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The Investigation of Quality of Life and Post-traumatic Stress Disorder Levels of Midwifery Students Experiencing an Earthquake

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Original Research

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Abstract

Objectives: The knowledge of students' quality of life and post-traumatic stress disorder levels, investigation of the relationship between them, and taking measures are essential in terms of guiding the necessary interventions. This study was conducted to determine the quality of life and post-traumatic stress disorder levels of midwifery students experiencing an earthquake.

Methods: This descriptive and correlational study was conducted with 363 midwifery students who had experienced the Kahramanmaras, Türkiye earthquake. Data were obtained using a Descriptive Information Form, the PTSD-Brief Scale, and the World Health Organization Quality of Life Scale (WHOQOL-BREF).

Results: The rate of post-traumatic stress disorder in the sample studied (n = 363), which consisted of midwifery students who would work in the field of health, was 21.5% 2 months after the earthquake. The multiple linear regression analysis indicated that factors predicting post-traumatic stress disorder following the earthquake were quality of life score related to physical and environmental domains, damage status of the house, presence of family history of depression, and smoking status.

Conclusions: This study, which was conducted 2 months following the earthquakes, showed that living spaces had an impact on the occurrence of post-traumatic stress disorder symptoms.

An earthquake is a type of natural disaster that causes serious loss of life and property.[1] It has severe traumatic effects due to destruction, death, and injury it causes, and threatens or disrupts individuals' vital integrity.[2,3] It is one of the natural disasters that affects Türkiye the most and continues to cause mental health problems in individuals and society due to its devastating effects.[3,4] Traumatic events such as earthquakes can leave a lasting impact on individuals' mental and spiritual health.[5] Post-traumatic stress disorder (PTSD) is one of the most widespread psychological traumas that emerges following earthquakes.[6] It is a widespread psychiatric trouble that occurs as a result of a painful, stressful event or situations that pose an extraordinary threat to a person's life.[7] In a meta-analysis of 46 studies including 76 101 earthquake survivors, the overall incidence of post-earthquake PTSD was reported to be 23.66%,[6] indicating that earthquakes caused tremendous psychological stress for survivors.[7] The effects of PTSD can lead to deep problems in individuals and negatively affect their daily routine and general quality of life.[8,9]

PTSD has a greater impact on quality-of-life domains than other mental illnesses.[10] Quality of life is one of the most important universal goals that societies aim to achieve today. It is linked to a person's judgment of his or her life. This judgment emerges from the combination of many concepts, such as a person's expectations from life, the standards he/she can establish, physiological and psychological processes, his/her goals in life, achievements, performance in living activities, and how he/she perceives life.[11,12] Quality of life is related to individuals' living conditions and can be affected by external factors.[11] The severity of post-traumatic symptoms is the strongest predictor of impaired quality of life in individuals experiencing PTSD.[10] The more severe the post-traumatic symptoms are, the greater the deterioration in quality of life will be.[13] Even compared to those with depression alone, individuals with PTSD comorbidity experience greater declines in quality of life.[14,15] Therefore, it is critical to determine the prevalence of PTSD in different populations, associated factors, and the level of its impact on life.[8,9]

Particularly midwifery students will be more affected by traumatic events such as earthquakes considering that they experience more stress and anxiety than others due to academic requirements, clinical practices, exams, exposure to emotionally challenging situations (birth and death), and responsibilities during their education.[16,17] Many factors, such as seeing injured or dead people after the earthquake, hospital experiences, damaged houses or schools, inability to access aid, and aftershocks after the earthquake, can cause students to experience repetitive trauma.[2,3]

The International Confederation of Midwives has determined the theme of the International Day of Midwives in 2024 as "Midwives: A vital climate solution," and under this theme, it has

been stated that midwives are at the forefront of natural disasters, especially midwives who are the first to provide supplies to women and children.[18] It was also seen during the earthquake in Türkiye that hundreds of midwives and midwifery students voluntarily rushed to help in the earthquake regions. The midwives and midwifery students in the earthquake regions were at the forefront because they knew the regions well. Although more than 1 year has passed in the earthquake zones, the living standards are unfortunately not at the old level. For these reasons, which were also seen in previous earthquakes, it was necessary to evaluate the quality of life of midwifery students who experienced the earthquake, which is at the forefront of disasters.

