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Research Article

Secondary School Students' Disaster Preparedness Perception: A Mixed Method Approach

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Abstract: The aim of this study was to examine the disaster preparedness perceptions and opinions of Secondary School Students who experienced the most recent major earthquake in Elazığ and Kahramanmaraş in Türkiye. The study population consisted of Secondary School Students in Elazığ and Kahramanmaraş during the 2022-2023 academic year. The sample included 548 participants in the quantitative part selected through non-probabilistic convenient sampling and 40 participants in the qualitative part selected using a criterion sampling method. In this study, a convergent parallel design, a mixed research method, was employed. The "Disaster Preparedness Scale" was used to collect quantitative data. The reliability of the scale was assessed using the Cronbach's Alpha, which was found to be .82. Qualitative data were collected through a semi-structured interview form developed by the researchers. The results indicated that the disaster preparedness perceptions of the participants were at a moderate level. There was no significant difference in the disaster preparedness perceptions among participants based on gender, while significant differences were identified based on city (in favor of students in Elazığ), grade, maternal education level, and paternal education level. Qualitative findings suggested that participants perceived the misinformation in the media after disasters as a significant problem. They also mentioned preparing disaster kits as a precaution after disasters, receiving fire and earthquake-related training at their schools, but feeling that these trainings did not contribute significantly to their preparedness. Participants emphasized the need for disaster awareness education and call for realistic and effective training exercises.

Keywords: Disaster, Disaster Preparedness, Secondary School Students

1.Introductıon

The frequency of disasters is increasing globally day by day. Following disasters, there are not only material and spiritual losses but also disruptions in societal life, leading to significant changes (Kolukırık, Arslan & Gökalp Yılmaz, 2022). Many phenomena arising after disasters impact individuals' socio-emotional, physical, cognitive, and psychological conditions, and often lead to lasting harm, especially to children (Garcia, Díaz & Martínez, 2016; Sağlam Şener & Arlıoğlu, 2022). Children exposed to negative living conditions as a result of disasters may encounter severe psychological disturbances. A substantial portion of children experiences post-traumatic stress disorder, depression, and anxiety as a result of disasters, leading to prolonged or enduring psychological distress (Kaya & Özcebe, 2013). In other words, children are significantly affected by both natural disasters (acts of nature) and human-made (intentional or accidental) disasters (Severin & Jacobson, 2020). Considering that disasters affect large areas, various measures can be taken by governments, institutions, and organizations to minimize the material and emotional negative impacts of disasters on people. For instance, providing students with information about disasters, organizing training on how to respond during disasters, and integrating these efforts into government policies can play a significant role in decreasing the effects of disasters (Adanalı, Yiyin & Özenel, 2022). In addition, by implementing necessary security measures in schools (Teyfur, 2021), students can be taught with the understanding that schools are safe places. This can help reduce students' fear of attending school and ensure the continuity of education. Emergency plans for disasters can be expanded, regular training and drills can be conducted, and disaster-resistant structures can be built (Connolly, 2012). According to Karatay and Emini (2022), educational policies can be reviewed and adjusted to ensure that students' educational freedom is not limited and that they

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feel secure during disasters. Specifically, adding more disaster education-related achievements to the curriculum can make students more prepared for disasters.

Disaster education is incorporated into various teaching programs within the education system of Türkiye. Subjects such as life sciences, social studies, science and technology, and geography include disaster education outcomes. In particular, the geography curriculum is the program with the most extensive coverage of disaster-related learning outcomes (Başıbüyük & Pala, 2023). In primary and secondary education, topics related to disasters are not allocated a separate subject but are incorporated within the units of existing courses. Topics related to disasters are included in the contents of subjects such as life sciences (grades 1, 2, and 3), science (grades 3, 5, and 8), social studies (grades 4 and 5), and "Our City" (an elective course for grades 5 through 8). In secondary education, these topics are present only in the curriculum of biology (10th grade) and geography (9th, 10th, and 12th grades). It is noted that in primary education, the subject of destructive natural events is discussed as a separate topic, which limits the concept of disasters to solely natural events, and does not conform to modern and contemporary disaster understanding (İnal, Kaya, & Altıntaş, 2018). In addition, the topic of earthquakes in the 4th-grade Social Sciences curriculum is associated with activities such as watching earthquake-related films, earthquake drills, and Earthquake Awareness Week (March 1-7) (Kırıkkaya Buluş, Oğuz Ünver & Çakın, 2011). Starting disaster education in the early years and incorporating relevant knowledge and skills into school curricula are believed to prepare students for disasters and reduce disaster risks (Musacchio et al., 2016). Efforts to develop disaster education curricula and to design them as specialized textbooks, rather than simply integrating them into existing course subjects, can enhance disaster awareness and improve students' perceptions of disaster preparedness (Kırıkkaya Buluş et al., 2011).

