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Research Article

The Effect of Disaster Training on Teachers Candidates' Perception of Disaster Awareness

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Abstract: Türkiye frequently experiences disasters that negatively affect human life in terms of various aspects. Therefore, teacher candidates who will teach future generations should be educated about raising disaster awareness. In this study, the effect of the disaster awareness training given by AFAD on the disaster perceptions, and awareness levels of teacher candidates were studied. In the research convenience sampling method was adopted. 58 teacher candidates, 44 females and 14 males, participated in the study which was designed in the "Single Group Pre-Test - Post-Test" model. Teacher candidates took disaster training for 12 hours in two courses. After the training, there was a partial increase in disaster awareness levels. However, the results showed that having received disaster training before or having experienced a disaster did not make a significant difference in disaster awareness. A disaster education course, including practice, can be integrated into undergraduate programs of education faculties.

Keywords: Disaster Training, Disaster Awareness, Teacher Candidates

1. Introduction

Disasters occurring under the influence of natural forces (Sena & Michael, 2006) can be defined as events that have local and global effects, require international measures, have devastating effects, and cause fatal damages (Disaster and Emergency Management Presidency [AFAD], 2014; Dikmenli & Yakar, 2019). These events are called disasters because of the great damage they can cause, rather than their magnitude (Varol & Gültekin, 2016). Disasters, handled in two groups, natural and man-made, according to the way they occur, are destructions that are uncontrollable and can cause deaths, severe injuries, food shortages, infectious diseases, and psychological disorders that affect human life in many ways (financial, social, economic, environmental health, etc.) (Özey, 2006; cited in Yazıcı & Ulu Kalın, 2018; Sena & Michael, 2006).

In the history of the Republic of Türkiye, there were significant mortality rates and loss of property owing to the earthquakes that occurred in Varto, Erzincan, Gölcük, Düzce, Elâzığ, İzmir, Van, and in the earthquake occurring on the 6th of February 2023, referred to in the literature as the "Disaster of the Century" that destroyed 11 provinces (Akbaş & Çalışkan, 2023; Aktürk & Albeni, 2002). What's more, due to global warming, natural disasters have become increasingly common (Şahin, 2019). Türkiye is one of the countries with a high probability of various disasters due to its geographical location. Since it will not be possible to prevent the events that occur naturally (floods, earthquakes, volcanic eruptions, etc.), ways to minimize the damages such events could cause should be sought, because natural disasters are potential threats even in the twenty-first century (Clarke, 2013). People consider natural disasters as unfortunate but inevitable (Sena & Michael, 2006). Therefore, the researchers think that raising individuals' awareness about disasters is important (İnal et al., 2012).

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Studies show that societies with disaster awareness are more successful in minimizing the damages that may arise from disasters and managing post-disaster effects. Education is the primary factor in this success (Cvetković & Stanišić, 2015). That's why knowledge and awareness of the society about disasters is crucial. Disaster education enables individuals to understand how to prepare for a disaster, what to do, and how to act during a disaster (Çelik, 2020). As for closing the gap between theory and practice, disaster education should be done practically and should be available at all levels of education (Gerdan, 2019). According to the common wisdom, surviving disasters with the least damage and recovering quickly are related to using knowledge about disasters (Varol, 2007). Thus, disaster education provides individuals with access to material and resources, that can help reduce vulnerability to disasters (Hoffmann & Blecha, 2020). Recently, it has been widespread in many countries to offer courses on disasters at different levels of education (Öcal, 2007).

Starting from pre-school education, students should be provided with information and awareness about disasters (Yılmaz, 2015). Torani et al. (2019) conducted a conceptual analysis of how and to whom disaster education should be provided. Because all types of education require time and cost, it is important to determine in advance to whom (children, women, elderly or disabled people/volunteers, people who can carry out post-disaster activities) disaster training will be given and to prepare the content accordingly.

The study done by Ronan and Johnston (2001) indicates that disaster education related to risk perceptions of children increases their knowledge of hazard reduction. In disaster education, the aim should be to gain the ability to read and recognize disaster information and reduce risks (Kesumaningtyas, Hafida, & Musiyam, 2022). Studies show that injuries and damages caused by natural disasters can be avoided by or reduced with various solutions such as training and proper equipment (Aldrich & Benson, 2008; Başıbüyük, 2004; Öcal, 2005; Tuladhar et all, 2015).

