakes occur when stress, accumulated in the Earth's crust due to tectonic processes like plate movements and mountain formation, is suddenly released (Elliott, 2020; Aral and Tunç, 2021). Türkiye, where this study was conducted, is one of the countries with the highest seismic activity. Located within the Alpine-Himalayan orogenic belt, Türkiye experiences numerous destructive earthquakes that cause loss of life and property (Kalafat et al., 2021; Alpyürür and Lav, 2022). The earthquakes centered in Kahramanmaraş on February 6, 2023, painfully reminded us of this reality (Dal Zilio and Ampuero, 2023; Naddaf, 2023). In addition to causing loss of life and property, disasters, particularly earthquakes, also lead to social, physical, psychological, and economic vulnerabilities among different population groups (Marshall et al., 2020, pp. 143-148). Women, in particular, face greater disadvantages during disasters compared to men due to gender roles and social statuses that leave them vulnerable (Ünür, 2021; Gündüz, 2022; Yadav et al., 2021). Literature data (Llorente-Marrón et al., 2020; Yoosefi Lebni et al., 2020; Arora et al., 2022; Tearne et al., 2021; Arora, 2022; Gündüz, 2024) suggest that earthquakes have a disproportionately negative impact on women. A study conducted in Türkiye indicates that during earthquakes, women experience shelter and security challenges, their specific needs are often ignored, these needs are shaped by male dominance, and they are subjected to both physical and psychological violence (Ural et al., 2024). Studies in the literature (Demirci and Avcu, 2021; Kaplan et al., 2024; Şeremet et al., 2024; Kartal and Çıtak, 2024) provide evidence that women are disproportionately affected by earthquakes. These circumstances can lead to reactions such as fear in individuals. Being directly or indirectly exposed to an earthquake can affect individuals' emotions and harm their psychological well-being (Prizmić-Larsen et al., 2023).

One of the emotions triggered by earthquakes, fear of earthquakes (Çuvadar and Aksoy, 2024; Canpolat and Emir, 2024; Demirci et al., 2024; Kurt et al., 2024) significantly affects people's psychological well-being (Okur et al., 2024). Fear of earthquakes can be defined as the physiological and psychological reactions that arise when thinking about an earthquake (Satıcı et al., 2024). In a study, male and female search and rescue personnel were separately asked, "What is the first word that comes to mind when you think of disaster and women?" Female participants used words reflecting emotions such as fear, pain, and hopelessness, while male participants mentioned words like help/cooperation and fear (Ilgın and Karagül, 2022). Numerous studies in the literature (Lovekamp et al., 2008; Shavit et al., 2013; Goltz, 2016; Goltz and Bourque, 2017; Cvetković et al., 2019; Santos-Reyes, 2020; Çınğı and Yazgan, 2022; Usta et al., 2024; Gökkaya et al., 2024) support the view that the female gender is associated with fear of earthquakes, and that women experience more fear during earthquakes than men. Mızrak et al. (2021) noted that fearing earthquakes, depression levels, and concern about the harm arising from potential seismic events all have a significant and positive effect on women's perception of earthquake risks. In simple terms, being more frightened also increases women's tendency to believe that earthquakes pose a risk (Mızrak et al., 2021).

The perception of risk is a crucial factor in understanding the measures taken and behaviours adopted by communities and individuals who are faced with natural hazards (Niforatos et al., 2024). The term 'risk perception' refers to how dangers are perceived, and these perceptions differ depending on the location, the type of threat, and various sociocultural factors (Kung and Chen, 2012; Becker et al., 2014; O'Neill et al., 2016). The literature has demonstrated that gender has a significant influence on risk perception as it relates to disasters (Mızrak and Aslan, 2020; Ayvazoğlu et al., 2020). One study determined that women had a significantly higher mean score on the Earthquake Risk Perception Scale than men. Women have also been found to perceive the risks arising from earthquakes to be greater than men (Gökçay et al., 2024). Studying earthquake risk perception may lead to a better understanding of people's thoughts and actions with regard to earthquakes. Women are generally acknowledged to have a vital part to play in disaster management. It is thus essential that they are given the opportunity to collaborate in the decision-making process and are able to take on lead roles in managing natural hazards (Gündüz, 2023, p. 35). In this respect, how women perceive risk has an effect on their own behaviours and their degree of preparation for when an earthquake happens. The findings that result from evaluating women's perceptions of earthquakes with regard to the fear they experience will help shape policy in a way that also takes into account gender equality (SDG 5) and enhances the ability of women to take the lead in managing disasters. In this context, identifying the factors related to women's fear

of earthquakes and their earthquake risk perceptions is considered important. Therefore, this study aims to investigate the effect of women's fear of earthquakes on their perception of earthquake risk.

