

Original Research

Cite this article: Gündüz Zeybekoğlu F, Usta G, Atalay E and Torpuş K (2025). Evaluation of the Effect of Women's Psychological Power on Disaster Risk Perception. *Disaster Medicine and Public Health Preparedness*, **19**, e200, 1–7 <https://doi.org/10.1017/dmp.2025.10122>

Received: 01 February 2025

Revised: 28 April 2025

Accepted: 16 June 2025

Keywords:

disaster and women; disaster risk perception; disaster management; psychological power of women

Corresponding author:

Kemal Torpuş;

Email: kemaltorpus@artvin.edu.tr

Evaluation of the Effect of Women's Psychological Power on Disaster Risk Perception

Fatma Gündüz Zeybekoğlu¹ , Galip Usta² , Ezgi Atalay³  and Kemal Torpuş⁴ 

¹Department of Property Protection and Security, Boyabat Vocational School of Higher Education, Sinop University, Sinop, Türkiye; ²Department of Medical Services and Techniques, Tonya Vocational School of Higher Education, Trabzon University, Trabzon, Türkiye; ³Department of Medical Services and Techniques, Mehmet Tanrikulu Vocational School of Health Service, Bolu Abant İzzet Baysal University, Bolu, Türkiye and ⁴Emergency Aid and Disaster Management, Faculty of Health Sciences, Artvin Coruh University, Artvin, Türkiye

Abstract

Objectives: In this study, we aimed to examine the effect of women's perceptions of psychological power related to gender roles on their disaster risk perceptions.

Methods: This cross-sectional and descriptive study was planned in a correlational design. The study was completed with 272 people who met the inclusion criteria. Data for the study were collected between February 21, 2024 and March 7, 2024. The Independent sample *t* test was used for the comparison of two independent groups and one way analysis of variance was used for the comparison of two or more unrelated groups. A Pearson correlation analysis was used to examine the relationship between numerical variables.

Results: Women who had previously experienced a disaster were found to have higher scores on the strength/advocacy, threat, anxiety, and disaster risk perception scale than those who had not. A moderate positive correlation was found between the increase in women's perceptions of psychological power and their perceptions of threat, controllability, anxiety levels, and disaster risk perceptions, while a low negative correlation was found with their perceptions of fatalism.

Conclusions: It was concluded that women's psychological strength affects disaster risk perception. Psychological empowerment of women is thought to be important in ensuring disaster resilience.

Disasters are known as the results of events caused by natural, technological, or human factors that interrupt human activities¹ and normal life and cause² physical, social, and economic losses.³ Disasters can affect human activities in the area⁴ where they occur and can bring many problems.⁵ Regardless of the source of disasters, all components of society can be affected by this situation.⁶ Especially, individuals in vulnerable groups such as women, children, the elderly, pregnant women, and people⁷ with disabilities may experience the negative effects of disasters more and the level of disaster response of these groups may differ.^{8,9} Women, who are among the aforementioned groups and constitute the population of our study, are more affected by disasters due to factors related to gender roles such as their education level,¹⁰ the behaviors they have developed due to their upbringing,⁹ and the skills they have acquired throughout their lives.^{11,12} Although the behaviors women have developed due to their upbringing and the skills they have acquired throughout their lives vary depending on sociocultural factors, they recognize risks and are the first to adopt safety behaviors, correctly evacuate individuals and animals under their care, and direct individuals using appropriate instructions; women climb, drive, ride bicycles, and use tools in combination with their leadership skills.^{7,9,11,12}

Studies^{13,14} indicate that women's vulnerability to disasters and their capacities are different. The characteristics¹⁵ that women spontaneously developed to overcome problems arising from gender differences enabled them to develop organizational¹⁶ and coordinational skills.¹⁷ Moreover, if these skills are supported by training, women may become major actors in disaster management processes.¹⁰ The psychological empowerment of women supports this situation.¹⁸ This is because psychological empowerment refers to women's ability to make and implement choices.¹⁹ Through psychological empowerment,²⁰ women not only overcome patriarchal taboos and traditional social responsibilities²¹ but also transform themselves.²² The psychological empowerment of women allows them to increase²³ their self-confidence and participate in new groups.²⁴ Therefore, this may contribute to disaster risk mitigation and disaster management.²⁵ Psychologically empowered women believe that they have more ability to control their environment, emotions, and actions to achieve desired outcomes.²⁶ Because women generally develop psychological resilience against the problems they manage in their daily lives, they can perform better in disaster situations.^{18,27} In order to strengthen women psychologically, they need to be visible in the public arena, participate in decision-making mechanisms, be represented in the political arena, increase their ability to act independently,

achieve economic prosperity, access training, use the conditions brought by technology, eliminate inequalities, protect their self-esteem, eliminate the oppression of the female body, and make their voices heard.^{7,28–30}

Although there is evidence in the literature that the gender factor affects disaster risk perception,^{31,32} it remains unclear whether psychological empowerment has a direct impact on disaster risk perception.³³ Although the evidence in the literature is unclear that psychological empowerment directly affects disaster risk perception, it suggests that psychological empowerment may be indirectly related to the change in individuals' negative thoughts, risk perceptions, and their consequences.^{34,35}

In this regard, the Sendai Framework for Disaster Risk Reduction also emphasizes the gender factor in increasing community disaster resilience. The Sendai Framework for Disaster Risk Reduction (2015–2030) calls for “empowering people disproportionately affected by disasters and ensuring inclusive, accessible and equitable participation. Include gender, age, disability, and cultural perspectives in all policies and practices, and promote women and youth leadership.”³⁶ Therefore, in a gender context, women, with their leadership and strong roles in integrated disaster management, can be major actors in disaster risk mitigation and crisis management processes by utilizing both their individual and societal capacities.^{7,37} Eliminating gender inequalities can pave the way for women to participate more in disaster preparedness and disaster response processes.³⁸

In this regard, this study aimed to examine the impact of psychological power perceptions of gender roles on disaster risk perception of women, who are at risk of becoming more vulnerable in disasters but have a high potential to become major actors in disaster risk mitigation and crisis management processes if they are empowered.

