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Investigation of Teachers' Sustainable Earthquake Awareness and Earthquake Knowledge Levels

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Abstract

This research aims to examine the relationships between teachers' earthquake knowledge levels and sustainable earthquake awareness levels. A relational survey model with a quantitative research method was chosen for the research. The research group consists of 255 teachers, 166 women, and 89 men, working in private and public institutions in Kocaeli province in the 2022-2023 academic year. The research group was determined by convenient sampling, one of the purposeful sampling methods, and the "Sustainable Earthquake Awareness Scale" and "Earthquake Knowledge Level Scale" were used as data collection tools. The data of the research were analyzed in a particular statistical program using quantitative methods. As a result of the analysis, it was determined that teachers' sustainable earthquake awareness levels did not differ according to their gender and age, and while their earthquake knowledge levels did not differ according to their gender, they did vary according to their age. Additionally, it was observed that there was a positive relationship between teachers' earthquake knowledge levels and sustainable earthquake awareness levels.

Keywords

Earthquake, Earthquake Knowledge Level, Sustainable Earthquake Awareness.

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INTRODUCTION

Many changes have occurred in the balance of the world in the process from the formation of the world to the present day. These changes involve a natural process. This process includes natural events such as volcanic eruptions, climate changes, earthquakes, and storms. Natural events take place in the natural order every day, but it cannot be said that all of these natural events are harmful to humans. If natural events cause social, cultural, physical, and economic losses to people, negatively affect people's everyday lives, and interrupt and stop human activities in society, they are called natural disasters (Öcal, 2005). Natural disasters are events that negatively affect society, cause significant loss of life and material damage, and occur due to human-caused reasons and natural factors (Karakuş, 2013).

Earthquakes are one of the natural disasters that significantly impact our country and threaten more than 90% of the people in our country. Until today, people have encountered many natural disasters, but earthquakes are among the disasters that remain in people's minds and threaten society (Değirmençay & Cin, 2016). Earthquakes, defined as short-term natural events that originate from the depths of the earth and cause vibrations on the earth's surface, show their effects more in parts of the earth's crust that are not fully settled (Öcal, 2005). People living in or near fault lines are more likely to encounter an earthquake than people living in areas far from fault lines (Değirmençay & Cin, 2016).

Today, an earthquake with a magnitude of 7.7 occurred in Kahramanmaraş Pazarcık district on February 6, 2023, at 04.17 and affected ten provinces of Turkey, namely Kahramanmaraş, Gaziantep, Adana, Malatya, Diyarbakır, Adıyaman, Hatay, Şanlıurfa, Osmaniye and Kilis. While aftershocks continued to occur, the second earthquake with a magnitude of 7.6 occurred in the Elbistan district of Kahramanmaraş at 13.24 on the same day, further increasing the damage in the provinces. As a result of this earthquake, a seven-day national mourning period was declared throughout the country, and a State of Emergency (OHAL) was declared in ten provinces (Maden, 2023). It has also been observed in the recent disaster that earthquakes affect people in every way. Earthquake is a situation that significantly affects physical, social, psychological, and economic life (Pelling et al., 2002). Although people are affected in many ways, they do not have enough information about earthquakes. It has been observed that people in developed or developing nations are unaware and uninformed about these situations (Thomas et al., 1999). Considering the effects of an earthquake, it is vitally important to minimize the potential for loss and damage seen in areas with high populations (Blutndell, 1981). People need to take precautions to minimize the damage they may experience in an earthquake, and they can do this.

According to Karakuş (2013), the first precaution people will take against earthquakes is continuous and effective earthquake education. In the face of major earthquakes, people affected by earthquakes face significant losses and difficulties. People do not react the same in these situations, and there are differences in their affective states. This difference in the event of an earthquake is related to people's knowledge and preparation levels for earthquakes (Paton & Jang, 2015). It is important for children or adults who encounter a disaster to respond correctly. Education and earthquake knowledge allow people to use strategies to reduce losses and damage from earthquakes (Shaw et al., 2009).