At the same time, it is thought that determining the adaptation skills, quality of life, and PTSD levels of midwifery students working with vulnerable populations such as pregnant women, postpartum women, and newborns may improve the quality of life, help to take and implement measures, and guide the necessary interventions. Our study was designed to determine the quality of life and PTSD levels of midwifery students who had experienced earthquakes in Kahramanmaraş province of Türkiye. In this context, research questions were determined as follows:

1) What is the level of quality of life in midwifery students who experienced the earthquake?
2) What are the PTSD levels of midwifery students who experienced the earthquake?
3) What are the factors affecting PTSD levels?

Methods

Study Design and Sampling

A descriptive and correlational design was used. The population of the research consisted of midwifery students studying at universities in 8 provinces of Türkiye where the February 6, 2023 earthquake occurred. The total number of students in midwifery departments in these 8 provinces was 1656 according to the Council of Higher Education Program Atlas (https://yokatlas.yok.gov.tr/lisans-anasayfa.php). The sample size of the study was calculated as at least 312 subjects on software by using the sampling of the known population formula (http://www.raosoft.com/samplesize.html) based on a confidence interval of 95%, a margin of error of 5%, and an unknown prevalence rate of 50%. Accordingly, 363 students were included in the study considering a margin of error of 15%.

The study data were collected online by the researchers from 363 midwifery students between April 6 and August 1, 2023. The link to the online questionnaire was sent to midwifery department students on WhatsApp and social media with the help of some faculty members and students from the relevant universities. Students were informed on WhatsApp groups that participation in the research was completely voluntary and that no incentives would be provided. In addition, a volunteer consent form was added to the beginning of the online questionnaire, so that students' consent was obtained. The online questionnaire included a descriptive information form, the PTSD Brief Scale, and the World Health Organization Quality of Life Scale (WHOQOL-BREF).

Measuring Instruments

Descriptive information form

This descriptive information form was prepared by the researchers following a review of the literature on the subject.[19,20] The descriptive information form consists of 17 questions about participants' sociodemographic characteristics.

The Post-Traumatic Stress Disorder (PTSD) Brief Scale

This scale was developed by LeBeau et al.,[20] and the Turkish validity and reliability study of its short form was conducted by Evren et al.[21] It is a Likert-type scale consisting of 9 questions and a single dimension. The items are scored between 0 points = "not at all" and 4 points = "extremely." The cut-off point of the scale is 24 points. Scores range from 0-36 and high scores show high levels of posttraumatic stress disorder. Evren et al. found Cronbach's alpha value of the scale as 0.87.[21] In this study, the alpha values of the PTSD scale were found to be 0.876 for the total scale, 0.803 for the physical domain, 0.647 for the spiritual domain, 0.678 for the social domain, and 0.842 for the environmental domain.

The World Health Organization Quality of Life Scale (WHOQOL-BREF)

The WHOQOL-BREF is the short form of the WHOQOL-100 scale. The WHOQOL-BREF has 27 items. Its validity and reliability study and adaptation to Turkish culture was conducted by Eser et al. in 1999. The WHOQOL-BREF consists of 4 domains. It does not have separate facets. This tool is scored over 4 dimensions. Dimension 1 includes physical health, which is related to pain, discomfort, vitality and fatigue, mobility, ability to carry out daily tasks, dependence on medications or treatment, strength to work, body image and appearance, and sexual life. Dimension 2 includes psychological health, which is related to positive emotions, thinking, learning, memory and concentration, self-esteem, opportunities to acquire new knowledge and skills, rest and leisure time, and personal beliefs. Dimension 3 includes social relations, which are related to physical safety and security, physical environment, material resources, health services and social assistance, transportation, accessibility, and quality. Dimension 4 includes environmental health, which is related to the home environment, relationships with other people, and social support. The scale does not have a total score. The score of each domain is calculated out of a maximum of 20 or 100 points. It is the researcher's choice which score system to use. In our country, calculations are often made over 100 points. As the score on the scale increases, the quality of life also increases. The correlation coefficients of the scale vary between 0.49 and 0.78 (items 14 and 17). Considering Cronbach's alpha is the reflection of the homogeneity between item and domain scores, the internal consistency of the items and domains of the WHOQOL-BREF (TR) was found to be quite high. In both patients and healthy individuals, the highest internal consistency was found in the physical domain (0.83 and 0.79, respectively) and the lowest in the social domain (0.53 in both). In this study, Cronbach's alpha value was found to be 0.91.