Methods

Study Design

This study, which examined the effect of women's psychological power on disaster risk perception, was planned in a cross-sectional, descriptive, and correlational design.

Universe and the sample of the study

The study universe consisted of women living in Türkiye. Living in Türkiye, being over 18 years of age, being able to read and write, women who can use social media communication tools, and volunteering to participate in the study were determined as inclusion criteria. The criteria other than these are considered as exclusion criteria. Considering the large size of the study universe, the difficulty of reaching the entire universe, and time and cost issues, sampling was chosen. In determining the study group, the non-probabilistic convenience sampling method was preferred.³⁹ The sample size required for valid, reliable, and accurate scientific results was calculated before the study using G*Power (3.1.9.7) software with 95% theoretical power.⁴⁰ The sample size of the study was determined as a minimum of 166 people with a power of 80% at an effect level of 0.5 at a 95% CI. Although the minimum sample size for the study was 166 people, data were collected from 272 participants, considering the expectation of missing data and erroneous responses.

Data collection tools

The study data were collected using the “Personal Information Form” prepared by the researchers to identify the personal and

professional characteristics of the participants, the “Women's Psychological Power Scale,” and the “Disaster Risk Perception Scale.”

Personal information form. The form created by the researchers consists of 8 closed-ended questions regarding the personal and professional characteristics of the participants (marital status, age, education level, occupation, disaster training status, disaster experience, psychosocial support service receipt status, etc.).

Women's Psychological Power Scale (WPPS). The “Women's Psychological Power Scale” (WPPS) was developed by Bozkur (2020). Focusing on the psychological aspect of empowerment, the WPPS measures women's perception of psychological power to challenge traditional gender roles arising from culture or context. The 5-point Likert-type WPPS consists of 4 sub-dimensions and 31 items. These sub-dimensions are strength/advocacy, self-esteem, approach to education, and restrictiveness. Cronbach's Alpha value for overall WPPS was found to be 0.84. In this study, Cronbach's Alpha value was found to be 0.71.⁴¹

Disaster Risk Perception Scale (DRPS). The Disaster Risk Perception Scale (DRPS) developed by Çelik and Kılıç (2023) consists of 21 items and 4 sub-dimensions. The sub-dimensions of the scale are “threat,” “fatalism,” “controllability,” and “anxiety.” The “threat” sub-dimension of the scale consists of 7 items, the “fatalism” sub-dimension consists of 3 items, the “controllability” sub-dimension consists of 6 items and the “anxiety” sub-dimension consists of 5 items. The items in the scale are in 5-point Likert format as “1-Strongly Disagree,” “2-Disagree,” “3-Partially Agree,” “4-Agree,” and “5-Strongly Agree.” The lowest score that can be obtained from the scale is 21 and the highest score is 105. As the score obtained from the scale increases, the level of disaster risk perception increases. The Cronbach's Alpha value of the scale was found to be 0.86. In this study, Cronbach's Alpha value was found to be 0.84.⁴²

Data Collection Process

The study was completed with 272 people who met the inclusion criteria. The data of the study were collected between February 21, 2024 and March 07, 2024 through an online survey. The data collection tool has been prepared electronically using the interface in the “<https://www.google.com/forms/about/>” system. Google Forms was limited to 1 response per participant to prevent repeated responses. Participants were contacted via social media tools such as email, WhatsApp, etc. As of February 21, 2024, posts were made via Instagram, Facebook, and WhatsApp status. These posts were repeated continuously every day and ended on March 7, 2024.

In the first part of the questionnaire form, the purpose of the study, contact information of the researchers, information on voluntary participation, and consent for voluntary participation were included. Following the information provided, those who wanted to participate in the study voluntarily checked the voluntary participation confirmation icon and had access to answer the “Women's Psychological Strength Scale” and “Disaster Risk Perception Scale” questions on the following pages. Individuals who voluntarily participate in the survey are required to answer all the questions in the relevant questionnaire to access the questions on the next page. Therefore, there were no questionnaires with missing responses in the study. The average time to answer the questionnaire is 10–15 minutes for each respondent. The number of questionnaire responses was limited so that each respondent could answer the questionnaire only once.

Statistical Analysis

All data were saved on the computer and analyzed using SPSS 22 (statistical package for social sciences) software for Windows.

In the analysis of the data, firstly, the assumptions to be met to decide which tests (parametric/nonparametric tests) to apply were tested. The normal distribution of the data was determined by examining the Kolmogorov-Smirnov and skewness and kurtosis coefficients. In addition, Kolmogorov-Smirnov, kurtosis and skewness values, which are other assumptions of the normal distribution, and histogram graph, were used to decide the distribution normality. As can be seen in Table 1, because the kurtosis and skewness values of the data obtained from the Kolmogorov-Smirnov test with a significance level less than 0.05 are between ± 2.0 ,⁴³ it is accepted that the values do not differ excessively from the normal distribution and statistical analyzes were performed with parametric tests. An Independent sample *t* test was used to compare two independent groups, and a one way analysis of variance was used to compare two or more unrelated groups. A Pearson correlation analysis was used to examine the relationship between numerical variables. The data were evaluated with a 95% confidence interval and $\alpha = 0.05$ significance level. Summary statistics for the overall and sub-dimension scores of the scale are presented in Table 1.