It is clear that earthquakes are one of the unpreventable natural disasters, and they will have severe consequences if necessary precautions are not taken. Thanks to individuals who have sufficient knowledge about what an earthquake is, its consequences and how to take precautions against it, future generations will grow up sensitive to earthquakes. They will take part in society as adults who are responsible in their roles in society and perform their social duties properly (Aydın, 2010). It is necessary to have earthquake knowledge as the effects of a possible earthquake cannot be avoided. This happens with education. Individuals' knowledge levels must be determined for earthquake education to be effective. Necessary training activities should be arranged in terms of content. Otherwise, negative situations may occur due to incomplete information about earthquakes, and traditional beliefs may continue (Tsai, 2001). In their research examining the relationship between earthquakes and formal education, Shoji, Takafuji, and Harada (2020) stated that a disaster-oriented education program in schools is essential in reducing the risk of death that may occur in disasters.

Another thing to do to reduce the destructive effects of the earthquake is to make sustainable earthquake preparations (Wu et al., 2018; Han et al., 2021). In places where various disasters may occur, minimizing the risks arising from these disasters is necessary. Efforts should be made to reduce risks. One of these studies is individual preparation. In their research, Johnston et al. (2013) stated that individual preparation is generally done as information about earthquakes and their risks, but more is needed.

As a result of public education studies, it has been seen that the public has high knowledge about earthquake risk. However, they stated that for this information to be transformed into sustainable awareness, society should be made interactive by creating programs that include critical thinking, the ability to cope with action, self-efficacy and confidence, and disseminating information. (Johnston et al., 2013). In the research conducted to increase earthquake awareness in Korea, it was observed that the earthquake increased the earthquake knowledge level of the society. Addressing major earthquakes and including them comprehensively in education is essential to creating sustainable earthquake awareness (Ha, 2018).

In order to minimize the damages caused by earthquakes, permanent, accurate, and highly participatory training plays an essential role in schools. Since the responsibility of raising awareness and conveying the necessary information in schools is on teachers, they must first have sufficient experience, knowledge, and awareness about disaster awareness and disaster education (Tekin & Dikmenli, 2021). It is crucial for future generations to grow up knowledgeable on this subject and to ensure accurate information transfer. For this reason, the study aimed to determine teachers' earthquake knowledge and sustainable awareness levels. In this context, the relationships between teachers' earthquake knowledge levels and sustainable earthquake awareness levels were examined in this study. In light of the information obtained from teachers, it is essential to take measures to increase earthquake knowledge and awareness of other members of society, prepare earthquake-related activities, and shed light on subsequent studies.

METHOD

Model of the Research

In this study, it was aimed to determine teachers' earthquake knowledge levels (DBD) and sustainable earthquake awareness levels (SDFD), whether DBD and SDFD differ according to teachers' gender and age, and the relationship between DBD and SDFD and their sub-dimensions. Relational survey model is used in research to describe a situation or event as it is and to determine the relationship between variables that cause this situation or event, the effects of variables and their degrees (Uçar, 2016). The relationship or lack of relationship between variables is determined by this model (Tekin & Dikmenli, 2021).

Population and Sample

The research group was determined by convenient sampling. Purposeful sampling enables detailed research by selecting rich situations to serve the purpose (Baştürk & Taştepe, 2014). In this method, the units that best serve the purpose are taken into account. It is a method where quick results are obtained by selecting a situation that is easy and close to reach (Yıldırım & Şimşek, 2021). The research is based on volunteering. Convenient sampling was used to obtain fast and practical results.

The population of this research consists of teachers working in public and private institutions in Kocaeli province in the 2022-2023 academic year. The research group consists of 255 teachers, 166 women, and 89 men, working in public and private institutions in Kocaeli province in the 2022-2023 academic year. Table 1 contains demographic information about the participants.