Data Collection

The study data were collected online via a questionnaire created on Google Forms. Google Forms results are considered a reliable service as they are systematically exported to Google spreadsheets. However, the "I am not a robot" option was put for students before seeing the consent form and questions in Google Forms and system security were ensured in this way. In addition, in the collection of data in the research, the professors in the midwifery departments of the universities in the earthquake region were reached and they were provided online survey forms to send to their students. The professors personally delivered the questionnaires to their students via WhatsApp

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and social media. In this way, the rigor of the research was preserved and bots were avoided. Afterwards, students were first informed about the study and that the study would be carried out on a confidential and voluntary basis on the online form and then those who approved the written consent form were allowed to access the questionnaire. Students who filled out the questionnaire were included in the study. Students who participated in the study were volunteers, were midwifery students, and had experienced the February 2023 earthquake. Those who filled out the questionnaire forms incompletely were excluded from the study.

Data Analysis

The study data were analyzed using the SPSS software for Windows (Version 24.0, Statistical Package for Social Sciences). The distribution of the data was evaluated with the Kolmogorov-Smirnov test, and data that did not comply with normal distribution were analyzed using mean, standard deviation, and median values. Descriptive statistics of continuous variables in the study were presented using mean, standard deviation, and minimum and maximum values. The Kruskal-Wallis test was used for 3-category independent group comparisons, and the Mann-Whitney U test was employed for 2-category independent group comparisons. Bonferroni correction test was applied to determine which groups caused the difference that emerged between the groups. Spearman correlation analysis was employed to determine the relationship between the scales (measurements) used in the study, and multiple linear regression analysis was utilized to determine the factors affecting the total PTSD score. Data were evaluated at a confidence interval of 95% and a significance level of $P < 0.05$.

Results

Students' Demographic and Earthquake-related Characteristics

The distribution of students' basic characteristics and earthquake-related data are shown in Table 1. It was determined that the students' mean age was 20.74, most of them were first-year students (36.4%), their income was equal to their expenses (67.8%), and that they had a nuclear family structure (86.2%). Also 10.5% had previously been diagnosed with depression or mood disorder, 8.8% had been using medication at that time, 20.9% had a family history of depression, 1.7% had lost a first-degree relative during the earthquake, the houses of 40.8% had minor damage, 2.2% had survived under debris during the earthquake, and 93.4% were non-smokers.

Table 1. Distribution of students' basic characteristics and earthquake-related data

Characteristics	Mean ± SD	Min.–Max.
Age	20,74 ± 1,48	18–31
Characteristics	***n***	**%**
Marital status		
Married	5	1.4
Single	358	98.6
Income Status		
Income is less than expenses	110	30.3
Income equals expenses	246	67.8
Income exceeds expenses	7	1.9
Family structure		
Nuclear family	313	86.2
Extended family	46	12.7
Divorced family	4	1.1
Have you ever been diagnosed with depression or a mood disorder?		
Yes	38	10.5
No	325	89.5
Did you use any medication at that time?		
Yes	32	8.8
No	331	91.2
Is there a family history of depression (mother, father, siblings)?		
Yes	76	20.9
No	287	79.1
Did you lose first-degree relative (mother, father, siblings) in the earthquake?		
Yes	6	1.7
No	357	98.3
What is the damage status of your home?		
Undamaged	135	37.2
Minor Damaged	148	40.8
Medium Damaged	38	10.5
Severely Damaged	33	9.1
Destroyed	9	2.5
Have you been trapped under debris during the earthquake?		
Yes	8	2.2
No	355	97.8
Smoking Status		
Yes	24	6.6
No	339	93.4

Comparison of students' basic characteristics and knowledge about earthquakes with their scores on the sub-dimensions of the WHOQOL-BREF scale and the total PTSD score

Table 2 shows the comparison of students' basic characteristics and knowledge about earthquakes with their scores on the sub-dimensions of the *WHOQOL*-BREF scale and the total PTSD score. Statistically significant differences were found between the following characteristics and scores: marital status and the scorers on psychological domain and the total PTSD; income status and the scores on physical, psychological, social, and environmental domains and the total PTSD; family structure and the scores on environmental domain and the total PTSD; previous diagnosis of depression or mood disorder and the scores on physical and psychological domains; depression in the family and the scores on psychological and social domains and the total PTSD; the loss of a first-degree relative (mother, father, siblings) in the earthquake and the total PTSD score; the damage status of the house and the scores on physical and environmental domains and the total PTSD; surviving under debris in the earthquake and the scores on environmental and social domains and the total PTSD ($P < 0.05$, Table 2).