Moreover, disaster education is a key to disaster awareness. It can either directly or indirectly affect disaster vulnerability as the capacity to anticipate, cope with, resist, and recover from natural disasters. Through education and learning, individuals acquire knowledge, abilities, skills, and perceptions that enable them to effectively prepare for and cope with the consequences of disaster shocks. This is the direct impact. On the other side education indirectly provides individuals with access to materials, information, and social resources that can help reduce disaster vulnerability. It is therefore important that all individuals are involved in disaster education processes (Hoffman and Blecha, 2020).

Teachers have a critical role in raising individuals' awareness about disasters. Thus, teachers should know about disasters and have disaster awareness. First of all, studies need to be done to increase the knowledge and awareness levels of teacher candidates who will teach future generations (İnal et al., 2012). In the research done to determine the Natural Disaster Literacy levels of pre-service geography teachers, it came out that the general natural disaster literacy levels of teacher candidates were high, but in the behavior dimension, it was at a medium level. Knowledge levels of teacher candidates should also be increased by training on natural disasters (Sözcü & Türker, 2021). Literature review showed that there are few studies on disaster awareness of teacher candidates (Özgen et al., 2011; Özkazanç & Yüksel, 2015; Sözcü & Aydınözü, 2019; Yazıcı & Ulu Kalın, 2018). Sözcü (2020), who revised the studies done between 2003 and 2020 on disaster education in Türkiye, concluded that the number of studies increased gradually, but there were not enough experimental studies.

Accordingly, this paper deals with the effect of a disaster education program aiming to increase the disaster awareness of teacher candidates and their perceptions of disaster awareness. It is hoped that disaster awareness of teacher candidates turns into a transferable behavior. The primary purpose of the study is to test the effect of the disaster education program given by AFAD on the disaster awareness of teacher candidates. Accordingly, it seeks answers to the following questions:

1. What are the disaster awareness levels of teacher candidates?
2. Is there a statistically significant difference between teacher candidates' disaster awareness pre-test and post-test scores?
3. Do the disaster awareness post-test scores of teacher candidates differ according to variables such as getting disaster training before and having experienced a disaster before?

2. Method

2.1. The research approach

This paper studies the effects of disaster awareness training on teacher candidates. Accordingly, the research was designed using a "Single Group Pre-test - Post-test" model. This model, considered relatively weaker among experimental designs, lacks a control group, and data collection tools are administered solely to the experimental group both before and after the experimental process (Büyüköztürk et al., 2016). The experimental group in this study comprised 58 teacher candidates who willingly participated in the program.

2.2. Population and sample

The study population consisted of teacher candidates studying at a faculty of education in Central Anatolia during the spring semester of the 2021-2022 academic year. The research sample was determined through the convenience sampling method. The sample consisted of 65 teacher candidates who voluntarily participated in the 12-hour Disaster Awareness Training program offered by AFAD at the faculty. The training's content and duration were explained, and volunteers were requested to attend the seminar hall at the specified time. These pre-service teachers constituted the experimental group, which was the only group in the study.

The experimental group consisted of 58 teacher candidates (7 forms were invalid and data from 58 forms were used for analysis) who willingly participated in the 10-hour training. Of the participants, 44 (75.9%) were females, and 14 (24.1%) were males. Out of the teacher candidates, 26 (44.8%) reported experiencing at least one disaster, while 31 (53.4%) reported no prior disaster experience. Furthermore, 41 teacher candidates (70.7%) had previously received disaster training, while 16 teacher candidates (27.6%) had not received any disaster-related training.