2. Methods

2.1. Design

Quantitative research methods were used in this study and it was designed as cross-sectional, descriptive, and correlational.

2.2. Population and Sample of the Study

Participants were selected using a simple random sampling method from women aged 18 and older who are citizens of the Republic of Türkiye. In this sampling method, each element of the population has an equal chance of being selected, and the weight assigned to each element in the calculation is the same (Arıkan, 2004, p. 141). Based on the female population in Türkiye, it was determined that a sample size of 385 would be sufficient for the study with a 95% confidence interval and a 5% margin of error. Accordingly, the study was conducted with 386 participants.

2.3. Data Collection Tools

The study data were collected using the "Socio-Demographic Information Form," the "Fear of Earthquake Scale," and the "Earthquake Risk Perception Scale."

2.3.1. Socio-Demographic Information Form

The socio-demographic information form consists of nine questions related to age, educational status, marital status, presence of children, chronic illnesses, employment status, economic status, experiences of earthquakes, and receipt of disaster education.

2.3.2. Fear of Earthquake Scale

"The "Fear of Earthquake Scale" was first developed by Prizmić-Larsen, Vujčić, and Lipovčan (2023) to evaluate the fear of earthquakes in Croatian society. It was adapted into Turkish by Usta et al. (2023) The scale is a unidimensional, five-point Likert-type scale, and is made up of seven positive items. The Cronbach's alpha reliability coefficient of the scale was found to be 0.91, which indicates a high level of reliability. The score obtainable from the scale ranges from 7 to 35, and higher scores indicate a greater fear of earthquakes (Usta et al., 2023). In the present study, the Cronbach's alpha coefficient for the seven items was 0.858, demonstrating that the scale is highly reliable."

2.3.3. Earthquake Risk Perception Scale

The Earthquake Risk Perception Scale was developed originally by Trumbo et al. (2016) for use in the USA. It was adapted for the Turkish context by Mızrak et al. (2021). It consists of two sub-dimensions, namely, Affective Risk Perception and the Cognitive Risk Perception, both of which have four items. The scale thus has eight positive items and has a five-point Likert-type structure scale. The Cronbach's alpha coefficient for the whole scale was found to be 0.857, with a value of 0.805 for the Affective Risk Perception sub-dimension and 0.859 for the Cognitive Risk Perception sub-dimension (Mızrak et al., 2021). In the current study, the Cronbach's alpha value for the whole scale was 0.881, while the values were 0.867 for the Affective Risk Perception sub-dimension and 0.877.the Cognitive Risk Perception sub-dimension.

2.4. Data Collection

Before the data were collected, the participants were informed about the aim of the study and why they had been selected to be included. The researchers prepared the Socio-Demographic Information Form, the Fear of Earthquake Scale, and the Earthquake Risk Perception Scale (via Google Forms) in an online format and

distributed them to the participants. Data were collected from individuals who voluntarily wished to participate in the study between April 28, 2024, and August 15, 2024.

2.5. Data Analysis

The data were analyzed using the SPSS 26 software. First, the information obtained through Google Forms was transferred to the SPSS program. Since the data met the assumption of normal distribution, parametric tests were preferred (Table I) (George and Mallery, 2010; Büyüköztürk, 2011, p. 42). For data evaluation, frequency analysis, descriptive statistics, independent t-tests for two different independent variables, and one-way ANOVA for more than two independent variables were used. To examine the relationships between variables, Pearson correlation analysis was conducted, and simple linear regression analysis was performed to investigate the effect between variables. The results were evaluated at a 95% confidence interval with significance at the $p<0.05$ level.