Results

In this section, firstly, the socio-demographic characteristics of the participants are presented. 95.59% (*n*: 260) of the participants were single, 50.37% (*n*: 137) had received disaster training, 51.47% (*n*: 140) had not experienced a disaster, and 86.4% (*n*: 235) had not received psychosocial support services before. The mean age of the participants was 20.47 ± 3.35 years (Table 2).

Fatalism scores showed a statistically significant difference according to the status of receiving disaster training ($P < 0.05$). When the mean scores were examined, it was determined that the fatalism scores of the participants who received disaster training (2.63 ± 0.94) were lower than those who did not receive disaster training (2.90 ± 1.06). Other scale scores did not show a statistically significant difference according to the status of receiving disaster education before ($P > 0.05$). The strength/advocacy, threat, anxiety, and disaster risk perception scale scores show a statistically significant difference according to the previous disaster experience of the participants ($P < 0.05$). When the mean scores were examined, it was determined that the strength/advocacy, threat, anxiety, and disaster risk perception scale scores of the participants who had disaster experience were

Table 2. Distributions on demographic characteristics

Variables	Groups	<i>n</i>	%
Marital status	Single	260	95.59
	Married	12	4.41
Disaster training status	Yes	137	50.37
	No	135	49.63
Disaster experience	Yes	132	48.53
	No	140	51.47
Psychosocial support service receipt status	Yes	37	13.6
	No	235	86.4
Age	$\bar{X} \pm SD$	20.47 ± 3.35	

higher than those who did not experience. Other scale scores did not show a statistically significant difference according to the status of experiencing a disaster ($P > 0.05$) (Table 3).

There was a low, positive, and significant ($r: 0.227$; $P < 0.05$) correlation between restrictiveness scores and threat scores; a low, negative, and significant ($r: -0.263$; $P < 0.05$) correlation between fatalism scores; a moderate, positive, and significant ($r: 0.448$; $P < 0.05$) correlation between the controllability scores; a low, positive, and significant ($r: 0.277$; $P < 0.05$) correlation between anxiety scores; and a low, positive, and significant ($r: 0.293$; $P < 0.05$) correlation between disaster risk perception scale scores. There was a low, negative, and significant correlation between the approach to education scores and fatalism scores ($r: -0.243$; $P < 0.05$), and a moderate, positive, and significant correlation between controllability scores ($r: 0.155$; $P < 0.05$). There was a low, negative, and significant correlation between self-esteem scores and fatalism scores ($r: 0.215$; $P < 0.05$). There was a moderate, positive, and significant ($r: 0.345$; $P < 0.05$) correlation between strength/advocacy scores and threat scores; a low, negative, and significant ($r: -0.192$; $P < 0.05$) correlation between fatalism scores; a moderate, positive, and significant ($r: 0.505$; $P < 0.05$) correlation between controllability scores; a low, positive, and significant ($r: 0.292$; $P < 0.05$) correlation between anxiety scores; and a moderate, positive, and significant ($r: 0.396$; $P < 0.05$) correlation between disaster risk perception scale scores. There is a moderate, positive, and

Table 1. Summary statistics for overall scale and sub-dimension scores

	Kolmogorov-Smirnov		Skewness	Kurtosis	Mean	S. Deviation
	Statistics	<i>p</i>				
Restrictiveness	0.21	0.01	-1.54	1.99	4.34	0.70
Approach to education	0.08	0.01	-0.09	-0.52	3.53	0.85
Self-esteem	0.10	0.01	0.68	0.39	2.30	0.73
Strength/advocacy	0.09	0.01	-0.80	0.44	4.23	0.50
Women's Psychological power Scale	0.07	0.01	-0.55	0.76	3.66	0.33
Threat	0.07	0.01	-0.24	-0.25	3.95	0.65
Fatalism	0.09	0.01	0.04	-0.57	2.76	1.01
Controllability	0.20	0.01	-1.16	0.42	4.44	0.63
Anxiety	0.11	0.01	-0.40	-0.27	4.06	0.72
Disaster risk Perception scale	0.08	0.01	-0.45	0.08	3.95	0.48