Table 1

Demographic information of participants

Demographic information		Frequency	Percentage %
Gender	Woman	166	65.1
	Male	89	34.9
Age	20-30	39	15.3
	31-40	139	54.5
	41-50	62	24.3
	51-60	15	5.9

Table 1 shows that, 166 (65.1 %) of the teachers in the study are women, and 89 (34.9%) are men. 39 of the teachers (15.3%) are between the ages of 20-30, 139 of them (54.5%) are between the ages of 31-40, 62 of them (24.3%) are between the ages of 41-50, and 15 of them (5.9%) are between the ages of 51-60.

Data Collection Tools

"Sustainable Earthquake Awareness Scale" and "Earthquake Knowledge Level Scale" are the research data collection tools.

Sustainable Earthquake Awareness Scale (SDFÖ)

In this research**,** SDFÖ developed by Genç and Sözen (2021) in "SDFÖ: Development, Validity and Reliability Study" was used. This scale, consisting of three factors, is thought to support educational studies. These factors are named "Earthquake-Structure Relationship," "Earthquake Preparedness Application," and "Earthquake Preparedness." This scale, consisting of 19 positive and three negative items, was scored as a five-point Likert. According to the reliability analysis of the scale, the internal consistency coefficient (Cronbach's alpha) was found to be 0.884. The internal consistency coefficient (Cronbach's alpha) in the sub-dimensions was calculated as 0.752 for "Earthquake-Structure Relationship," 0.838 for "Earthquake Preparedness Practice," and 0.827 for "Earthquake

Preparedness." According to the reliability analysis of the scale for this study, the internal consistency coefficient (Cronbach's alpha) was found to be 0.875.

When scoring the SDFÖ, "I completely agree" was evaluated as 5 points, "I agree" as 4 points, "I am undecided" as 3 points, "I disagree" as 2 points, and "I strongly disagree" as 1 point. The data analysis scored three items on the scale in the opposite direction. A minimum of 22 and a maximum of 110 points are obtained from the scale. Information about the scoring is given in Table 2.

Table 2

Information on scoring SDFÖ and its sub-dimensions

Dimension	Number of Items	Minimum Points	Most Points
Earthquake Structure Relationship (1)	4	4	20
Earthquake Preparedness Application (2)	11th	11th	55
Being Prepared for Earthquake (3)	7	7	35
Total	22	22	110

According to Table 2, a minimum of 4 and a maximum of 20 points from the "Earthquake-Structure Relationship" sub-dimension, a minimum of 11 and a maximum of 55 points from the "Earthquake Preparedness Practice" sub-dimension, a maximum of 35 and a maximum of 7 points from the "Earthquake Preparedness" sub-dimension. Is obtained.

Some of the questions in the SDFÖ are as follows;

- While I was at the faculty, I had knowledge about what we would do if there were an earthquake.
- I trust the earthquake resistance of the faculty where I study.
- Our earthquake kit is ready at home.
- Our meetings about earthquakes will be helpful.
- As a country, we must be prepared for any possible earthquake.

Earthquake Knowledge Level Scale (DBDÖ)

In this research**,** DBDÖ, developed by Genç and Sözen (2022) in "DBDÖ: Development, Validity and Reliability Study," was used. It is thought that this scale, consisting of three factors, will support educational studies. These factors are named "Distribution Information of Earthquake Regions," "Earthquake Effects Information," and "Earthquake Education." All statements in the scale are positive. According to the reliability analysis of the scale, the internal consistency coefficient (Cronbach's alpha) was found to be 0.868. The internal consistency coefficient (Cronbach's alpha) in the sub-dimensions was calculated as 0.877 for "Distribution Information of Earthquake Regions," 0.841 for "Earthquake

Effects Information," and 0.922 for "Earthquake Education." According to the reliability analysis of the scale in this study, the internal consistency coefficient (Cronbach's alpha) was found to be 0.908.