Table I. Findings Regarding the Normality of Scales and Sub-Dimensions

	Skewness	Kurtosis	Average	S. Deviation
Fear of Earthquake Scale	-0.20	-0.44	3.50	0.79
Affective Earthquake Risk Perception Sub-dimension	-0.19	-0.47	3.54	0.87
Cognitive Earthquake Risk Perception Sub-dimension	-0.71	0.34	4.21	0.72
Earthquake Risk Perception Scale	-0.25	-0.41	3.8	0.70

2.6. Ethical Aspects of the Study and Consents

Throughout the study, actions were taken within the framework of the "Regulation on Scientific Research and Publication Ethics for Higher Education Institutions." Before starting the study, the necessary permissions were obtained via email from the responsible authors to use the Fear of Earthquake and Earthquake Risk Perception Scales. Approval was granted by the "Ethics Committee for Social Human Research at Sinop University" for the study. Before data collection began, individuals who agreed to participate in the research filled out a voluntary consent form. Participants were informed that their data would be kept confidential and would never be shared with third parties, and they were also informed that they could withdraw from the study if they requested.

2.7. Assumptions and Limitations of the Study

It is assumed that the responses obtained from the participants who volunteered for the study reflect their true situations. The results obtained from this study indicate the levels of individuals aged 18 and older living in Türkiye during the period the study was conducted, and they cannot be generalized to other communities.

3. Results

When examining the socio-demographic characteristics of the 386 participants in the study, it was found that the average age was 33.51 ± 11.12, 32.9% were graduates of a bachelor's degree, 50.3% were married, 55.7% did not have children, 81.6% had no chronic illnesses, 66.3% were employed, 51.8% had a medium economic status, 67.9% had experienced an earthquake, and 55.7% had not received any disaster education (Table II).

Table II. Descriptive Statistics for Socio-Demographic Characteristics (N=386)

Variable	Group	n	%
Age	$\bar{X}$±Sd	33.51±11.12	
Education Level	Secondary Education	36	9.3
	Associate Degree	100	25.9
	Bachelor's Degree	127	32.9
	Graduate Degree	123	31.9
Marital Status	Married	194	50.3
	Single	192	49.7
Child Status	Yes	171	44.3

Chronic Illness	No	215	55.7
	Yes	71	18.4
Employment Status	No	315	81.6
	Yes	256	66.3
Economic Status	No	130	33.7
	Low	35	9.1
	Moderate	200	51.8
	High	151	39.1
Earthquake Experience	Yes	262	67.9
	No	124	32.1
Disaster Education Status	Yes	171	44.3
	No	215	55.7

Table III presents the analysis results of the Fear of Earthquakes and Earthquake Risk Perception Scales according to socio-demographic variables. No statistically significant difference was found between the Fear of Earthquakes and the variables of marital status, child presence, chronic illness, earthquake experience, and disaster education status ($p > 0.05$). Similarly, no statistically significant difference was found between Earthquake Risk Perception and the variables of marital status, child presence, chronic illness, employment status, and earthquake experience ($p > 0.05$). When the analysis results of the Fear of Earthquake Scale according to the participants' employment status variable were examined, a significant difference was found ($t[384] = -2.10$; $p < 0.05$). The average scores of employed participants ($X = 3.44$) were lower than those of non-employed participants ($X = 3.62$) (Table III). Similarly, when the analysis results of the Earthquake Risk Perception Scale according to the participants' disaster education variable were examined, a significant difference was found ($t[384] = -2.52$; $p < 0.05$). The average scores of participants who received disaster education ($X = 3.77$) were lower than those who did not receive it ($X = 3.95$) (Table III).