Table 3. Comparison of scale scores according to demographic characteristics

	Disaster training status			Disaster experience		Psychosocial support service receipt status	
	Group	$\bar{X} \pm SD$		$\bar{X} \pm SD$		$\bar{X} \pm SD$	
Restrictiveness	Yes	4.32 $\pm$ 0.69	$t: -0.49; P: 0.62$	4.37 $\pm$ 0.73	$t: 0.57; P: 0.57$	4.32 $\pm$ 0.81	$t: -0.16; P: 0.87$
	No	4.36 $\pm$ 0.71		4.32 $\pm$ 0.68		4.34 $\pm$ 0.68	
Approach to education	Yes	3.49 $\pm$ 0.83	$t: -0.84; P: 0.40$	3.57 $\pm$ 0.85	$t: 0.61; p: 0.55$	3.49 $\pm$ 0.95	$t: -0.31; P: 0.76$
	No	3.58 $\pm$ 0.88		3.50 $\pm$ 0.86		3.54 $\pm$ 0.84	
Self esteem	Yes	2.27 $\pm$ 0.70	$t: -0.70; P: 0.49$	2.29 $\pm$ 0.73	$t: -0.09; P: 0.93$	2.24 $\pm$ 0.68	$t: -0.54; P: 0.59$
	No	2.33 $\pm$ 0.76		2.30 $\pm$ 0.73		2.31 $\pm$ 0.74	
Strength/advocacy	Yes	4.20 $\pm$ 0.55	$t: -1.09; P: 0.28$	4.29 $\pm$ 0.48	$t: 2.11; P: 0.04$	4.31 $\pm$ 0.57	$t: 1.01; P: 0.31$
	No	4.26 $\pm$ 0.43		4.17 $\pm$ 0.51		4.22 $\pm$ 0.48	
Women's Psychological Power Scale	Yes	3.63 $\pm$ 0.34	$t: -1.57; P: 0.12$	3.69 $\pm$ 0.33	$t: 1.75; P: 0.08$	3.67 $\pm$ 0.36	$t: 0.22; P: 0.83$
	No	3.69 $\pm$ 0.33		3.62 $\pm$ 0.34		3.66 $\pm$ 0.33	
Threat	Yes	4.02 $\pm$ 0.67	$t: 1.86; P: 0.06$	4.06 $\pm$ 0.70	$t: 2.83; P: 0.01$	3.98 $\pm$ 0.71	$t: 0.31; P: 0.75$
	No	3.88 $\pm$ 0.62		3.84 $\pm$ 0.57		3.94 $\pm$ 0.64	
Fatalism	Yes	2.63 $\pm$ 0.94	$t: -2.29; P: 0.02$	2.80 $\pm$ 1.12	$t: 0.59; P: 0.56$	2.71 $\pm$ 1.03	$t: -0.33; P: 0.74$
	No	2.90 $\pm$ 1.06		2.73 $\pm$ 0.90		2.77 $\pm$ 1.01	
Controllability	Yes	4.47 $\pm$ 0.66	$t: 0.68; P: 0.50$	4.44 $\pm$ 0.64	$t: -0.11; P: 0.92$	4.51 $\pm$ 0.65	$t: 0.66; P: 0.51$
	No	4.42 $\pm$ 0.61		4.45 $\pm$ 0.63		4.43 $\pm$ 0.63	
Anxiety	Yes	4.11 $\pm$ 0.74	$t: 1.17; P: 0.24$	4.16 $\pm$ 0.68	$t: 2.32; P: 0.02$	3.94 $\pm$ 0.81	$t: -1.06; P: 0.29$
	No	4.01 $\pm$ 0.70		3.96 $\pm$ 0.75		4.08 $\pm$ 0.70	
Disaster Risk Perception Scale	Yes	3.97 $\pm$ 0.47	$t: 0.83; P: 0.41$	4.01 $\pm$ 0.51	$t: 2.25; P: 0.03$	3.94 $\pm$ 0.53	$t: -0.09; P: 0.93$
	No	3.92 $\pm$ 0.48		3.88 $\pm$ 0.44		3.95 $\pm$ 0.47	

F: One-way analysis of variance t: Independent sample t test.

significant ($r: 0.339; P < 0.05$) correlation between the women's psychological power scale scores and threat scores; a low, negative, and significant ($r: -0.177; P < 0.05$) correlation between the fatalism scores; a moderate, positive, and significant ($r: 0.483; P < 0.05$) correlation between the controllability scores; a moderate, positive, and significant ($r: 0.391; P < 0.05$) correlation between anxiety scores; and a moderate, positive, and significant ($r: 0.425; P < 0.05$) correlation between the disaster risk perception scale scores (Table 4).

When the regression analysis assumptions were analyzed, it was found that the Durbin-Watson value was 1.80 and there was no autocorrelation. The variance inflation factor (VIF) was around 1 and it was observed that there was no multicollinearity problem. Multiple regression analysis was conducted by including the sub-

dimension scores of the women's psychological power scale, which were found to be significant and related to the disaster risk perception scores, in the model. It was determined that the model established for the prediction of disaster risk perception scores was statistically significant [$F(4.267) = 19.92 P < 0.05$]. Restrictiveness, self-esteem, and strength/advocacy scores were found to be significant predictors of disaster risk perception scores ($P < 0.05$). A 1-unit change in the restrictiveness sub-dimension scores will cause a 0.14-fold change in the disaster risk perception score, a 1-unit change in the self-esteem sub-dimension scores will cause a 0.16-fold change in the disaster risk perception score, and a 1-unit change in the strength/advocacy sub-dimension scores will cause a 0.39-fold change in the disaster risk perception score. The scores of restrictiveness, self-esteem, and strength/advocacy sub-

Table 4. Findings on the correlation between scales

Pearson Correlation	Threat	Fatalism	Controllability	Anxiety	Disaster risk perception Scale
Restrictiveness	.227**	-.263**	.448**	.277**	.293**
Approach to education	.080	-.243**	.155*	.103	.059
Self esteem	.006	.215**	-.106	.118	.070
Strength/advocacy	.345**	-.192**	.505**	.292**	.396**
Women's Psychological Power Scale	.339**	-.177**	.483**	.391**	.425**

** $P < 0.01$.

Table 5. Findings on the prediction of disaster risk perception score

Dependent variable: Disaster Risk Perception Scale						
Independent variables:	B	St. Error	Beta	t	P	VIF
Constant	1.55	0.29		5.36	0.01	
Restrictiveness	0.14	0.05	0.20	2.87	0.01	1.72
Approach to education	−0.06	0.04	−0.10	−1.65	0.10	1.37
Self-esteem	0.16	0.04	0.25	4.10	0.01	1.25
Strength/advocacy	0.39	0.06	0.40	5.99	0.01	1.57

F(4,267)=19.92; P<0.01 R:0.479 R²:0.230 Durbin-Watson:1.80.

dimensions, which were found significant in the model, explained 23% of the variance in disaster risk perception scores (R²: 0.23) (Table 5).