Studies have been conducted to measure the disaster awareness levels and preparedness of students at different levels regarding what will happen before, during, and after a disaster (Karakuş & Önger, 2017; Dökmeci & Merinç, 2018; Fathoni, 2018; Ventura & Madrigal, 2020; Şahan & Dinç, 2021; Şekerci, Ayvazoğlu & Çekiç, 2023). In addition, students' preparedness for various potential disasters that could occur at any time and place will enable them to take necessary precautions before a disaster, be aware of the behaviors to adopt or avoid during a disaster, and act consciously after the disaster. As can be seen from the 6.8 magnitude Elazığ earthquake in 2020 and the 7.8 and 7.5 magnitude Kahramanmaraş earthquakes in 2023, Türkiye is an important region at risk of disaster. Therefore, it is important for children and families to learn what to do in case of disaster and how to cope with the difficulties that arise after the disaster. Since students are the most affected individuals during disasters, the governments need to take the necessary measures to minimize the impact on students. This study aims to examine the preparedness levels of students in disaster-prone areas such as Kahramanmaraş and Elazığ, to identify potential shortcomings in their readiness for future disasters, and to shed light on the necessary measures that should be taken. In this sense, the main motivation behind this study was the recognition of the importance of preparing students for disasters and the challenges they may encounter afterward. Thus, thee objective of this study was to examine the disaster preparedness perceptions and views of Secondary School Students who experienced the most recent major earthquake disaster in Elazığ and Kahramanmaraş in Türkiye.

2.Methodology

In this study, a convergent parallel design, a mixed-methods approach, was employed. The mixed-methods design allows for a comprehensive and multidimensional examination of a situation by using both numerical and verbal data concurrently (Gay, Mills, Airasian, 2012; Mills, Gay, 2016). The convergent parallel design is a type of mixed-methods design in which quantitative and qualitative data are collected during the same time frame (Creswell, Plano Clark, 2015). In this design, data are initially analyzed separately and then integrated to draw conclusions.

2.1. Quantitative Study

2.1.1. Participants

The population of the study consisted of Secondary School Students in Elazığ and Kahramanmaraş during the 2022-2023 academic year. A non-probabilistic convenience sampling method was used in sample selection and as a result 548 Secondary School Students from Elazığ and Kahramanmaraş were included in the study. Convenience sampling is a suitable sampling method when participants are easily accessible, data collection is time-efficient. It also facilitates reaching a larger number of participants quantitatively (Büyüköztürk, 2015). The demographic information is provided below.

Table 1

The Participants' Demographic Information

Variables		N	Yüzde (%)
City	Elazığ	228	41,6
	Kahramanmaraş	320	58,4
Gender	Female	301	54,9
	Male	247	45,1
Grade	5. Grade	204	37,2
	6. Grade	271	49,5
	7. Grade	49	8,9
	8. Grade	24	4,4
Maternal Education Status	Primary School	157	28,6
	Secondary School	153	27,9
	High School	156	28,5
	University	82	15,0
Paternal Education Status	Primary School	61	11,1
	Secondary School	120	21,9
	High School	199	36,3
	University	168	30,7
Total		548	100

Of the 548 participants, 228 (41.6%) were enrolled in schools in Elazığ, while 320 (58.4%) attend schools in Kahramanmaraş. In terms of gender, the gender was composed of 301 (54.9%) female students and 247 (45.1%) male students. Among the participants, 204 (37.2%) were in the 5th grade, 271 (49.5%) in the 6th grade, 49 (8.9%) in the 7th grade, and 24 (4.4%) in the 8th grade. Regarding the variable of maternal education, 157 (28.6%) had mothers with primary school education, 153 (27.9%) with middle school education, 156 (28.5%) with high school education, and 82 (15%) with a university degree. In terms of paternal education, 61 (11.1%) participants' fathers completed primary school, 120 (21.9%) completed middle school, 199 (36.3%) completed high school, and 168 (30.7%) had a university degree.

2.1.2. Data collection tool

2.1.2.1. Disaster preparedness scale

The "Disaster Preparedness Scale," developed by Şentuna and Çakı (2020), was used to collect the quantitative data in the study. The scale consists of two sections: demographic variables and scale items. It comprises 13 items, each using a 4-point Likert scale, ranging from "definitely no," "no," "yes," and "definitely yes.". The Kaiser-Meyer-Olkin (KMO) index, used as a criterion for the suitability of the scale items for principal component analysis, was found to have a good fit level at .84 (p = .00). The item-total correlation scores of the scale range between .43 and .63 . The scale is composed of four sub-dimensions: "Disaster Physical Protection," "Disaster Planning," "Disaster Assistance," and "Disaster Warning and Signals." Although there are various debates on the use of the scale, there is an opinion that the use of a 4-point likert-type scale will prevent participants from giving vague answers and encourage them to think more (Garland, 1991). Items in the scale (Definitely yes: 3.21-4.00, Yes: 2.41-3.20, No: 1.61-2.40, Absolutely no: 0.81-1.60) were scored as follows (Şentuna, Çakı, 2020). The lowest score that can be obtained from the whole scale is 4 and the highest score is 42. The reliability of the scale was examined using Cronbach's Alpha which was found to be .82. The CFA of the scale used was examined to see its suitability for secondary school students, and it was seen that this scale could be used for secondary school students. To ensure the scale's reliability for this study, the internal consistency coefficient was calculated and the reliability of the scale was confirmed. It was concluded in the study that the scale showed sufficient fit (p=.00; $\chi 2/sd=1,99$; SRMR= 0,03; RMSEA= 0,04; CFI= .94; TLI= .92).