Table III. Independent Samples T-Test Results of the Fear of Earthquake and Earthquake Risk

		Fear of Earthquake Scale			***t test***			**Earthquake Risk Perception Scale**			***t test***		
Socio-Demographic Variables		**N**	**X**	**Sd**	**t**	**sd**	**p**	**N**	**X**	**Sd**	**t**	**sd**	**p**
Marital Status	**Married**	194	3.51	.72	0.18	384	0.85	194	3.86	.69	-.51	384	.60
	Single	192	3.50	.85				192	3.89	.70			
Child Presence	**Yes**	171	3.50	.69	-.13	383.85	0.89	171	3.84	.68	-.80	384	.42
	No	215	3.51	.86				215	3.90	.71			
Chronic Illness	**Yes**	71	3.55	.80	.58	384	0.55	71	3.99	.69	1.52	384	.12
	No	315	3.49	.79				315	3.85	.69			
Employment Status	**Yes**	256	3.44	.79	-2.10	384	**0.03***	256	3.85	.68	-.85	384	.39
	No	130	3.62	.77				130	3.92	.73			
Earthquake Experience	**Yes**	262	3.50	.79	.02	384	0.97	262	3.88	.68	.28	384	0.77
	No	124	3.50	.80				124	3.86	.73			
Disaster Education Status	**Yes**	171	3.42	.79	-1.87	384	0.06	171	3.77	.70	-	384	**0.01***
	No	215	3.57	.78				215	3.95	.68	2.52		

The results of the one-way variance (ANOVA) analysis conducted to determine whether the Fear of Earthquake Scale, the Earthquake Risk Perception Scale, and their sub-dimensions differ according to participants' education levels are presented in Table IV. The analysis revealed a statistically significant difference between participants' education levels and the Cognitive sub-dimension of the Earthquake Risk Perception Scale ($F= 3.64$; $p<0.05$). To identify the group causing the difference, the Games-Howell test was applied as part of the Post Hoc pairwise comparisons. According to the results of the Games-Howell test, participants with a postgraduate education level had higher mean scores compared to those with an undergraduate education level (Table IV).

Table IV. ANOVA Test Results for Scale and Sub-Dimension Scores According to Education Level

Scales	Education Level	n	$\bar{X}$±Sd	Test (F;p)
Fear of Earthquake	Secondary Education[1]	36	3.69±0.83	F:1.40; p:0.24
	Associate Degree[2]	100	3.58±0.81	
	Bachelor's Degree[3]	127	3.45±0.77	
	Graduate Degree[4]	123	3.44±0.77	
	Total	386	3.50±0.79	
Earthquake Risk Perception (ERP)	Secondary Education[1]	36	3.92±0.71	F/Welch: 2.12; p:0.09
	Associate Degree[2]	100	3.83±0.79	
	Bachelor's Degree[3]	127	3.78±0.64	
	Graduate Degree[4]	123	3.99±0.66	
	Total	386	3.87±0.70	
ERP Affective	Secondary Education[1]	36	3.61±0.93	F:0.63; p:0.59
	Associate Degree[2]	100	3.54±0.91	
	Bachelor's Degree[3]	127	3.46±0.80	
	Graduate Degree[4]	123	3.60±0.89	
	Total	386	3.54±0.87	
ERP Cognitive	Secondary Education[1]	36	4.22±0.70	**F/Welch: 3.64; p:0.01* Difference:4>3**
	Associate Degree[2]	100	4.12±0.83	
	Bachelor's Degree[3]	127	4.11±0.68	
	Graduate Degree[4]	123	4.37±0.67	
	Total	386	4.21±0.72	

* $p<0.05$

The results of the one-way variance (ANOVA) analysis conducted to determine whether the Fear of Earthquake Scale, the Earthquake Risk Perception Scale, and their sub-dimensions differ according to participants' economic status are presented in Table V. The analysis revealed a statistically significant difference between participants' economic status and the Fear of Earthquake Scale ($F= 3.59$; $p<0.05$). To identify the group causing the difference, the Bonferroni test was applied as a Post Hoc pairwise comparison. According to the Bonferroni results, participants who reported having a moderate economic level had higher mean scores compared to those who reported having a high economic level (Table V).