2.3. Data collection tool

The study used the "Disaster Awareness Perception Scale," developed by Dikmenli, Yakar, and Konca, (2018). This scale is comprised of 36 items and four factors: "disaster education awareness," "pre-disaster awareness," "false disaster awareness," and "post-disaster awareness." Respondents used a 5-point Likert-type scale with response options including "never," "rarely," "sometimes," "frequently," and "always." Nine of the items in the scale were reverse coded. The overall Cronbach alpha coefficient for the scale was found to be 0.772, with Cronbach alpha coefficients for the individual factors ranging between 0.672 and 0.769 (Dikmenli, Yakar, & Konca, 2018). The researchers conducted a confirmatory factor analysis for the scale, and by dividing the obtained chi-squared value by the degrees of freedom, a ratio of 2.88 was calculated. Since this value is less than 3, it was concluded that there was a high degree of compliance (Sümer, 2000). Additionally, the analysis of the scale's factors yielded a root mean square error of approximation (RMSEA) index of 0.069. The Cronbach alpha coefficients for both the overall scale and its factors ranged between 0.85 and 0.88.

2.4. Data collection & experimentation

Prospective teachers got disaster training in two courses from Konya AFAD trainers. In the first course, basic information and concepts, the necessary preparations to be made before any disasters, the correct behavior during disasters, post-disaster actions, fire prevention and evacuation, and information about what to do before and after earthquakes were taught. The course consists of 6 hours of training in total. In the second course, basic CBRN (Chemical, Biological, Radiological, and Nuclear) training was given to the participants. This course also had a total of 6 hours of training.

2.5. Ethical principles

The ethics committee approval for this study was granted by Selçuk University Ethics Committee of Literature Faculty with decision file and number 2022/03 on 28.01.2022.

3. Finding

Findings related to the level of prospective teachers' disaster awareness perceptions are given in Table 1.

Table 1

Mean and standard deviations of prospective teachers' disaster awareness perceptions

Scale	N	Min	Max	X	Sd
Disaster Awareness Perception Scale (Total)	56	1,47	3,56	2,75	,330
Pre-disaster awareness factor (8 items)	57	,63	4,00	3,32	,532
Disaster education awareness factor (13 items)	57	,54	3,38	2,87	,427
Post-disaster awareness factor (7 items)	57	,57	3,86	2,61	,600
False disaster awareness factor (8 items)	58	,00	4,38	1,78	1,086

Considering that the highest mean to be obtained from the scale is "5", it can be thought that the teacher candidates' perception of disaster awareness is at an "average" level. The participants have the highest mean in the "pre-disaster awareness" factor. The lowest mean belongs to the false disaster awareness factor. This result can be considered as an indicator of the necessity of disaster training.

In the research, the effect of disaster training on the participants' disaster awareness perception was studied. The results of the paired samples t-test are given in Table 2.

Table 2

Paired Samples t Test results to test the effects of disaster awareness training on prospective teachers' disaster awareness perceptions

Variable	Category	X	N	Sd	df	t	p
Disaster Awareness Perception Scale (Total)	Pretest	2,75	56	,330	55	1.138	.260
	Posttest	2,81	56	,256			
Pre-disaster awareness factor (8 items)	Pretest	3,32	57	,532	56	-,831	.406
	Posttest	3,38	57	,394			
Disaster education awareness factor (13 items)	Pretest	2,88	57	,427	56	-2,702	.009*
	Posttest	3,07	57	,335			
Post-disaster awareness factor (7 items)	Pretest	2,61	57	,600	56	-5,431	.000*
	Posttest	3,06	57	,509			
False disaster awareness factor (8 items)	Pretest	1,78	58	1,086	57	,876	.385
	Posttest	1,63	58	1,174			

* p<.05

Considering the results in Table 1, it is clear that there is no significant difference between the mean pretest and posttest scores from the overall scale (t55=1.138, p>.05), the mean pretest and posttest scores from the pre-disaster awareness factor (t56=0.831, p>.05), and the mean pretest and posttest scores from the false disaster awareness factor (t57= .876, p>.05). It came out that the posttest mean scores from the post-disaster awareness factor differed significantly from the pretest mean scores (t56=-5,431, p<.05). Accordingly, the mean score for post-disaster awareness factor, which was X=2,61 at the beginning, increased to X=3,06 after the training. The difference in the mean scores for the disaster education awareness factor was statistically significant (t56=--2,701, p<.05). The mean score which was X=2,88 before the training, increased to X=3,07 after the training.