2.1.2.2. Analysis of quantitative data

The "Disaster Preparedness Scale" and a semi-structured interview form were administered to assess Disaster preparedness perceptions of the participants. The quantitative and qualitative data were analyzed at the end of the data collection process. For the quantitative part of the study, the dependent variable was Disaster preparedness perceptions of the participants, and the independent variables were city, gender, grade, and parental education levels. Data were analyzed using the "IBM SPSS Statistics 22.0" software package. An analysis was conducted to examine whether the data had a normal distribution. It was found that the data exhibited a normal distribution. To be considered as having a normal distribution, skewness and kurtosis values should be between +1.5 and -1.5 (Tabachnick & Fidell, 2013). For the Disaster Preparedness Scale, the skewness value was .226, and the kurtosis value was .642.

For each item on the scale, the arithmetic mean, standard deviation, percentage, and frequency values were calculated. Since the numerical data obtained from the scales were parametric, the t-test was employed for pairwise comparisons, and a one-way analysis of variance (ONEWAY ANOVA) was used for comparisons involving more than two variables.

2.2. Qualitative study

2.2.1. Participants

The study group consisted of 27 female and 13 male participants who were attending schools in Elazığ and Kahramanmaraş during the 2022-2023 academic year. In selecting the study group, criterion sampling method was employed. The criteria for participant selection were that they were in the 8th grade, had experienced a disaster, and had participated in disaster drills. Criterion sampling is a non-probabilistic method in which the sample is composed of individuals, events, or situations that possess the specific qualities defined in relation to the problem (qualifications) under investigation (Büyüköztürk, et al. 2008).

Table 2

The Demographic Variables of the Participants

Variables		N	Percent (%)
City	Elazığ	15	37.5
	Kahramanmaraş	25	62.5
Gender	Female	27	67.5
	Male	13	32.5
Maternal Education Status	Primary School	5	12.5
	Secondary School	9	22.5
	High School	13	32.5
	University	13	32.5
Paternal Education Status	Primary School	5	12.5
	Secondary School	9	22.5
	High School	13	32.5
	University	13	32.5

2.2.2. Data collection tool

2.2.2.1. Semi-structured interview form

To collect qualitative data, a semi-structured interview form was prepared. A semi-structured interview is a flexible interviewing technique in which the researchers have predetermined topic areas, and each participant is asked similar questions (Buran, 2021; Türnüklü, 2000). The interview form consisted of two sections: one section included demographic questions, and the other section contained questions designed to investigate the participants' opinions. To enhance the validity of the data collection tool, feedback was sought from one social studies teacher and two curriculum experts. The prepared interview form was provided to the participants, and their opinions were collected face-to-face on a voluntary basis. The interviews were conducted one-on-one with students in a school setting during suitable time slots over the course of one week. The following questions were posed to the participants regarding their perceptions of disaster preparedness:

1. What are the opinions of Secondary School Students regarding the problems that occur after disasters?
2. What precautions do Secondary School Students take with their families after a disaster?
3. What kind of disaster-related training did Secondary School Students receive at their schools?
4. How did the training they received benefit Secondary School Students during a disaster?
5. What type of disaster-related training would Secondary School Students like to see provided in their schools?
6. According to Secondary School Students, how should disaster drills be conducted?

2.2.2.2. Analysis of qualitative data

The qualitative data were uploaded to the MAXQDA 2018 program and structured using MAXMaps. The data were analyzed using the content analysis method. Content analysis involves transforming words, expressions, and concepts in texts into codes and expressing them in numbers (Kızıltepe, 2021).

2.3. Ethical considerations

Ethics committee permission for this study was obtained from Firat University Social Sciences And Humanities Research Ethics Committee Social And Humanities Research Ethics Committee with the decision dated 13.07.2023 and numbered 2023/13.

3. Findings

This section presents the findings of the analysis conducted to examine the disaster preparedness perceptions of Secondary School Students and their opinions on this topic in terms of various variables.

3.1. Quantitative findings on disaster preparedness perceptions of the participants

3.1.1. Disaster preparedness perceptions of the participants

The arithmetic means and standard deviations were calculated for disaster preparedness perceptions of the participants.

Table 3

Disaster Preparedness Perceptions of the Participants

	N	$\bar{X}$	**ss**
Disaster Preparedness Perceptions	548	2.66	.45
Disaster Physical Protection	548	2.51	.54
Disaster Planning'	548	2.72	.69
Disaster Assistance	548	3.00	.59
Disaster Warning and Signals	548	2.45	.67

It was found that the participants had a moderate level of disaster preparedness perceptions ($\bar{X}$=2.66). Looking at the sub-dimensions of the disaster preparedness scale in terms of student perceptions, it was found that students had high perceptions in the Disaster Assistance ($\bar{X}$=3.00) sub-dimension, while their perceptions were at a moderate level in the Disaster Physical Protection ($\bar{X}$=2.51), Disaster Planning ($\bar{X}$=2.72), and Disaster Warning and Signals ($\bar{X}$=2.45) sub-dimensions.