Table V. ANOVA Test Results for Scale and Sub-Dimension Scores According to Economic Level

Scales	Economic Status	n	$\bar{X}$±Sd	Test (F;p)
Fear of Earthquake	Low[1]	35	3.62±0.88	**F:3.59; p:0.02* Difference:2>3**
	Moderate[2]	200	3.58±0.76	
	High[3]	151	3.37±0.79	
	Total	386	3.50±0.79	
Earthquake Risk Perception (ERP)	Low[1]	35	3.91±0.70	F:1.91; p:0.14
	Moderate[2]	200	3.93±0.71	
	High[3]	151	3.79±0.68	
	Total	386	3.87±0.70	
ERP Affective	Low[1]	35	3.47±0.91	F:1.91; p:0.14
	Moderate[2]	200	3.63±0.87	
	High[3]	151	3.45±0.86	
	Total	386	3.54±0.87	
ERP Cognitive	Low[1]	35	4.35±0.71	F:1.73; p:0.17
	Moderate[2]	200	4.24±0.74	
	High[3]	151	4.13±0.70	
	Total	386	4.21±0.72	

Pearson Correlation Analysis was used to determine the relationship between fear of earthquake and earthquake risk perception. The results of the analysis are presented in Table VI.

Table VI. The Relationship Between Fear of Earthquake and Earthquake Risk Perception

		Earthquake Risk Perception
Fear of Earthquake	Pearson r	0.752*
	P	0.000
	2	386

*The correlation is significant at p<0.01.

A strong positive (r=0.752) and significant (p<0.05) relationship was found between earthquake fear and earthquake risk perception. Participants' earthquake fear and risk perception increase significantly in correlation with each other. The variance explained between the variables is 56.55%. This suggests that 56.55% of individuals' earthquake risk perception may stem from their fear of earthquakes. This relationship is illustrated in Figure 1.

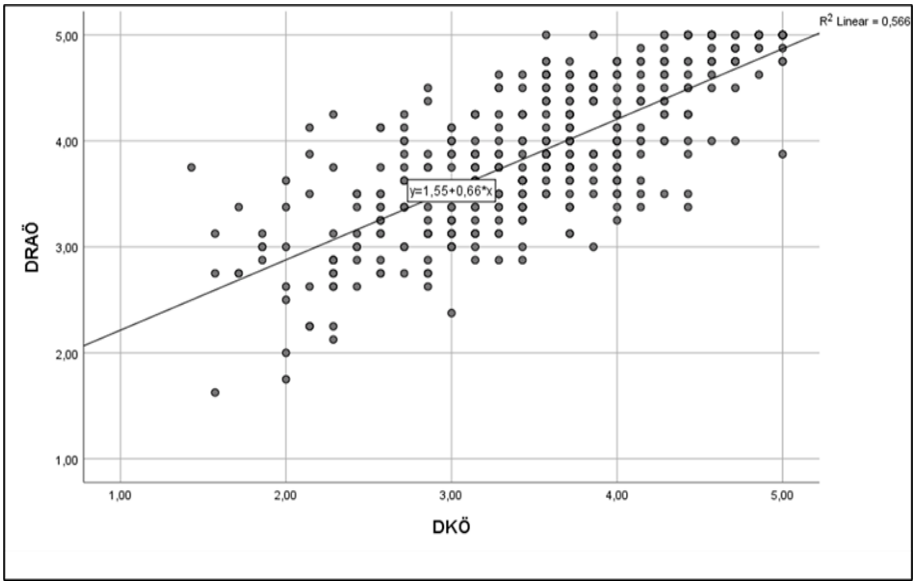

Figure 1. The relationship between Fear of Earthquake Scale (Deprem Korkusu Ölçeği) and Earthquake Risk Perception Scale (Deprem Risk Algısı Ölçeği)

A simple linear regression analysis was conducted to determine how much earthquake fear influences earthquake risk perception. The scatterplot and Pearson correlation analysis results indicated a strong positive and significant relationship between the variables. The regression analysis results showed that the model is significant (F=500.862; P=0.001). The adjusted R^2 demonstrates the model's generalizability, explaining 56% of the total variance (Table VII). In other words, 56% of earthquake risk perception can be explained by earthquake fear. In conclusion, as earthquake fear increases, there is a significant increase in earthquake risk perception. This finding can be considered critical for disaster management strategies.