Discussion

In this study, we aimed to examine the effect of women's perceptions of psychological power related to gender roles on their disaster risk perceptions. This study determined that the psychological strength of women with disaster experience positively affects disaster risk perception, that women who received disaster training have lower fatalistic beliefs, and that women's psychological strength affects threat perception, controllability, and anxiety levels. In addition, the study reveals that important parameters affecting women's perception of disaster risk are restrictiveness, self-confidence, and power/advocacy.

This study, which examined the effect of women's perceptions of psychological power regarding gender roles on disaster risk perception, found that the scores of strength/advocacy, threat, anxiety, and disaster risk perception scale were higher in women who experienced disasters compared to those who did not. A previous study conducted in Portugal determined that the disaster experience affects individuals' disaster risk perception.⁴⁴ Individual perception and experience of a natural hazard can influence risk perception.⁴⁵ Exposure to an event and experience affects individuals' risk perception.⁴⁶ Another study determined that factors such as gender, age, and disaster experience affect risk perception.⁴⁷ Similarly, there is evidence in the literature that disaster risk perception is influenced by various factors, particularly experiences.^{48,49} When the data of our study are evaluated together with the existing literature, it is concluded that disaster experiences of individuals affect disaster risk perception. This can be explained by the fact that having experienced a disaster makes people aware of their vulnerabilities and thus affects their risk perception.⁵⁰ Therefore, it can be said that creating systems that will directly include people with disaster experience in the process of creating disaster plans will contribute to disaster management processes.

This study found that the fatalism scores of women who had received disaster training were lower than those who had not received disaster training before. In the study conducted by Aksa et al. (2020) in Indonesia, it was found that participants' fatalistic beliefs had a negative and significant correlation with earthquake risk perception.⁵¹ In another study conducted in Florida, Kusenbach (2018) reported that although there was a partial link between female gender and fatalism, no other distinct clusters based on demographic characteristics were observed.⁵² In their study conducted in Lebanon, Baytiyeh and Naja (2016) reported that belief in fatalism affects risk perception and has a negative impact on

disaster preparedness.⁵³ This can be explained by the fatalistic belief that people have no control over dangers.⁵⁴ Fatalistic understanding should be considered in efforts to increase the disaster resilience of societies because it has been found that fatalistic approaches reduce disaster resilience.⁵⁵ Yari et al. (2019) stated in their research that fatalistic beliefs affect disaster preparedness behavior.⁵⁶ Lindell and Perry (1992) stated that individuals with fatalistic beliefs believe that disasters cannot be prevented.⁵⁷ Therefore, it can be assumed that it is a natural result that disaster training affects fatalism score.

In this study, it was determined that there was a moderate and positive correlation between women's perceptions of psychological power and threat perception, controllability, anxiety levels, and disaster risk perceptions, while there was a low and negative correlation with their perceptions of fatalism. Although psychological strength is usually associated with lower threat perception, in this study higher WPPS was associated with higher threat perception. A possible explanation for this is that women who perceive themselves as psychologically strong are more aware of the dangers around them, which leads to higher threat perception. Marceron and Rohrbeck (2019) found a significant negative correlation between perceived threat and self-efficacy regarding disasters.⁵⁸ A study in Taiwan reported that women feel more prepared than men for possible future hazards.⁵⁹ Another study found that women were more prepared for hazards.⁶⁰ These situations may indicate that women's threat perception and controllability affect disaster risk perception. Cvetković et al. (2019) determined that men have higher perceptions of flood disaster preparedness and women have low self-confidence in flood disaster preparedness.⁶¹ In the aforementioned study, this was attributed to women's gender roles and linked to women's low participation in community networks, their status within the family, and cultural influence. Kung and Chen (2012) determined that women feel more anxious and threatened by earthquakes and are more sensitive to risk.⁴⁹ It can be stated that threat perception affects disaster risk perception and makes women more sensitive.

Restrictiveness, self-esteem, and strength/advocacy scores were found to be significant predictors of disaster risk perception scores. The psychological power of women affects their disaster risk perception. Rodriguez-Llanes et al. (2013) determined that strong social support received after a disaster is associated with increased psychological resilience, while the women's resilience result is associated with decreased probability.⁶² Öztekin and Örki (2023) reported that conscious societies have higher psychological resilience in disasters and higher disaster risk perceptions.⁶³ Killgore et al. (2020) determined that psychological resilience in the face of disaster risks is related to alterable factors.⁶⁴ Nishimi et al. (2023) reported that psychological resilience is associated with a lower probability of disaster risk over time.⁶⁵ Altınova and Adıgüzel (2014) found positive results in terms of self-esteem, gender roles, and perceptions.⁶⁶ Rodriguez-Llanes et al. (2013) determined that women are at higher risk of experiencing a worse state of psychological resilience after a disaster.⁶² Xi et al. (2020) concluded that resilience mediates various problems after disasters.⁶⁷ In a study conducted in Erzincan, Tercan (2023) determined that the level of disaster risk perception of female individuals was higher than male individuals.⁶⁸ In their study conducted at Gümüşhane University, Mızrak and Aslan (2020) found that women's perception of disaster risk was higher than that of men.⁶⁹ Ayvazoglu et al. (2020) in their study conducted at Mustafa Kemal University, determined that the disaster risk perception levels of women were higher than men.⁷⁰ Similarly, numerous studies^{31,49,71–73} revealed that women have higher disaster risk

perceptions than men. Therefore, it can be stated that the psychological empowerment of women can have significant effects on disaster risk management. It is considered that women have higher disaster risk perceptions than men due to their physiological, cognitive, psychological, social network, and social roles. This may significantly affect the idea of empowering women and supporting a collective approach⁷⁴ to create disaster-resilient societies and achieve sustainable development goals.