3.1.2. Disaster preparedness perceptions of the participants by gender

An independent variables t-test analysis was conducted to examine whether Disaster preparedness perceptions of the participants differed based on their gender.

Table 4

Disaster Preparedness Perceptions of the Participants by Gender

	Gender	N	$\bar{X}$	ss	Sd	t	p.
Disaster Preparedness	Female	301	2.68	.45	546	.920	.35
	Male	247	2.64	.44			

*p.<.05

As shown in Table 4, there was no significant difference in the disaster preparedness perceptions of the participants. However, when examining the means, it was noted that female students ($\bar{X}$=2.68) had higher disaster preparedness perceptions compared to male students ($\bar{X}$=2.64).

3.1.3. Disaster preparedness perceptions of the participants by city

An independent variables t-test analysis was conducted to examine whether the disaster preparedness perceptions of the participants differed based on the city variable.

Table 5

Disaster Preparedness Perceptions of the Participants by City

	City	N	X-	ss	Sd	t	p.
Disaster Preparedness	Elazığ	228	2.74	.54	546	3.396	.00*
	Kahramanmaraş	320	2.60	.35			

*p<.05

Table 5 revealed a significant difference in the disaster preparedness perceptions of Secondary School Students in Kahramanmaraş in favor of those living in Elazığ (t(546)=3.396; p=.00<.05).

3.1.4. Disaster preparedness perceptions of the participants by grade

A one-way analysis of variance was conducted to examine whether the disaster preparedness perceptions of the participants differed based on their grade.

Table 6

Disaster Preparedness Perceptions of the Participants by Grade

	Grade	N	X̄	sd		Anova Sum of Squares	sd	Mean Squares	F	P	Difference (LSD)
Disaster Preparedness	5.Grade (1)	204	2.71	.47	Between groups	2.517	3	.839	4.188	.006*	
	6. Grade (2)	271	2.67	.45	Within Groups	108.996	544	.200			1>3
	7. Grade (3)	49	2.56	.34	Total	111.514	547				1>4
	8. Grade (4)	24	2.41	.37							2>4
	Total	548	2.66	.45							

*p<.05

As shown in Table 6, a significant difference was found in the disaster preparedness perceptions of the participants in terms of grade (F(3.544) = 4.188; p = .00 < .05). The analysis of the disaster preparedness scale revealed that 5th-grade students had greater disaster preparedness perceptions compared to those in the 7th and 8th grades, and 6th-grade students had higher disaster preparedness perceptions compared to 8th-grade students.

3.1.5. Disaster preparedness perceptions of the participants by maternal education level

A one-way analysis of variance (ANOVA) was conducted to investigate whether the disaster preparedness perceptions of the participants showed significant differences based on maternal education level.

Table 7

Disaster Preparedness Perceptions of the Participants by Maternal Education Level

Maternal Education Level	N	X̄	ss		Anova Sum of Squares	sd	Mean Squares	F	P	Difference
Primary (1)	157	2.61	.48	Between groups	2.513	3	.838	4.180	.006*	
Secondary (2)	153	2.60	.41	Within Groups	109.001	544	.200			4>1
High School (3)	156	2.70	.43	Total	111.514	547				4>2
University (4)	82	2.79	.45							
Total	548	2.66	.45							

*p<.05

As shown in Table 7, there was a significant difference in Disaster preparedness perceptions of the participants in terms of maternal education level (F(3.544) = 4.180; p = .00 < .05). The difference was between the participants whose mothers had university degree ($\bar{X}$=2.79) and those whose mothers were primary school ($\bar{X}$=2.61) or secondary school ($\bar{X}$=2.60) graduates.

3.1.6. Disaster preparedness perceptions of the participants by paternal education level

One-way ANOVA was conducted to examine if there was a significant difference in Disaster preparedness perceptions of the participants concerning paternal education level.

Table 8

Disaster Preparedness Perceptions of the Participants by Paternal Education Level

	Paternal Education Level	N	$\bar{X}$	sd	Anova					
						Sum of Squares	sd	Mean Squares	F	P	Difference
Disaster Preparedness	Primary (1)	61	2.52	.47	Between groups	3.002	3	1.001	5.017	.002*	
	Secondary (2)	120	2.60	.42	Within Groups	108.512	544	.199			3>1
	High School (3)	199	2.67	.41	Total	111.514	547				4>2
	University (4)	168	2.75	.47							
	Total	548	2.66	.45							