On the other hand, the researchers also tested whether the posttest mean scores for the teacher candidates' disaster awareness education differed significantly according to whether they had experienced a disaster or whether they had received disaster education before (non-parametric test was done because the data related to the variable of whether they had received disaster training before or not did not show normal distribution). No statistically significant difference was found between the mean scores obtained from the scale's total and its factors in terms of both variables. The results are given in Table 3 and 4.

Table 3

Mann-Whitney U Test results for the posttest scores of the disaster awareness scale of teacher candidates according to whether they had received disaster training before or not

Variable	Category	N	Mean Rank	Sum of Ranks	U	p
Disaster Awareness Perception Scale (Total)	Got Training	16	34,41	1102,50	241,500	,124
	No Training	41	26,89	550,50		
Pre-disaster awareness factor (8 items)	Got Training	16	30,13	482,00	310,00	,748
	No Training	41	28,56	1171,00		
Disaster education awareness factor (13 items)	Got Training	16	31,03	496,50	295,500	,563
	No Training	41	28,21	1156,50		
Post-disaster awareness factor (7 items)	Got Training	16	32,44	519,00	273,00	,326
	No Training	41	27,66	1134,00		
False disaster awareness factor (8 items)	Got Training	16	32,88	1127,00	266,66	,270
	No Training	41	27,49	496,50		

Table 4

The results of the Independent Groups t Test considering whether the participants had experienced a disaster before or not

Variable	Category	N	X	Sd	df	t	p
Disaster Awareness Perception Scale (Total)	Experienced a disaster	31	2,85	,214	55	-1,080	,285
	No disaster experience	26	2,78	,299	55		
Pre-disaster awareness factor (8 items)	Experienced a disaster	31	3,45	,375	55	-1,382	,173
	No disaster experience	26	3,30	,409	55		
Disaster education awareness factor (13 items)	Experienced a disaster	31	3,09	,343	55	-,936	,354
	No disaster experience	26	3,01	,339	55		
Post-disaster awareness factor (7 items)	Experienced a disaster	31	3,11	,517	55	-,790	,433
	No disaster experience	26	3,01	,518	55		
False disaster awareness factor (8 items)	Experienced a disaster	31	1,63	,959	55	,145	,885
	No disaster experience	26	1,68	1,400	55		

Table 3 and 4 show that the teacher candidates who have experienced a disaster before or participated in disaster training before do not have a significant difference in their disaster awareness perception. This situation is thought to be remarkable and worthy of discussion.

4. Results and Discussion

In this research, the effect of disaster awareness training conducted by AFAD on the disaster awareness perceptions of teacher candidates was studied. It was found that there was no significant difference between the pre-test and post-test mean scores of pre-disaster and false disaster awareness perceptions of teacher candidates who attended the disaster awareness training in two sessions. However, it can be concluded that there was a partial increase in the mean pre-disaster awareness perception scores of the teacher candidates after the disaster training. In their study, Dikmenli and Yakar (2019) found that the pre-disaster perceptions of the participants were high, and the false disaster consciousness perceptions were at a medium level. In another study, it was found that the level of disaster awareness among high school students in Türkiye was low (Özkazanç & Yüksel, 2015). In another research in Türkiye, contrary to our findings, it was determined that the level of basic disaster awareness and preparedness among higher education students was low (İnal, Kocagöz, & Turan, 2012). A study done in Taiwan found that school administrators and teachers had a high level of disaster preparedness skills (Chung & Yen, 2016). In a study done in Greece, it was found that despite the increasing occurrence of biological and technological hazards, teachers' awareness of disasters is low, which negatively affects teaching, and consequently the preparedness of students and their families (Christina, Asimina, Anastasios, & Luca, 2022). These differences in findings may be due to differences in the education levels of the participants and the disaster education policies of the countries. Doğan et al. (2023) studied the attitudes of pre-service social studies teachers towards disasters and found that pre-service teachers' attitudes towards disasters were “agree” in cognitive and affective dimensions and “moderately agree” in behavioral dimensions. Sari and Ridhwan (2022) conducted a study in Indonesia with prospective geography teachers and found that their level of disaster preparedness was low. However, the most interesting finding of the study was that there was a significant relationship between academic competence and disaster preparedness. Disaster preparedness levels of those with high academic competence were also found to be high. The researchers explained this relationship with the appropriateness of the content in the curriculum and the availability of teaching materials such as simulations and models. In this context, the quality of the education provided also stands out (Coppola, 2015). Modern disaster management includes pre-disaster risk management (prevention and preparation) and post-disaster crisis management (response and recovery) stages (Mileti, 1999). In the provision of such management, it is a priority for individuals to gain practical knowledge. In this context, the practical effectiveness of the content of training offered both in pre-service programs and at different times by governmental or non-governmental organizations should be discussed.