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Table 2. Comparison of sociodemographic characteristics and earthquake-related data, WHOOL Scale Sub-Dimension Scores and PTSD total score

Characteristics	WHOOL Physical Domain Mean ± SD/ Mean Rank	WHOOL Psychological Domain Mean ± SD/ Mean Rank	WHOOL Social Domain Mean ± SD/ Mean Rank	WHOOL Environmental Domain Mean ± SD/ Mean Rank	PTSD Total Mean ± SD/ Mean Rank
Marital status					
Married	24,40 ± 2,30/181,72	20,20 ± 1,09/180,72	8,40 ± 1,81/182,80	26,80 ± 4,08/181,23	9,00 ± 4,84/183,40
Single	23,53 ± 4,45/201,70	18,62 ± 2,06/274,00	9,41 ± 2,34/124,60	24,63 ± 4,94/237,00	16,44 ± 8,03/81,50
Z	–0.424	–2.002	–1.247	–1.183	–2.159
P	0.672	**0.045**	0.212	0.237	**0.031**
Income Status					
Income is less than expenses[1]	21.99 ± 4.45/146.96	17.94 ± 2.04/146.96	8.87 ± 2.41 /159.84	22.00 ± 4.48/123.90	18.99 ± 8.16/215.43
Income equal to expenses[2]	24.22 ± 4.2 /197.23	18.91 ± 2.00/195.60	9.60 ± 2.26 /190.65	25.78 ± 4.69/206.27	15.09 ± 7.75/165.96
Income exceeds expenses[3]	24.00 ± 4.72/197.36	20.00 ± 1.52/254.57	10.42 ± 2.37/226.36	27.14 ± 3.93/242.00	18.85 ± 6.36/220.50
χ2	17.686	20.303	8.020	49.429	17.894
P	**<0.001. 2>1**	**<0.001. 2>1. 3>1**	**0.018. 2>1**	**<0.001. 2>1. 3>1**	**<0.001. 1>2**
Family structure					
Nuclear Family[1]	23.69 ± 4.41/185.50	18.67 ± 2.11/184.59	9.37 ± 2.42/180.4	24.84 ± 5.01/186.29	16.06 ± 8.32/177.35
Extended Family [2]	22.28 ± 4.45/152.20	18.41 ± 1.79/163.60	9.54 ± 1.76/187.05	23.13 ± 4.20/145.42	18.63 ± 5.69/217.64
Divorced family[3]	26.25 ± 2.62/250.63	18.75 ± 0.50/190.88	10.00 ± 0.81/214.88	28.00 ± 2.16/267.25	12.50 ± 1.91/135.63
χ2	5.799	1.680	0.551	8.795	6.714
P	0.055	0.432	0.759	**0.012. 1>2**	**0.035. 2>1**
Smoking Status					
Yes	23.58 ± 6.52/188.60	19.00 ± 2.65/202.19	9.04 ± 3.36/187.56	25.50 ± 6.44/202.38	19.37 ± 9.80/211.71
No	23.53 ± 4.26/181.53	18.61 ± 2.01/180.57	9.42 ± 2.24/181.61	24.60 ± 4.81/180.56	16.13 ± 7.87/179.90
Z	–0.32	–0.989	–0.272	–0.987	–1.437
P	0.749	0.323	0.786	0.324	0.151
Have you ever been diagnosed with depression or a mood disorder?					
Yes	22.31 ± 4.77/149.22	17.97 ± 2.14/150.08	8.97 ± 2.05/160.03	24.63 ± 4.59/181.01	18.15 ± 7.85/208.01
No	23.68 ± 4.37/185.83	18.72 ± 2.04/185.73	9.44 ± 2.36/184.57	24.67 ± 4.97/182.12	16.13 ± 8.05/178.96
Z	–2.040	–2.009	–1.381	–0.061	–1.617
P	**0.041**	**0.044**	0.167	0.951	0.106
Did you use any medication at that time?					
Yes	22.37 ± 4.89/150.95	18.12 ± 1.99/156.19	9.31 ± 1.97/178.47	24.28 ± 4.95/172.70	17.71 ± 8.23/201.92
No	23.65 ± 4.37/185.00	18.69 ± 2.06/184.50	9.40 ± 2.37/182.34	24.70 ± 4.93/182.90	16.21 ± 8.02/180.07
Z	–1.757	–1.478	–0.202	–0.526	–1.126
P	0.079	0.14	0.84	0.599	0.26
Is there a family history of depression (mother. father. siblings)?					
Yes	23.21 ± 4.90/173.50	18.18 ± 2.14/158.46	8.90 ± 2.49/161.14	23.98 ± 5.28/164.54	18.61 ± 7.97/211.57
No	23.63 ± 4.30/184.25	18.76 ± 2.02/188.23	9.52 ± 2.27/187.52	24.84 ± 4.82/186.62	15.74 ± 7.96/174.17
Z	–0.796	–2.230	–1.973	–1.636	–2.766
P	0.426	**0.026**	**0.049**	0.102	**0.006**
Did you lose a first-degree relative (mother. father. siblings) in the earthquake?					
Yes	21.33 ± 3.61/121.50	19.00 ± 1.54/198.17	8.66 ± 3.38/156.17	22.33 ± 3.77/122.50	24.16 ± 5.67/285.92