Table VII. Results on Prediction of Disaster Risk Perception Score

Dependent Variable: Disaster Risk Perception										
Independent Variable	**B**	**Std. Error**	**Beta**	**t**	**R**	**R^2**	**Adjusted R^2**	**F**	**Durbin-Watson**	**p**
Constant	1.550	0.107		14.53	0.752	0.566	0.565	500.862	1.834	.000
Fear of Earthquake	0.664	0.030	0.752	22.38						

4. Discussion

In this study, which investigated the impact of women's earthquake fear on earthquake risk perception, it was found that participants who received disaster education had lower earthquake risk perception scores compared to those who did not. Amini et al. (2021) found that providing disaster education enhanced women's perceptions of earthquake risk (Amini et al., 2021). Similar to these results, another study demonstrated that participants who had received education about earthquakes had increased perceptions of the risk of earthquakes (Çınğı and Yazgan, 2022). In Wang et al.'s study (2022), it was determined that disaster education positive affected risk perception. In addition, their study found that disaster education was able to change attitudes toward disasters and make it easier for individuals to effectively participate in disaster risk management (Wang et al., 2022). A study evaluating the effect of disaster education interventions on children found that these interventions had a positive effect on children's perceptions of risk (Yildiz et al., 2024). However, a study examining university students' disaster risk perceptions was unable to identify any relationship between perception of risk and disaster education (Mızrak and Aslan, 2020). Furthermore, the present study did not find any correlation between fear of earthquakes and disaster education. A different study determined that the scores for earthquake fear of individuals who had been educated in disaster awareness were on average lower (Usta et al., 2024). In a similar study, individuals who had received education about earthquakes had lower average scores for earthquake fear than individuals who had not had this education (Çınğı and Yazgan, 2022). The reason that the women who received education about disasters demonstrated risk perceptions that were significantly lower may be that the skills and knowledge they acquired during this process meant that they felt better able to deal with earthquakes.

In the present study, those who had a postgraduate level of education gained higher scores in the cognitive subdimension of the Earthquake Risk Perception Scale than those who only had an undergraduate degree. A significant relationship exists between education and earthquake risk perception (Ainuddin et al., 2014). In Mızrak et al.'s study (2021), the education variable had an effect on women's perceptions of the risks caused by earthquakes. In contrast with the results of the present study, the researchers suggested that a lower educational level may be related to a greater degree of earthquake risk perception. Indeed, their study found that education had a significant, negative effect on earthquake risk perception in women (Mızrak et al., 2021). Tian et al. (2014) determined that education level and earthquake risk perception were negatively correlated. In another study, female participants with higher education levels had a superior perception of risk than male individuals (Rahman, 2019). The increased earthquake risk perception among women who have postgraduate degrees may be due to their lacking awareness and knowledge regarding disasters. That said, the present study did not find any statistically significant correlations between participants' education and their degree of concern about earthquakes. A similar result emerged from Usta et al.'s (2024) study, in which no significant correlation was determined between level of education and fear of earthquakes (Usta et al., 2024). That women's educational achievement did not have any particular effect on their earthquake anxiety may have resulted from various sociocultural and psychological differences among the participants.

The present study's findings included a statistically significant correlation between economic status and levels of earthquake fear. Those whose economic status was moderate had higher earthquake fear scores than those with a better economic status. In another study, there was no statistically significant difference in terms of earthquake fear between those with low, moderate, and high levels of income and no significant correlation between earthquake fear and levels of income (Usta et al., 2024). Tian et al. (2014) found that there was a negative correlation between earthquake risk perception and income, and that those who had less income tended to see a higher risk (Tian et al., 2014). Lower levels of earthquake in women with higher levels of income may be due to positive effects that being economically comfortable has on their daily lives and feelings of security. In addition, those participants who were currently employed had lower earthquake fear scores than those who were unemployed. The reduced fear of earthquakes by those with paid employment may be related to their financial situation and the belief that they have the resources to deal with unexpected negative event, including natural hazards.