*p<.05

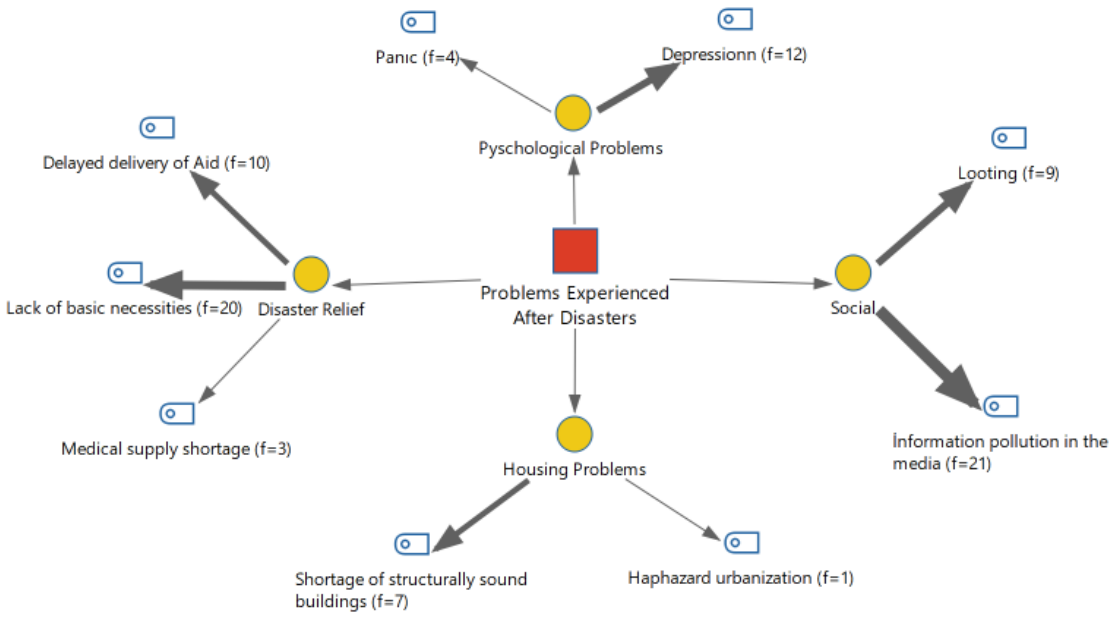
Table 8 revealed a significant difference in disaster preparedness perceptions (F(3,544)=5.017; p=.00<.05). It was found that the participants whose father had completed high school ($\bar{X}$=2.67) exhibited greater disaster preparedness perceptions compared to those whose fathers had finished primary school ($\bar{X}$=2.52). In a similar vein, participants whose fathers were university graduates ($\bar{X}$=2.75) demonstrated higher disaster preparedness perceptions compared to those whose fathers had completed secondary school ($\bar{X}$=2.60).

3.2. Qualitative findings on disaster preparedness of the participants

3.2.1. Problems experienced by the students after disasters

Figure 1

Problems Experienced After Disasters



As shown in Figure 1, the participants' views on the problems and deficiencies experienced after disasters were categorized into 4 themes with 9 codes. It was found that the participants primarily focused on information pollution in the media (f=21) and the lack of basic necessities (f=20). The opinions of the participants from Kahramanmaraş revealed that they mainly concentrated on psychological issues and shortages of basic necessities. In contrast, the participants from Elazığ tended to emphasize the delayed response in providing assistance and the information pollution in the media.

S 15: " It left a significant psychological impact, and we felt like we were continuously reliving that moment. It could cause financial effects."

S 18: "During the earthquake we experienced, there were significant deficiencies in the first aid teams. In addition, there were problems with finding shelter, water, and food. There were hygiene problems."

3.2.2. Precautions taken by the participants after disasters

In Figure 2, the opinions of the participants regarding the precautions they took after disasters are presented.

Figure 2

Precautions Taken by the Participants After Disasters

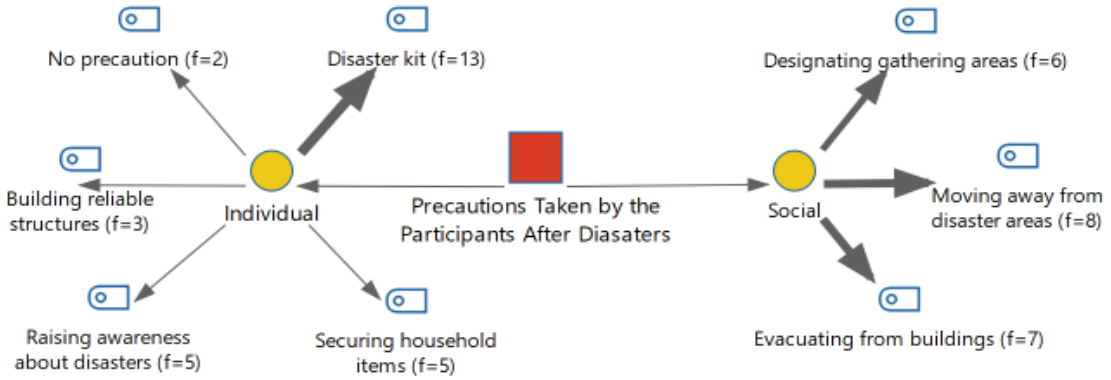


Figure 2 indicated that the participants' precautions regarding disasters were categorized into two themes and eight codes: individual and collective measures. Students first took measures related to evacuating from buildings (f=7) and moving away from disaster areas (f=8). Subsequently, they prepared disaster kits (f=13) and secured household items (f=5).

S5: "*After the earthquake, we discussed with my family where to stay in the house during the earthquake and where to go if we are outside*."