(*Continued*)

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Table 2. (*Continued*)

Characteristics	WHOOL Physical Domain Mean ± SD/ Mean Rank	WHOOL Psychological Domain Mean ± SD/ Mean Rank	WHOOL Social Domain Mean ± SD/ Mean Rank	WHOOL Environmental Domain Mean ± SD/ Mean Rank	PTSD Total Mean ± SD/ Mean Rank
No	23.57 ± 4.43/183.02	18.63 ± 2.07/181.73	9.41 ± 2.31/182.43	24.70 ± 4.94/183.00	16.21 ± 8.01/180.25
Z	–1.428	–0.386	–0.616	–1.404	–2.448
P	0.153	0.700	0.538	0.160	**0.014**
What is the damage status of your home?					
Undamaged [1]	24.00 ± 4.54/193.31	18.70 ± 2.06/183.70	9.48 ± 2.33/185.80	25.94 ± 4.33/212.41	14.96 ± 8.24/163.98
Minor Damage [2]	23.95 ± 4.29/191.73	18.66 ± 2.11/185.27	9.39 ± 2.34/183.46	24.86 ± 5.12/186.65	15.64 ± 7.75/172.27
Medium Damage [3]	22.36 ± 3.61/151.91	18.55 ± 2.13/179.36	9.57 ± 2.51/190.05	22.55 ± 4.43/132.66	20.47 ± 6.82/237.96
Severely Damaged [4]	21.81 ± 4.05/136.15	18.39 ± 1.74/161.98	9.06 ± 1.93/163.24	21.75 ± 4.65/110.97	18.12 ± 7.17/206.53
Destroyed [5]	21.00 ± 6.67/147.50	18.77 ± 2.16/187.33	8.66 ± 2.95/135.67	21.77 ± 5.65/118.22	24.66 ± 7.05/286.11
χ2	13.304	1.467	3.319	38.671	26.776
P	**0.01. 1>4**	0.832	0.506	**<0.001. 1>4.2>4.1>3.2>3.**	**<0.001. 3>1.3>2.5>1.5>2**
Have you been trapped under debris during the earthquake?					
Yes	21.12 ± 5.30/135.69	18.25 ± 1.58/152.00	7.87 ± 1.88/107.75	19.37 ± 2.77/60.31	23.62 ± 7.24/272.88
No	23.59 ± 4.40/183.04	18.65 ± 2.07/182.68	9.43 ± 2.33/183.67	24.78 ± 4.90/184.74	16.18 ± 7.99/179.95
Z	–1.265	–0.829	–2.049	–3.325	–2.479
P	0.206	0.407	**0.040**	**0.001**	**0.013**

P < 0.05. *χ2*: Kruskal Wallis Test. Z: Mann Whitney U Test.

Students' scores on the total PTSD and the sub-dimensions of the WHOQOL-BREF

Students' scores were 16.34±8.04 on the total PTSD, 9.39±2.33 on the WHOQOL social domain, 24.66±4.93 on the WHOQOL environmental domain, 23.54±4.43 on the WHOQOL physical domain, and 18.64±2.06 on the WHOQOL psychological domain (Table 3).