When scoring the DBSÖ, "I completely agree" is evaluated as 5 points, "I agree" is evaluated as 4 points, "I moderately agree" is evaluated as 3 points, "I disagree" is evaluated as 2 points and "I strongly disagree" is evaluated as 1 point. Since there is no item to be reverse scored in the scale, a minimum of 19 and a maximum of 35 points are obtained from the scale. Information about the scoring is given in Table 3.

Table 3

Information regarding the scoring of DBDÖ and its sub-dimensions

Dimension	Number of Items	Minimum Points	Most Points
Information on the Distribution of Earthquake Zones (1)	7	7	35
Earthquake Effects Information (2)	7	7	35
Earthquake Training (3)	5	5	25
Total	19	19	95

According to Table 3, a maximum of 35 points and a minimum of 7 from the "Knowledge of the Distribution of Earthquake Zones" sub-dimension, a minimum of 7 and a maximum of 35 points from the "Earthquake Effects Knowledge" sub-dimension, and a minimum of 5 and a maximum of 25 points from the "Earthquake Education" sub-dimension are obtained. Is done.

Some of the questions included in the DBDÖ are as follows;

- I have information about natural disasters that may occur in my country.
- I have information about the natural disasters that will be most effective in my country.
- I have information about places with high earthquake risk in my country.
- I know that being aware of earthquakes can sometimes save lives.
- I have information about the effects of earthquakes on structures.

Collection of Data

The data for the research were collected in June 2023 via Google Forms, one of the Web 2.0 technology tools. Participants were informed about the purpose of the research before the application, and data were collected from volunteer participants.

Analysis of Data

The data of the research were analyzed in a particular statistical program using quantitative methods. Frequency and percentage distributions were used to present the descriptive characteristics of the data. Kolmogorov test for the normality of the distribution of the data obtained. It was examined with the Smirnov test. The difference between demographic characteristics and DBD and SDFD was determined by independent samples t-test, Kruskal Wallis test, and Mann Whitney U test, and whether there was a relationship between the scales was determined by Spearman Correlation Analysis.

Ethical Principles

Ethics committee permission for this study was obtained from Sakarya University Educational Research and Publication Ethics Committee decisions with the decision dated 14.06.2023 and numbered 20/03.

FINDINGS

Table 5 shows the findings regarding teachers' sustainable earthquake awareness levels.

Table 5

Sustainable Earthquake Awareness Levels of Teachers

Sustainable Earthquake Awareness Level Sub-Dimensions		Low	Middle	High	$\bar{x}$	S
Size 1	Range	4-9	10-15	16-20		
Earthquake Building	F	18	147	90	13.9	3.1
relationship	%	7.1	57.6	35.3		
Dimension 2	Range	11-25	26-40	41-55		
Earthquake Preparation	F	54	144	57	32.7	8.9
Application	%	21.1	56.5	22.4		
Dimension 3	Range	7-15	16-24	25-35		
Against Earthquake	F	160	88	7	14.1	45.0
Preparedness	%	62.7	34.5	2.8		
	Range	22-51	52-81	82-110		
Total	F	64	175	16	60.8	14.0
	%	25.1	68.6	6.3		

Table 5, in the 1st sub-dimension of the scale, 16-20 points are high, 10-15 points are medium, and 4-9 points are low. 18 of the teachers (7.1%) received low scores on the scale, 147 (57.6%) received medium scores, and 90 (35.3%) received high scores. The average score of the teachers in the 1st sub-dimension of the scale was found to be ($\bar{X}$ =13.9). Accordingly, it can be said that the score teachers received from the "Earthquake-Structure Relationship" dimension, which is the first sub-dimension of the scale, is at a medium level.

In the 2nd sub-dimension of the scale, 41-55 points are considered high, 26-40 points are medium, and 11-25 points are low. 54 of the teachers (21.1%) received low scores on the scale, 144 (56.4%) received medium scores, and 57 (22.4%) received high scores. The average score of the teachers in the 2nd sub-dimension of the scale was found to be ($\bar{X}$ =32.7). Accordingly, it can be said that the score teachers received from the "Earthquake Preparedness Practice" dimension, which is the 2nd sub-dimension of the scale, is at a medium level.