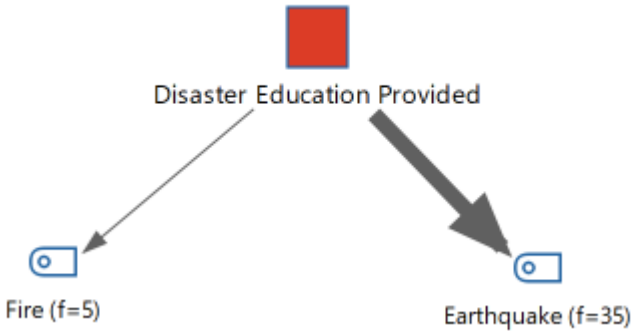
S27: "*Right after the earthquake, we moved away from the city, and when we returned home, we prepared a disaster kit and secured the items in the house*."

3.2.3. Disaster education received by the participants in their schools

Figure 3 presentes the codes regarding the disaster education received by the participants.

Figure 3

Disaster Education Provided to the Participants in Their Schools



It was observed that students mostly received earthquake-related education.

S40: "An earthquake drill was conducted, and training on actions like drop, cover, and hold was provided."

S1: "We were taught what to do during an earthquake and practiced it. We also received training on how to put out fires during a fire."

3.2.4. Contributions of disaster education received by the participants

In Figure 4, the participants' opinions on the contributions of the disaster education they received regarding disasters were illustrated.

Figure 4

Contributions of Disaster Education Received by the Participants

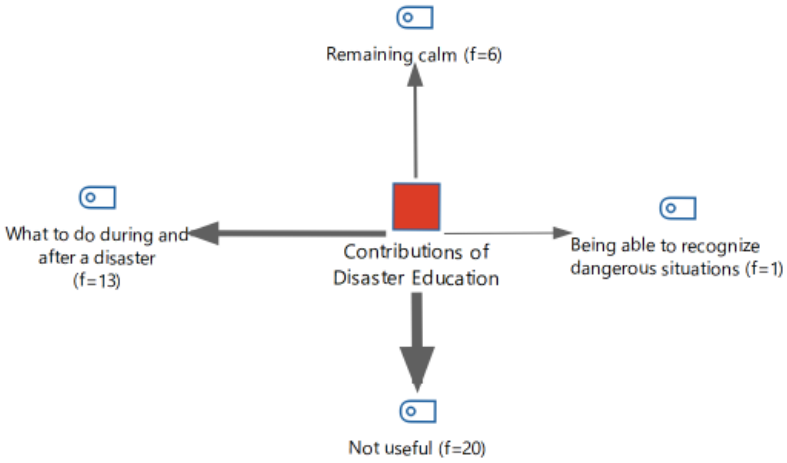


Figure 4 presents the participants' opinions on the contributions of the disaster education they received regarding disasters. While some participants stated that they were informed about what to do during and after a disaster (f=13), others expressed that the education they received was not useful (f=20). Some of the participants' opinions are as follows:

S17: "We received education before the disaster, but it did not help at all. During the disaster, it felt like I had forgotten everything."

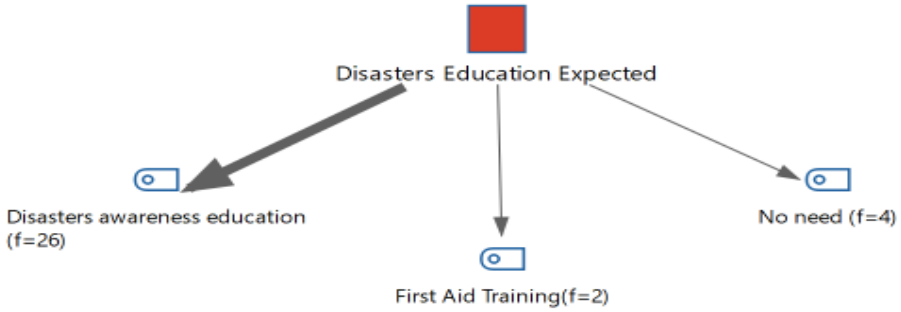
S19: "We had drills at our school before. But I could not stay calm because I was scared of the darkness and earthquakes."

3.2.5. Disaster education the participants expect to receive

Figure 5 shows the disaster education topics that the participants expect to take, represented by codes.

Figure 5

Disasters Education Expected by the Participants



As shown in Figure 5, students had a strong preference for disaster awareness education (f=26). They expressed the necessity of such education to exhibit appropriate behavior during and after disasters. First aid training was considered essential for both disaster situations and daily life.

S2 "Training on how to take necessary measures can be provided. Behaviors like 'Drop, Cover, and Hold On' should not remain purely theoretical, and at least basic first aid training can be provided."