Relationship between the total PTSD score and the sub-dimensions of the WHOQOL

A negative correlation was detected between the total PTSD score and all sub-dimensions of the WHOQOL scale ($P < 0.001$, Table 4).

Factors affecting the total PTSD score

In Table 4, the factors affecting students' PTSD scores were examined using the multiple linear regression model (stepwise method), and the model was found to be statistically significant (F6:22.186, $P < 0.001$). All variables were included in this model. The models and the variables that most affected the total PTSD score were as follows: the first model, the WHOQL environmental domain score; the second model, the WHOQL physical domain score; the third and fourth models, the damage status of the house (destroyed or moderately damaged); the fifth model, presence of a history of depression in the family; the sixth model, smoking status. The

Table 3. Relationship between PTSD total score and WHOOL sub-dimensions

	Mean ± SD		PTSD total	WHOOL social domain	WHOOL environmental domain	WHOOL physical domain	WHOOL psychological domain
PTSD total	16.34 ± 8.04	*rs*	1	–0.280	–0.431	–0.380	–0.269
		P		<0.001	<0.001	<0.001	<0.001
WHOOL social domain	9.39 ± 2.33	*rs*	–0.28	1	0.530	0.463	0.491
		P	<0.001		<0.001	<0.001	<0.001
WHOOL environmental domain	24.66 ± 4.93	*rs*	–0.431	0.530	1	0.651	0.500
		P	<0.001	<0.001		<0.001	<0.001
WHOOL physical domain	23.54 ± 4.43	*rs*	–0.38	0.463	0.651	1	0.546
		P	<0.001	<0.001	<0.001		<0.001
WHOOL psychological domain	18.64 ± 2.06	*rs*	–0.269	0.491	0.500	0.546	1
		P	<0.001	<0.001	<0.001	<0.001	.

P < 0.001. *rs*: Spearman Correlation Analysis.

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Table 4. Factors affecting the PTSD total score

Model		B_0	*SE*	B_1	*t*	*P*	*r1*	*r2*	Model Summary and ANOVA
1	(Constant)	33.470	1.954		17.129	**<0.001**			Adjusted R^2:0.179 *F*:79.851. *P* < 0.001
	WHOOL Environmental Domain	–0.694	0.078	–0.426	–8.936	**<0.001**	–0.426	–0.426	
2	(Constant)	37.374	2.163		17.279	**<0.001**			Adjusted R^2:0.210 *F*:49.082. *P* < 0.001
	WHOOL Environmental Domain	–0.432	0.102	–0.265	–4.241	**<0.001**	–0.383	–0.367	
	WHOOL Physical Domain	–0.441	0.113	–0.243	–3.896	**<0.001**	0.203	0.184	
3	(Constant)	36.671	2.164		16.947	**<0.001**			Adjusted R^2:0.222 *F*:35.413. *P* < 0.001
	WHOOL Environmental Domain	–0.42	0.101	–0.258	–4.157	**<0.001**	–0.186	–0.165	
	WHOOL Physical Domain	–0.43	0.112	–0.237	–3.821	**<0.001**	0.202	0.179	
	Damage Status of the House (5)	6.166	2.408	0.119	2.561	0.011	–0.2	–0.177	
4	(Constant)	35.552	2.184		16.275	**<0.001**			Adjusted R^2:0.235.*F*:28.865. *P* < 0.001
	WHOOL Environmental Domain	–0.387	0.101	–0.238	–3.840	**<0.001**	–0.177	–0.154	
	WHOOL Physical Domain	–0.431	0.111	–0.238	–3.871	**<0.001**	0.217	0.191	
	Damage Status of the House (5)	6.614	2.392	0.128	2.765	0.006	–0.204	–0.178	
	Damage Status of the House (3)	3.311	1.222	0.126	2.710	0.007	0.155	0.135	
5	(Constant)	34.543	2.191		15.767	**<0.001**			Adjusted R^2:0.251. *F*:25.214.*P* < 0.001
	WHOOL Environmental Domain	–0.367	0.1	–0.225	–3.660	**<0.001**	–0.172	–0.148	
	WHOOL Physical Domain	–0.435	0.11	–0.24	–3.944	**<0.001**	0.22	0.191	
	Damage Status of the House (5)	6.669	2.368	0.129	2.816	0.005	–0.2	–0.174	
	Damage Status of the House (3)	3.660	1.216	0.139	3.010	0.003	0.157	0.135	
	Having a Family History of Depression	2.603	0.905	0.132	2.875	0.004	0.14	0.12	
6	(Constant)	41.373	3.643		11.356	**<0.001**			Adjusted R^2:0.260. *F*:22.186. *P* < 0.001
	WHOOL Environmental Domain	–0.381	0.1	–0.234	–3.822	**<0.001**	–0.157	–0.133	
	WHOOL Physical Domain	–0.425	0.11	–0.234	–3.873	**<0.001**	0.213	0.183	
	Damage Status of the House (5)	6.890	2.356	0.133	2.925	0.004	–0.204	–0.175	
	Damage Status of the House (3)	3.670	1.208	0.14	3.037	0.003	0.172	0.146	
	Having a Family History of Depression	2.367	0.905	0.12	2.615	0.009	0.151	0.128	
	Smoking Status	–3.448	1.475	–0.107	–2.338	0.02	0.148	0.125	