Limitations

Collecting the study data online via Google form is a limitation of the study. While this method provides the convenience of collecting participants' responses in real-time, it may make it difficult to observe significant contexts of the participants, such as social or demographic factors. It was observed that disaster training affected the fatalism score. However, considering that the perception of fatalism may be affected by different factors, the fact that the perception of fatalism in disasters was not examined in terms of different variables is considered as a limitation of the study. In this study, only the effect of women's psychological resilience on disaster risk perception was examined. Therefore, it is considered important to conduct further studies with a mixed design, considering women's psychological experiences and other environmental factors. In this study, it was determined that income level affects self-esteem. Therefore, it is recommended that future studies investigate environmental and personal characteristics that may affect self-esteem.

Conclusion and Recommendations

As mentioned in our study, it has been determined in many scientific studies that disaster risk perception is affected by various factors. A high level of disaster risk perception may increase individuals' tendency to be more prepared for disasters and thus reduce their vulnerability. Therefore, in this study, the effect of psychological power of women living in Türkiye on disaster risk perception was examined in terms of various variables. This study determined that women with disaster experience had higher disaster risk perceptions. For this reason, it is considered important to ensure the leadership of women with disaster experience and their participation in disaster risk and disaster crisis management stages. It was determined that receiving disaster training was a significant factor in disaster preparedness and affected the fatalism score. It can be said that disaster training is an important tool for empowering women and building capacity against their vulnerabilities. It was determined that there was a moderate positive correlation between women's perceptions of psychological power and their perceptions of disaster risk. In addition, the restrictiveness, self-esteem, and strength/advocacy scores were found to be significant predictors of disaster risk perception scores. It is considered that psychological empowerment of women and conducting women-based disaster studies are essential in reducing disaster risks, ensuring sustainable disaster resilience, building a disaster-resilient society, and conveying this information to future generations.

Finally, according to the results of our study, women's psychological strength affects their perception of disaster risk. It is thought that psychological empowerment of women can play an important role in increasing their resilience against disasters and reducing their vulnerability. However, vulnerability to disasters is a multidimensional phenomenon, and because it cannot be explained only by psychological strength, it is recommended that different perspectives be developed in future studies based on this study.

Data availability statement. The data created within the scope of the study can be accessed from the authors upon appropriate request, provided that legal and ethical rules are respected. The data will be stored securely on a password-protected computer.

Funding statement. No support received.

Competing interests. No conflict of interest has been declared.

Ethical standard. The Helsinki guidelines were followed during the study's execution. Participants participated in the study voluntarily and with their consent. Informed consent was obtained from each participant. Permission was obtained from Artvin Çoruh University Scientific Research and Publication Ethics Committee before the study started (Ethics Committee No: E-18457941-050.99-121593- 22.01.2024).

References

1. Varol N, Gültekin T. Afet antropolojisi. *Elektronik Sosyal Bilimler Dergisi*. 2016;15(59):1431–1436.
2. AFAD. Açıklamalı afet yönetimi terimleri sözlüğü. Published Accessed 11 December 2024. <https://www.afad.gov.tr/kurumlar/afad.gov.tr/3495/xfiles/sozluk.pdf>.
3. Quarantelli EL. What is a disaster?: A dozen perspectives on the question. *What is a Disaster?: A Dozen Perspectives on the Question*. 2005:3–6.
4. Cutter S. *Hazards Vulnerability and Environmental Justice*. Routledge; 2012:71–73.
5. Thomas DS, Mitchell JT, Scott MS, et al. Developing a digital atlas of environmental risks and hazards. *J Geograph*. 1999;98(5):201–207.
6. Quarantelli EL. Disasters and catastrophes: Their conditions in and consequences for social development. *Preliminary Paper #197*. Newark, Delaware: Disaster Research Center, University of Delaware. 1993:3–5.
7. Gündüz F. A phenomenological study on women's disaster experience in Türkiye. *Int J Disaster Risk Reduct*. 2024;100:104196.
8. Thurairajah N, Haigh R, Thurairajah N, et al. Post disaster reconstruction as an opportunity for development: women's perspective. In: *CIB W89 International Conference on Building Education and research (BEAR)*, 11–15th February 2008, Sri Lanka. 2008:1115.
9. Neumayer E, American TP. The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Ann Assoc Am Geograph*. 2007;97(3):551–566.
10. Hemachandra K, Amaratunga D, Haigh R. Role of women in disaster risk governance. *Procedia Eng*. 2018;212:1187–1194.
11. Ikeda K. Gender differences in human loss and vulnerability in natural disasters: a case study from Bangladesh. *Indian J Gend Stud*. 1995;2(2):171–193.
12. Enarson E, Meyreles L. International perspectives on gender and disaster: differences and possibilities. *Int J Sociol Soc Pol*. 2004;24(10–11):49–93.
13. Clissold R, Westoby R, McNamara KE. Women as recovery enablers in the face of disasters in Vanuatu. *Geoforum*. 2020;113:101–110.
14. Smyth I, Sweetman C. Introduction: gender and resilience. *Gend Dev*. 2015; 23(3):405–414.
15. Wood W, Eagly AH. Biosocial construction of sex differences and similarities in behavior. *Adv Exp Soc Psychol*. 2012;46:55–123.
16. Sandmeyer L, Kohn P, Driscoll JB, et al. A Program for Optimizing Women's Leadership Skills (OWLS). 1977:15–19.
17. Ruducha J, Hariharan D, Potter J, et al. Measuring coordination between women's self-help groups and local health systems in rural India: a social network analysis. *BMJ Open*. 2019;9(8):28943.
18. Işık Ö, Özer N, Sayın N, et al. Are women in Turkey both risks and resources in disaster management? *Int J Environ Res Public Health*. 2015; 12(6):5758–5774.
19. Brody C, De Hoop T, Vojtkova M, et al. Can self-help group programs improve women's empowerment? A systematic review. *J Dev Effect*. 2016; 9(1):15–40.
20. Batool SA, Batool SS. Construction and validation of Global Psychological Empowerment Scale for Women. *Pak J Soc Clin Psychol*. 2018; 15(1):3–10.
21. Cerna C, Wallace J. Women and culture. *Women Int Human Rights Law*. 2000:623–624.