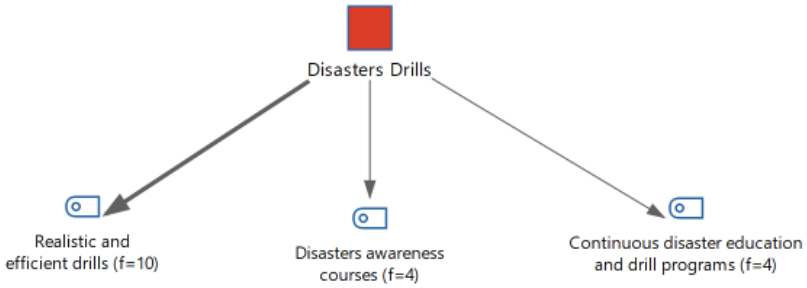
S32 "First aid kits should be provided, and first aid training should be given.""

3.2.6. The participants' recommendations for drills/trainings

Figure 6 presents the recommendations of the participants concerning disaster drills and training, represented using codes.

Figure 6

Recommendations of the Participants for Disaster Drills



The participants emphasized the need for disaster drills and training to be realistic and efficient (f=10). In addition, they expressed a desire for lessons aimed at improving disaster awareness (f=4) and stressed the importance of continuous disaster education and drill programs (f=4).

S16 "I would like to have lessons on how to protect ourselves during disasters and how to act during an earthquake."

S19 "I wish our school would conduct a more realistic drill. We could not adequately prepare for an earthquake because only simple drills have been performed."

4.Results, Discussion and Recommendations

Preparation for disasters, especially earthquakes, involves efforts to minimize the impact of various disasters on individuals. It can be claimed that children are most affected by disasters worldwide. After disasters, children often have difficulties adapting to their education, psychology (Widdyusuf, Muctiarni & Mupita, 2022), and social lives. To minimize these negative effects, it is important to determine children's disaster preparedness perceptions and prepare them for disasters accordingly based on the results. In this context, this study aimed to examine the disaster preparedness perceptions of secondary school students who experienced a major earthquake in Türkiye, specifically in Elazığ and Kahramanmaraş.

The findings indicated that the participants' disaster preparedness perceptions were at a moderate level. In the literature, there are studies which reported both similar and different results (Dereli Toprak & Açıkalın Savaşçı, 2018; Taşkın, 2022). For example, Yıldız, Teeuw, Dickinson, and Robert (2020) investigated earthquake preparedness and risk perception of children, and found that they were generally aware of the earthquake risks in their regions. However, their preparedness levels for such earthquakes were low. Furthermore, they concluded that children who participated in earthquake education programs had higher earthquake awareness, and were able to envisage future earthquakes and possible causes of injury. In contrast, several studies aiming to examine secondary school students' earthquake preparedness reported that the students' earthquake preparedness levels were satisfactory (Alkalash, 2023; Widdyusuf et al., 2022).

It was found in the present study that the participants did not differ by gender. Widdyusuf et. al. (2022) also arrived at a similar conclusion in their study. In contrast to these findings, Cvetković et. al. (2015) found that male students had more disaster-related knowledge compared to female students.

It was also found that there was a significant difference in favor of those in Elazığ regarding the disaster preparedness perceptions of middle school students based on the city variable. A possible reason for this finding could be the significant earthquakes experienced in Elazığ, such as the Sivrice and Elazığ earthquakes. The education received by the children in schools or different social settings, as well as experiencing these earthquakes, may have prepared the children to respond appropriately to disasters. The frequent occurrence of earthquakes in Elazığ, compared to the participants in Kahramanmaraş who may have experienced such a significant disaster for the first time, could be a factor for this finding. Özelmacı (2016) investigated the perceptions of secondary school students regarding disasters and disaster preparedness in Erzurum, Karaman, Kocaeli, and Trabzon. It was concluded that students in Karaman, where disasters are least common in Türkiye, were aware of the impacts of disasters but were not very conscious of preparedness, thinking of a disaster bag as just a simple first aid kit. The lack of experience with disasters could influence children's preparedness perceptions. Cvetković et. al. (2015) studied the knowledge and perceptions of secondary school students in Belgrade about earthquakes as natural disasters, and found that students' knowledge about earthquakes was influenced by personal experiences and the experiences of the head of the family, typically the father. Contrary to these findings, Benzer and Arpalık (2021) did not find a significant difference in the knowledge levels of secondary school students living in different earthquake regions concerning earthquakes based on the city variable.

This study also investigated whether there was a significant difference in disaster preparedness perceptions among secondary school students based on their grade. The findings revealed a significant difference. It was found that participants in 5th-grade had higher disaster preparedness perceptions compared to 7th and 8th graders, and participants in 6th-grade had higher perceptions compared to 8th graders. The reason for this may be that recent disasters were more extensively covered at the primary school level, and it is possible that 5th and 6th-grade students have higher disaster preparedness perceptions compared to students in the 7th and 8th grades contrast, some studies reported that 8th-

grade students had higher knowledge about disasters compared to 5th, 6th, and 7th graders (Adanalı et al., 2022; Benzer & Arpalık, 2021; Piyadeoğlu-Kaya, 2019).