result of the regression analysis indicated that as the PTSD score increased by 1 unit, the environmental quality domain decreased by 0.381 times ($P < 0.001$) and the physical quality domain decreased by 0.425 times ($P < 0.001$). Compared to other damage levels, the PTSD score increased by 6.890 times per unit in those whose houses were destroyed ($P = 0.004$) and 3.670 times per unit in those whose houses were moderately damaged ($P = 0.003$). Having a family history of depression increased the PTSD score by 2.367 times per unit ($P = 0.009$), and not smoking reduced it 3.448 times ($P = 0.020$). The variable included in the multiple linear regression model established with the stepwise method explained 26% of the total PTSD score.

Discussion

This study was conducted 2 months after the Kahramanmaraş-centered earthquakes in Türkiye, which were described as the "disaster of the century" and caused great material and moral destruction. It is the first study to determine the quality of life and PTSD levels of midwifery students who had experienced the earthquake. The study showed that the rate of PTSD in midwifery students, who would work in the health field, was 21.5% approximately 2 months following the earthquake. Our result was different from those of previous studies, which showed that the rate of PTSD was close to 40% among adolescents (40.69%) and adults in different earthquakes in the east of Türkiye.[23] In another study conducted 9 months after the Van, Türkiye earthquake to screen for post-traumatic stress disorder on a sample of 1498 individuals who were aged >15 years and lived in the Van-Erciş region, this rate was 35.5%.[24] In another study conducted 3 years after the 1999 Marmara earthquake, this rate was determined as 11.7%.[25] Previous studies on Türkiye's earthquakes showed different rates depending on the differences in sample selection, evaluation time, and methods. In a study conducted approximately 1 year after the Nepal earthquake, the rate of PTSD in adolescents was found to be 43.3%.[26] The prevalence of PTSD among surviving children and adolescents was determined to be 19.2% in the first month and 30% in the second month following disasters such as earthquakes and floods.[27] In a meta-analysis including 46 articles and 76 101 earthquake victims, the incidence of post-earthquake PTSD was found to

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be 23.66% and it was detected as 19.48% 9 months following the earthquake. The results of this study showed that approximately 1/4 of earthquake victims were diagnosed with PTSD.[6] In a recent meta-analysis, the prevalence of the disorder was found to range from 4.1%-67.07%.[28]

Factors that predicted post-earthquake PTSD were found to be quality of life score related to physical and environmental domains, damage status of the house, family history of depression, and smoking status. Some studies showed that these factors were experiencing depression, being a woman, being single, exposure to an earthquake, serious financial loss, and loss of a close family member.[23,24,29,30] While PTSD scores in our study were found to be higher in individuals who had lost a first-degree family member, it was not among the predictive factors when put into the model. Similar to our study, a study on the long-term effects of the Van earthquake indicated that there was no significant relationship between losing a family member or relative after the earthquake and the long-term effects of the earthquake.[31] Because the current study was conducted with midwifery students, it consisted of only female participants, and the PTSD score was found to be higher in those who were single, which was similar to the results in the literature. In the systematic review by Latuperissa et al.,[32] it was stated that the rate of PTSD in women after the earthquake was higher than in men. In the study conducted by Sharma and Kar 1 year after the Nepal earthquake, female gender, joint family, financial problems, and damage to livelihoods were found to be associated with the diagnosis of PTSD.[26] In addition, some studies indicated that PTSD symptom severity was associated with poor general health and negative physical perception, similar to our study result.[23] Evren et al. investigated the impact of lifelong PTSD on the quality of life in men in a different population and found that the PTSD group exhibited severe impairments in the physical and mental domains of quality of life.[21] Lifetime PTSD predicted impairment in physical functioning, general health, vitality, and mental health domains of quality of life. In the current study, deterioration in physical and environmental health domains negatively affected the PTSD score.