In the 3rd sub-dimension of the scale, 25-35 points are considered high, 16-24 points are medium, and 7-15 points are low. 160 of the teachers (62.7%) received low scores on the scale, 88 (34.5%) received medium scores, and 7 (2.8%) received high scores. The average score of the teachers in the 3rd sub-dimension of the scale was found to be ($\bar{X}$ =14.1). Accordingly, it can be said that the scores teachers received from the "Earthquake Preparedness" dimension, which is the 3rd sub-dimension of the scale, are low.

For the total score to be obtained from the scale, 22-51 points are low, 52-81 points are medium, and 82-110 points are high. 64 of the teachers (25.1%) received low scores on the scale, 175 (68.6%) received medium scores, and 16 (6.3%) received high scores. The average of the teachers' total scores from the scale was found to be ($\bar{X}$ =60.8). According to these values, it can be said that teachers' sustainable earthquake awareness levels are at a medium level.

Findings regarding the difference in teachers' DBD and SDFD scores according to their gender

Table 6 shows the findings regarding whether teachers' DBD and SDFD scores differ according to their gender.

Table 6

t-Test results on whether teachers' DBD and SDFD scores differ according to gender

Gender	Scale	N	$\bar{x}$	S	sd.	t	p
Woman	DBD	167	71.60	11.60			
Male	DBD	89	70,60	10.30	254	.677	.499*
Woman	SDFD	167	59.48	14.59			
Male	SDFD	89	62.90	13.06	254	-1.85	.65*

*p>0.05

A t-test was conducted to determine whether the difference between teachers' genders and DBD scores was significant, and it was determined that the difference was not significant (t(254)= 0.677). A t-test was conducted to determine whether the difference between teachers' genders and SDFD scores was significant, and it was determined that the difference was not significant. (t(254)=-1.85; p>0.05).

Findings regarding the difference in earthquake knowledge levels of teachers according to their ages

Table 7 shows the findings regarding whether teachers' earthquake knowledge levels differ according to their age.

Table 7

Kruskal -Wallis test results on whether teachers' earthquake knowledge levels differ according to their age.

Age	Scale	N	rank average	sd.	X^2	p	significant difference
20-30	DBD	39	155.17	3	8.19	.042*	20-30 years - 31-40 years
31-40	DBD	139	123.45				20-30 years-51-60 years
41-50	DBD	62	128.19				
51-60	DBD	15	98.73				

*p<0.05

The Kruskal -Wallis test, which was conducted to determine whether there is a significant difference between teachers' age groups and earthquake knowledge levels, determined a significant difference between age groups and earthquake levels (X^2 (3)=8.19, p<0.05).

Table 8

-Whitney U test results regarding the difference between the earthquake knowledge levels of teachers between the ages of 20-30, 31-40, and 51-60

Groups	Age	N	rank average	rank sum	u	p
with 20-30 years old	20-30	39	106.74	4163.00	2038,000	.018*
31-40 age range	31-40	139	84.66	11768.00		
with 20-30 years old	20-30	39	30.63	1194.50	170,500	.018*
51-60 age range	51-60	15	19.37	290.50		

*p<0.05

Table 8 shows the findings regarding the earthquake knowledge levels of teachers between the ages of 20-30 and 31-40. As a result of multiple comparisons made with the Mann -Whitney U test, it was determined that there was a significant difference between 20-30 years of age (Mdn = 75.0) and 31-40 years of age (Mdn = 70.0) (U = 2038.000, p < 0.05)). According to the findings regarding the earthquake knowledge levels of teachers between the ages of 20-30 and 51-60, as a result of multiple comparisons made with the Mann- Whitney U test, the difference between the ages of 20-30 (Mdn = 75.0) and 51-60 years (Mdn = 69.0) It was determined that there was a significant difference between (U=170.500, p<0.05).

Sustainable earthquake awareness of teachers' findings regarding the difference in levels according to age

Table 9 shows the findings regarding the difference in teachers' sustainable earthquake awareness levels according to their ages.