22. **Chandra Mandal K.** International forum of teaching and studies concept and types of women empowerment. *Int Forum Teach Stud.* 2013;**9**(2): 17–30.
23. **Diener E, Biswas-Diener R.** Psychological empowerment and subjective well-being. *PsycEXTRA Dataset.* 2005;125–140.
24. **Hibbs L.** “I could do that!”—The role of a women’s non-governmental organisation in increasing women’s psychological empowerment and civic participation in Wales. *Womens Stud Int Forum.* 2022;90.
25. **Yıldırım F, Gül H.** Uluslararası kalkınma politikaları ve kadınların güçlendirilmesi üzerine bir değerlendirme. *MANAS Sosyal Araştırmalar Dergisi.* 2021;**10**(1):679–695.
26. **Mahato T, Jha MK, Nayak AK, et al.** Empowerment of women through participation in self-help groups: a bibliometric analysis and systematic review. *J Enterp Communities.* 2023;**17**(6):1511–1538.
27. **Bonanno GA, Galea S, Bucciarelli A, et al.** What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *J Consult Clin Psychol.* 2007;**75**(5):671–682.
28. **Bhat RA.** Role of education in the empowerment of women in India. *J Educ Pract.* 2015;**6**(10):188–191.
29. **Yılmaz M.** Kadınlarda psikolojik güçlülük ve güçlenmesi gereken alanların belirlenmesi. Master’s thesis, İzmir Katip Celebi University, Türkiye 2024: 23–26.
30. **Francina PX, Joseph MV.** Women empowerment: the psychological dimension. *Rajagiri J Soc Devel.* 2013;**5**(2):61–74.
31. **Bronfman NC, Cisternas PC, López-Vázquez E, et al.** Trust and risk perception of natural hazards: implications for risk preparedness in Chile. *Nat Hazards.* 2016;**81**(1):307–327.
32. **Usta G.** Dünya’da meydana gelen afetlerin istatistiksel olarak analizi (1900–2022). *Gümüşhane Üniversitesi Sosyal Bilimler Dergisi.* 2023;**14**(1):172–186.
33. **Moreno J, Shaw D.** Women’s empowerment following disaster: a longitudinal study of social change. *Nat Hazards.* 2018;**92**(1):205–224.
34. **Emery C, Booth JE, Michaelides G, et al.** The importance of being psychologically empowered: buffering the negative effects of employee perceptions of leader–member exchange differentiation. *J Occup Organ Psychol.* 2019;**92**(3):566–592.
35. **Ma Z, Zhou W, Deng X, et al.** Community disaster resilience and risk perception in earthquake-stricken areas of China. *Disaster Med Public Health Prep.* 2022;**17**(e74).
36. **UNDRR.** Sendai Framework for Disaster Risk Reduction 2015–2030. 2015: 21–28.
37. **Gündüz F.** Afetlerde kadın ve toplumsal cinsiyet perspektifi ile çıkarılması gereken dersler (Haiti ve Japonya depremi örneği). *IBAD Sosyal Bilimler Dergisi.* 2022;**12**(12):440–460.
38. **Bradshaw S.** Engendering development and disasters. *Disasters.* 2015; **39**(1):54–75.
39. **Malhotra NK.** *Marketing Research an Applied Orientation.* 4. Edition. Pearson Prentice Hall; 2004:410–414.
40. **Faul F, Erdfelder E, Buchner A, et al.** Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. *Behavior Research Methods.* 2009;**41**(4):1149–1160.
41. **Bozkur B.** Kadın psikolojik güç ölçeği: Ölçek geliştirme çalışması. *Fe Dergi.* 2020;**12**(2):15–31.
42. **Çelik İH, Kılıç T.** Disaster risk perception regarding culture and personality. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi.* 2023;**77**:157–172.
43. **Mallery P, George D.** *SPSS for Windows Step BysStep: A Simple Guide and Reference.* Taylor & Francis: Abingdon; 2016:222.
44. **Domingues RB, de Jesus SN, Ferreira Ó.** Place attachment, risk perception, and preparedness in a population exposed to coastal hazards: a case study in Faro Beach, southern Portugal. *Int J Disaster Risk Reduct.* 2021;**60**:102288.
45. **Vitek JD, Berta SM.** Improving perception of and response to natural hazards: the need for local education. *J Geograph.* 1982;**81**(6):225–228.
46. **Lima ML, Barnett J, Vala J.** Risk perception and technological development at a societal level. *Risk Anal.* 2005;**25**(5):1229–1239.
47. **Fernandez G, Tun AM, Okazaki K, et al.** Factors influencing fire, earthquake, and cyclone risk perception in Yangon, Myanmar. *Int J Disaster Risk Reduct.* 2018;**28**:140–149.
48. **Sjöberg L.** Distal factors in risk perception. *J Risk Res.* 2003;**6**(3): 187–211.
49. **Kung Y, Chen S.** Perception of earthquake risk in Taiwan: effects of gender and past earthquake experience. *Risk Anal Int J.* 2012;**32**(9): 1535–1546.