No correlation was found between women's parental status and their fear regarding earthquakes. Goltz's (2016) determined that women who had children had higher levels of earthquake fear that those who lived by themselves or solely with adults. In one study with both female and male participants, having children in the

home was negatively correlated with earthquake fear; the study also suggested that with an increasing number of children, the fear of earthquakes was reduced (Fernandez et al., 2018). No correlation was found between women's marital status and their levels of earthquake fear and risk perception in the present study. Usta et al. (2024) determined that those who were married had higher levels of earthquake fear than those who were single. One study on disaster risk perception found that single individuals demonstrated a greater level of disaster risk perception than those who were married (Tercan, 2023). In the present study, no correlation was found between women's perceptions of earthquake fear and having previously experienced seismic events. The study conducted by Usta et al. (2024), corroborating the results of the present study, did not find any relationship between fear of earthquakes and prior experience of natural disasters (Usta et al., 2024). Cvetković et al. (2019) noted that prior experiences of disasters were related to an increase in fear. In Tian et al.'s (2014) study, they suggested that individuals with more experience of earthquakes were less frightened of them. The study reported that individuals with more earthquake experiences have a lower risk perception (Tian et al., 2014). It is thought that the lack of detailed information about the experiences of women who reported having experienced an earthquake, as well as the unknown extent of those experiences, contributes to the insignificant relationship found between earthquake fear and earthquake risk perception and the experiences they have gone through.

In our study, a strong positive and significant relationship was found between earthquake fear and earthquake risk perception. The participants' fear of earthquakes and their risk perceptions significantly increase together. The analysis conducted to determine how much earthquake fear affects earthquake risk perception indicates that 56% of earthquake risk perception can be explained by earthquake fear. As earthquake fear increases, there is also a significant increase in earthquake risk perception. In the literature, it has been reported that women's fears of earthquakes, their states of depression, and their thoughts about the potential harm from earthquakes positively and significantly affect their earthquake risk perceptions. Thus, an increase in fear enhances women's earthquake risk perception (Mızrak et al., 2021). According to a study examining the effect of risk perception on earthquake preparedness, it has been revealed that risk perception is significantly influenced by future earthquake fear (Kiani et al., 2022). In a study investigating the risk perception, fear, and preparedness of individuals who have experienced an earthquake, a positive but weak correlation was found between earthquake risk perception and fear (Çınğı and Yazgan, 2022).

5. Conclusion and Recommendations

As mentioned in our study, various scientific research has identified that earthquake fear and earthquake risk perception are influenced by several factors. This study examined the effects of earthquake fear on the earthquake risk perception of women living in Türkiye from various perspectives. According to the results, individuals with a moderate economic level have higher earthquake fear scores compared to those with a high economic level. In our study, women who received disaster training had lower earthquake risk perception scores. There was a strong positive and significant relationship between earthquake risk perception and fear of earthquakes. The earthquake fear and earthquake risk perceptions of the participants increased significantly increased together. As fear of earthquakes increased, a significant rise was also seen in the perception of earthquake risk. These findings indicate that it is crucial to engage in activities that can bolster women's resilience when faced with seismic events and increase their awareness of the risks they pose. Evaluating women's perceptions of earthquake risk with regard to fear-related factors can help shape development of policies aimed at achieving gender equality (SDG 5) and enhances women's ability to play a leading role in managing disasters. In addition, the insights gained from the present study will help women become more empowered in the context of natural hazards and facilitate the development of more gender-based approaches to disaster management. The findings presented here may also offer a new perspective for policymakers with regard to developing gender-sensitive policies.

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There are no conflicting interests to declare.

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Etik, Beyan ve Açıklamalar

1. Etik Kurul izni ile ilgili;
☑ Bu çalışmanın yazar/yazarları, Sinop Üniversitesi İnsan Araştırmaları Etik Kurulu'nun tarih 29.12.2023 sayı ve karar 2023/251 ile etik kurul izin belgesi almış olduklarını beyan etmektedir.

2. Bu çalışmanın yazarları, araştırma ve yayın etiği ilkelerine uyduklarını kabul etmektedir.

3. Bu çalışmanın yazarları kullanmış oldukları resim, şekil, fotoğraf ve benzeri belgelerin kullanımında tüm sorumlulukları kabul etmektedir.

4. Bu çalışmanın benzerlik raporu bulunmaktadır.