Table 9

Difference in sustainable earthquake awareness levels of teachers according to their ages

Age	Scale	N	rank average	sd.	X^2	p	significant difference
20-30	SDFD	39	131.06	3	2.23	.531*	-
31-40	SDFD	139	123.63				-
41-50	SDFD	62	138.63				-
51-60	SDFD	15	116.60				-

*p>0.05

The Kruskal -Wallis test, which was conducted to determine whether there is a significant difference in teachers' sustainable earthquake awareness levels according to their age groups, it was determined that there was no significant difference between age groups and sustainable earthquake awareness levels (X^2 (3)=2.23, p>0.05).

Findings regarding the relationship between teachers' DBD and SDFD sub-dimensions

Table 10 shows the Spearman Correlation analysis findings, which determined the relationship between teachers' DBD and SDFD sub-dimensions.

Table 10

The relationship between teachers' DBD and SDFD sub-dimensions

		Earthquake structure relationship SDFD 1st dimension	Earthquake preparedness application SDFD 2nd dimension	Being prepared for earthquakes SDFD 3rd dimension
Earthquake Zones	Spearman's p	.280	,231	.042
Distribution Information DBD 1st dimension	P	,000	,000	.507
Earthquake Effects	Spearman's p	,172	.235	-.029

Information DBD 2nd dimension	P	.006	,000	.642
Earthquake	Spearman's p	,190	.371	,171
Education DBD 3rd dimension	P	.002	,000	.006

* Correlation is significant at p<0.05 level.

The Spearman Correlation analysis performed to determine the relationship between teachers' DBD and SDFD sub-dimensions in Table 10 shows that there is a weakly positive (r=0.280) and significant (p<0.05) relationship between earthquake zone distribution information and earthquake structure relationship. In other words, teachers' knowledge of earthquake zone distribution and earthquake structure relationship increases weakly and significantly.

It is seen that there is a weakly positive (r=0.231) and significant (p<0.05) relationship between earthquake zone distribution knowledge and earthquake preparedness practice. In other words, teachers' knowledge of earthquake zone distribution and earthquake preparedness practices increase at a weak level and significantly together.

It is seen that there is no significant (p>0.05) relationship between knowledge of earthquake zone distribution and preparedness for earthquakes.

It is seen that there is a weakly positive (r=0.172) and significant (p<0.05) relationship between earthquake effects knowledge and earthquake structure relationship. In other words, the relationship between teachers' knowledge of earthquake effects and structure increases weakly and significantly.

It is seen that there is a weakly positive (r=0.235) and significant (p<0.05) relationship between earthquake effects knowledge and earthquake preparedness practice. In other words, teachers' knowledge of earthquake effects and preparedness practices is increasing weakly and significantly.

There appears to be no significant (p>0.05) relationship between knowledge of earthquake effects and preparedness for earthquakes.

It is seen that there is a weakly positive (r=0.190) and significant (p<0.05) relationship between earthquake education and earthquake structure relationship. In other words, the relationship between teachers' earthquake education and earthquake structure is weak and significantly increasing.

There is a moderate positive (r=0.371) and significant (p<0.05) relationship between earthquake education and earthquake preparedness practice. In other words, teachers' earthquake education and preparedness practices increase moderately and significantly.

It is seen that there is a weakly positive (r=0.171) and significant (p<0.05) relationship between earthquake education and earthquake preparedness. In other words, teachers' earthquake education and preparedness increase moderately and significantly.

Findings regarding the relationship between teachers' DBD and SDFD

Table 11 shows the findings of the Spearman Correlation analysis conducted to determine the relationship between teachers' DBD and SDFD.

Table 11

Spearman Correlation analysis results on the relationship between teachers' DBD and SDFD

Variables	n	r	P
DBD	255	,313	,000*
SDFD			

* Correlation is significant at p<0.05 level.