In a study conducted with 210 medical faculty students 4 years after the Türkiye-Van earthquake, 18.3% of the students stated that they had developed an addiction and that tobacco addiction was the highest of all (75.0%).[31] In the model established in our research, it was determined that smoking status negatively affected the PTSD score. In this respect, our results are consistent with the literature.

In the current study, a negative correlation was found between the total PTSD score and all domains of quality of life. In another study conducted with a different quality of life scale (SF-36), the scores on the role-physical, body-pain, and general health and role-emotional domains, which covered physical and mental domains and were consistent with the domains of the scale used in this study, were found to be negatively correlated with the PTSD symptom severity.[22] Witnessing a traumatic event such as an earthquake or the loss of a family member can lead to intense fear responses.[24,33] In a study conducted with medical faculty students 4 years after the Türkiye-Van earthquake, the rate of fear development following the earthquake was found to be 36.5%.[31] In a meta-analysis conducted by Dai et al., it was found that fear during an earthquake was a strong predictor of PTSD, considering that it is a fear-based disorder. In our study, it was determined that as the PTSD score increased, the quality of life in the psychological domain decreased.[6] Some studies showed that deterioration in emotional and physical health also caused deterioration in the severity of PTSD symptoms.[23] In a study conducted with a sample of young adult survivors 21 months after exposure to the 2009 L'Aquila earthquake in Italy, the emergence of somatic symptoms was associated with PTSD.[34]

In a study with 407 university students on the investigation of the quality of life of earthquake victims 6 years after the Marmara earthquake in Türkiye, it was found that the environmental quality of life of earthquake victims, which involved psychological and material resources, freedom, physical security, accessibility, and quality of health and social services issues, was significantly lower than that of people who were not exposed to the earthquake.[35] In our study, of the midwifery department students who experienced the earthquake, those whose income was more than their expenses had higher environmental domain scores than those who had less income, and those whose income was less than their expenses had higher PTSD scores than those who had equal income and expenses. In this respect, although the study yielded similar results to those in the literature, it was also thought that the low environmental and psychological quality of life may have been due to inadequate financial resources caused by the earthquake, which was devastating in all areas, restrictions on young people in acquiring new knowledge and skills, and the inability to ensure the continuity of their educational lives. In this sense, the decrease in the survivors' quality of life in psychological and environmental domains 2 months after the earthquake may have also affected the physical and social domains and caused a lower quality of life. In a study conducted after the March 2011 Great Japan earthquake and tsunami, 42.6% of the participants were found to have moderate to severe mental health problems, and the effect of economic status on serious mental health problems was found to be significant in multivariate analysis.[36]

In the study, as the damage to one's house increased, the environmental domain score was negatively affected and the total PTSD score increased. Similar to our study, Roussos et al. determined that PTSD score was positively associated with severe house damage but not with death or injury to family members in adolescent victims of the Greek earthquake.[37] In a study conducted 20 months after the Nepal earthquake, it was reported that the loss of family members, having to move several times due to damaged and destroyed houses, the economic status, food security, and employment had negative effects on family life, in addition to high levels of PTSD symptoms.[38] Exposure variables such as the death of a family member and the belief that one's life or the life of a loved one was in danger, as well as variables such as education level and low socio-economic status, were found to be associated with higher PTSD symptoms.[38]

Conclusion

The results of the study showed a relationship between the impact of living spaces and PTSD symptoms seen 2 months following the earthquakes. This suggests that the impact on major areas of life increases PTSD.

The study results are based on a sample of university students in the regions affected by 2 Kahramanmaraş-centered earthquakes. The study was conducted 2 months following the earthquakes. It is difficult to determine the definite long-term consequences of earthquakes. Conducting longitudinal studies to investigate the long-term effects of earthquakes may be more informative in understanding the relationships between variables in the post-traumatic period. It is also necessary to do research on the permanent effects of earthquakes. Previous exposure to trauma was not assessed in our study. It is thought to be a variable that should be evaluated in future studies.

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