It was also examined whether there was a significant difference between secondary school students' disaster preparedness perceptions based on their parents' education levels. A significant difference between parents' education levels and students' disaster preparedness perceptions was found. A significant difference was observed in participants whose mothers were high school and university graduates, as they had higher disaster preparedness perceptions compared to students whose mothers were elementary and secondary school graduates. Similarly, students whose fathers were high school and university graduates exhibited higher disaster preparedness perceptions than students whose fathers were elementary and middle school graduates. These findings suggest that parents with higher education levels might better inform their children about disasters and that the preparedness of children for disasters is positively correlated with parental education. In contrast, Cvetković et al. (2015) reported that while the education level of parents might not directly affect children's knowledge about earthquakes, the rate at which children of highly educated parents are knowledgeable about earthquakes is statistically higher.

In the qualitative part of the study, the participants were asked about the problems they experienced after the disaster. The responses were mainly about psychological issues, social issues, housing problems, and issues related to disaster aid. The participants in Kahramanmaraş focused particularly on psychological problems and basic needs deficiencies. Tanhan and Mukba (2015) examined the perceptions of secondary school students in Van regarding earthquakes and the psychosocial effects of earthquakes among students. They concluded that earthquakes can cause cognitive, emotional, and behavioral problems in children, as well as psychological issues such as loss of trust and hopelessness about the future. Furthermore, some studies found that students experienced stress disorders after a trauma (Chong-de et al., 2013). Students in Elazığ concentrated on responses related to media misinformation and delays in receiving aid. Koçyiğit (2023) pointed out that the media's coverage encompasses not only communication, aid coordination, and information sharing, but also the generation of false and negative content for specific purposes, which can unnecessarily dominate the media's agenda. The difference in responses may be attributed to the greater destruction in Kahramanmaraş and the lack of basic needs such as food, shelter, and hygiene. The absence of destruction in Elazığ may be related to the different responses given by the students.

In response to the question about the measures they took after disasters, students most commonly reported that they prepared a disaster bag. The lack of basic needs such as food and water, either under the rubble or on the streets, following earthquakes can be attributed to the adoption of this measure. Nevertheless, some participants reported not taking any measures although they experienced a significant disaster. Özkorkmaz et al. also found similar results. The students indicated that they had taken such precautions. Karthikeyan and Rajendran (2020) highlighted the importance of encouraging students to keep water, food, and first aid supplies in their homes or backpacks for an earthquake. They emphasized the importance of creating a disaster preparedness bag. In their study, Özkorkmaz and colleagues (2023) found that approximately 37% of students had prepared a disaster bag.

When asked about the type of disaster training they received at their schools, the participants reported that they received earthquake training and some also received fire training. Türkiye is located in an earthquake-prone region and thus more training shoud be provided. Studies showed that the disaster training provided differs by region. Piyadeoğlu Olcay (2019) examined secondary school students in Gümüşhane and found that the students were educated about disaster awareness for events such as landslides, rockfalls, and floods, which are common in the region.

In terms of the impact of the disaster training they received, the majority of the participants said that it had "no impact." The reason for this finding may be the panic and fear during an earthquake, which may

prevent students from implementing their knowledge. However, the findings of this study contrast with other studies reporting that disaster training can increase disasters awareness (Faupel and Styles, 1993), reduce anxiety after a disaster (Mishra & Suar, 2012), and help children better prepare for disasters (Shiwaku et al., 2007).

In terms of their expectations from disaster training, the majority of the participants stated that disaster awareness education should be provided. Similarly, Özkorkmaz et. al. (2023) emphasized that raising earthquakes awareness of 7th-grade secondary school students was crucial. They argued that earthquake training should be organized, and technological advancements should be included in the programs in order to improve earthquake awareness.

The participants expressed that disaster drills should be more realistic, efficient, and continuous. They also argued that disasters should be taught as a distinct subject. İnal, Kaya, and Altıntaş (2018) highlighted that the disaster education curriculum of primary and secondary education in Türkiye was insufficient.

The study findings indicated that secondary school students had a moderate level of awareness regarding disaster preparedness. However, there is a notable disagreement in the responses of students in terms of earthquake preparedness and preventive measures, as many of them predominantly mentioned the preparation of emergency bags.

In terms of the city variable, the study suggests a more favorable disaster preparedness perception among students in Elazığ. Differences in responses were observed among students residing in Elazığ and Kahramanmaraş concerning the challenges they faced after earthquakes. Specifically, students who experienced the Kahramanmaraş earthquake appeared to undergo more trauma, exhibit higher fears of loss, and demonstrate greater sensitivity to issues related to housing and food shortages.

Research on education revealed positive outcomes for students with parents having a higher level of education. Although the awareness is believed to be linked to education, students expressed that the education received before earthquakes did not significantly contribute to their preparedness. Nevertheless, the students' expressed desire for education in realistic settings and their recognition of the need for continuous education underscore their awareness of the pivotal role of education in disaster preparedness.

4.1 Recommendations

Türkiye is located in an earthquake-prone zone which requires certain measures to be taken. In particular, housing plans should be developed with careful consideration and in collaboration with the government. The number of Disaster and Emergency teams should be increased. Teams capable of providing real life training to students should also be established. Before training children, teachers and parents should receive training in first aid, psychological support, and stress management. In addition, disaster training should be integrated into the curriculum for every course. Furthermore, the drills should be implemented in environments that closely simulate real-world conditions.

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