The Spearman Correlation analysis was conducted to determine the relationship between teachers' DBD and SDFD; it was seen that there was a positive and moderately significant relationship between the levels ($r = 0.381$, $p<0.05$). According to this result, as the DBD of teachers increases, SDFD also increases, and as DBD decreases, SDFD also decreases.

CONCLUSION AND DISCUSSION

When the findings of the research are analyzed, it is seen that teachers have high level of knowledge about the distribution of earthquake zones and the effects of earthquakes, and medium level of knowledge about earthquake education. In general, it was concluded that teachers' earthquake knowledge levels were at a high level. The reason for the high level of earthquake knowledge of the teachers in the study may be the effect of the Kahramanmaraş earthquake that occurred very recently. Tekin and Dikmenli (2021) stated in their study that more importance was given to what should be done after the earthquake and information. Ha (2018), in his study to investigate earthquake awareness in Korea, stated that earthquake awareness increased after the earthquake in the region and that earthquakes play an important role in increasing earthquake knowledge in society. In this direction, it can be said that recent earthquakes positively affect the level of earthquake knowledge.

According to the study, teachers have moderate knowledge about the relationship between earthquakes and structures and earthquake preparedness practices. Teachers' level of earthquake preparedness is low. In parallel with the results of the study, Jhonston et al. (2013) stated that the public had more knowledge about earthquake risk after public education activities, but the result was separate from earthquake preparedness. The reason for the low level of preparedness of teachers for earthquakes may be that although they have received in-service training on earthquakes at various times, they need more than this training. Yakut (2002) stated in his study that individuals' taking measures to reduce the damages of disasters and developing behaviors about earthquake preparedness require an educational process. In their study, Vicente et al. (2014) emphasized the importance of creating public education and publicity campaigns at the city level and providing education in schools in order to reduce the negative effects of disasters. In this direction, earthquake education can be given seriously and as a process to raise awareness of the society, not after any earthquake disaster.

In the study, it was observed that the levels of earthquake knowledge and sustainable earthquake awareness did not differ according to the gender of the teachers, but the level of earthquake knowledge differed between teachers between the ages of 20-30 and other age groups. Dökmeci and Merinç (2018) stated in their study that increasing the earthquake awareness of future generations will play an important role in the continuation of humanity and that students raised with disaster awareness can form a useful workforce in case of disaster. The high level of earthquake knowledge of teachers in the 20-30 age group may enable them to be useful in regions where manpower is needed in case of a possible disaster.

In the study, it was observed that there was a positive and moderate relationship between teachers' DBD and SDFD. There was a weak positive relationship between teachers' knowledge of earthquake zone distribution and earthquake structure relationship and earthquake preparedness practices. According to this result, it can be said that as teachers' knowledge about the distribution of earthquakes according to regions increases, their level of knowledge about the structures that should be built in these regions, their level of preparedness for a possible earthquake and their level of preparedness for a possible earthquake will increase. There was a weak positive correlation between teachers' knowledge about the effects of earthquake and earthquake-structure relationship and their earthquake preparedness practices. According to this result, when teachers' knowledge about the effects of earthquakes increases, their knowledge about the structures that should be built against earthquakes and their level of preparedness against a possible earthquake will also increase. When the level of knowledge of teachers increases with the earthquake education they receive, their knowledge of earthquake-structure relations, earthquake preparedness and implementation will also increase. In our earthquake-prone country, it is extremely important to be prepared for earthquakes at any time and to take the necessary precautions. In order to increase earthquake awareness in our country, earthquake-related trainings can be given to students in a systematic way starting from the lowest level. Education and earthquake knowledge enable people to use strategies to reduce losses and damages caused by earthquakes (Shaw et al., 2009). After providing information about earthquakes, drills can be conducted regularly. A suitable environment can be provided for drills to be taken seriously. An applied course can be added to the curriculum to make this awareness permanent. A course on disasters and disaster prevention can be given to prospective teachers during their undergraduate years. They can also be encouraged to participate in activities related to disasters.

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