50. **Terpstra T.** Emotions, trust, and perceived risk: affective and cognitive routes to flood preparedness behavior. *Risk Anal.* 2011;**31**(10):1658–1675.
51. **Aksa FI, Utaya S, Bachri S, et al.** The role of knowledge and fatalism in college students related to the earthquake-risk perception. *Jambá J Disaster Risk Stud.* 2020;**12**(1):1–6.
52. **Kusenbach M.** People like me: multiple belongings among senior mobile home residents in Florida. *Contested Belonging: Spaces, Practices, Biographies.* 2018:43–66.
53. **Baytiyeh H, Naja M.** The effects of fatalism and denial on earthquake preparedness levels. *Disaster Prev Manag.* 2016;**25**(2):154–167.
54. **Gierlach E, Belsher BE, Beutler LE.** Cross-cultural differences in risk perceptions of disasters. *Risk Anal Int J.* 2010;**30**(10):1539–1549.
55. **Pathirage C, Seneviratne K, Amaratunga D, et al.** Managing disaster knowledge: identification of knowledge factors and challenges. *Int J Disaster Resil Built Environ.* 2012;**3**(3):237–252.
56. **Yari A, Zarezadeh Y, Ostadtaghizadeh A.** Prevalence of fatalistic attitudes toward earthquake disaster risk management in citizens of Tehran, Iran. *Int J Disaster Risk Reduct.* 2019;**38**:101181.
57. **Lindell M, Perry R.** *Behavioral Foundations of Community Emergency Planning.* Hemisphere Publishing Corp. 1992:163–164.
58. **Marceron JE, Rohrbeck CA.** Disability and disasters: the role of self-efficacy in emergency preparedness. *Psychol Health Med.* 2019;**24**(1):83–93.
59. **Roder G, Ruljigalig T, Lin CW, et al.** Natural hazards knowledge and risk perception of Wujie indigenous community in Taiwan. *Nat Hazards.* 2016; **81**(1):641–662.
60. **Lindell MK, Whitney DJ.** Correlates of household seismic hazard adjustment adoption. *Risk Anal.* 2000;**20**(1):13–26.
61. **Cvetković VM, Öcal A, Ivanov A.** Young adults’ fear of disasters: a case study of residents from Turkey, Serbia and Macedonia. *Int J Disaster Risk Reduct.* 2019;**35**(February).
62. **Rodriguez-Llanes JM, Vos F, Guha-Sapir D.** Measuring psychological resilience to disasters: Are evidence-based indicators an achievable goal? *Environ Health.* 2013;**12**(1):1–10.
63. **Öztekin GG, Örkü H.** Effects of depression, anxiety, and stress on disaster preparedness: Evidence from the February 6 Türkiye earthquakes. *J Disaster Risk.* 2023;**6**(4):1332–1347.
64. **Killgore WDS, Taylor EC, Cloonan SA, et al.** Psychological resilience during the COVID-19 lockdown. *Psychiatry Res.* 2020;291.
65. **Nishimi K, Tan J, Scoglio A, et al.** Psychological resilience to trauma and risk of COVID-19 infection and somatic symptoms across 2 years. *Psychosom Med.* 2023;**85**(6):488–497.
66. **Altınova H, Adıgüzel Ö.** Yaratıcı drama yönteminin kadınların cinsiyet rolü bilincine etkililiği. *Toplum ve Sosyal Hizmet.* 2014;**25**(1):35–60.
67. **Xi Y, Yu H, Yao Y, et al.** Post-traumatic stress disorder and the role of resilience, social support, anxiety and depression after the Jiuzhaigou earthquake: a structural equation model. *Asian J Psychiatr.* 2020;**49**:101958.
68. **Tercan B.** Bireylerin afet risk algısının çeşitli değişkenler açısından değerlendirilmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi.* 2023;**12**(3): 1279–1287.
69. **Mızrak S, Aslan R.** Disaster risk perception of university students. *Risk Hazards Crisis Public Policy.* 2020;**11**(4):411–433.
70. **Ayvazoglu G, Çekiç M, Yücel H.** Hatay Mustafa Kemal Üniversitesi öğrencilerinin afet risk algısı ve afete hazırlık durumlarının değerlendirilmesi. *Sosyal Bilimler Elektronik Dergisi.* 2020;**4**(7):85–96.
71. **Lindell MK, Hwang SN.** Households’ perceived personal risk and responses in a multihazard environment. *Risk Analysis.* 2008;**28**(2):539–556.
72. **Shrestha SR, Sliuzas R, Kuffer M.** Open spaces and risk perception in post-earthquake Kathmandu city. *App Geogr.* 2018;**93**:81–91.
73. **Gökçay G, Çevirme A, Küçük Hİ, et al.** The relationship between earthquake risk perceptions, religious orientation, spiritual well-being in individuals with and without earthquake experience: A cross-sectional study. *Sci Rep.* 2024;**14**(1):1–13.
74. **Drolet J, Dominelli L, Alston M, et al.** Women rebuilding lives post-disaster: Innovative community practices for building resilience and promoting sustainable development. *Gend Dev.* 2015;**23**(3):433–448.