AFAD defines disaster as a natural, technological, or human-induced event that causes physical, economic, and social losses for the whole or certain segments of the society, stops or interrupts daily life and human activities, and the coping capacity of the affected society is not sufficient. Disaster is not the event itself, but the consequence. In this context, we consider our negative experiences that occur after the event as “disasters” (AFAD, 2023). One way of improving disaster awareness is the disaster experience and the other one is training**.** Coping with disasters depends on being able to correctly identify where and how the danger will come from. Knowing the risks related to possible disasters improves perception, awareness, and combating skills (Kundak, 2018). Several empirical studies indicate that higher education levels are positively associated with several outcomes like levels of preparedness, responses to forewarnings, evacuations and relocation decisions, adaptation to environmental conditions, and the ability to deal with the results of disasters (Hoffmann and Blecha, 2020). In Türkiye, the Disaster and Emergency Management Presidency is trying to improve disaster

awareness through brochures prepared for children, youth, and families and practical training given at different educational levels. In addition, citizens can participate in "basic disaster awareness training" by applying through e-government (application link: https://www.turkiye.gov.tr/afad-temel-afet-bilinci-farkindalik-egitimi-basvurusu).

The results of the research show that the difference between the mean scores before and after disaster awareness training is statistically significant. The mean score, which was X=2.88 before the training, increased to X=3.07 after the training. This indicates that the training had a positive effect on the perception of the teacher candidates but to a limited extent. Research shows that even limited disaster training contributes to increasing disaster awareness (Karanci, Akşit & Dirik, 2005). However, training should be determined according to needs and priorities, and for disaster training to be effective, training should be provided by experts using appropriate techniques, and the continuity of this training should be ensured (Mızrak, 2018). For example, natural disasters such as earthquakes, floods, and landslides are frequent in Türkiye. Precautions should be taken for these disasters, the consequences of which are extremely destructive, and everyone in society should be trained against such disasters (Ataman-Bor, 2023).

In the study of Gezer and Aksu (2022), it was observed that the disaster awareness levels of teacher candidates who were exposed to a disaster and experienced a disaster differed statistically from those of teacher candidates who were not exposed to a disaster or did not experience a disaster before. Karadeniz (2020) similarly found that the disaster preparedness scores of those who experienced a disaster were higher than those who did not experience a disaster. The fact that prospective teachers have experienced the negative conditions of a disaster may have led them to be more conscious about disasters and to develop awareness about disasters. However, the findings obtained in the current study are different. A striking finding of the research is that disaster awareness perceptions of the teacher candidates do not differ according to whether they have experienced a disaster before. The experienced disaster, and the amount of destruction, damage, or loss may affect this situation. Boran and Ulutaşdemir (2023), found that the number of people exposed to disaster in the family, the number of people who lost their relatives in the disaster, the death toll, and material loss in the disaster did not affect the mean scores of the students of the Department of Emergency Relief and Disaster Management. The research done with teachers after the disaster in Indonesia, one of the disaster-prone countries, in 2018 showed that a recent disaster experience improved teachers' knowledge, attitudes, and disaster risk reduction knowledge. According to the research findings, teachers reflected their knowledge in classroom activities. Another reason for the improvement was disaster risk reduction activities in the school and increased participation in lessons emphasizing these issues (Astuti, Werdhiana, & Wahyono, 2021). Becker et al. (2017), on the contrary, emphasize that experience has seven different effects on disaster preparedness after their research on earthquakes. These are: encouraging thinking and talking; increasing awareness and knowledge; telling individuals the results of a disaster; improving preparedness; influencing emotions, and encouraging community interaction on disaster. Any kind of contribution to preparedness or awareness is very important considering the possibility of saving lives or minimizing damage. All segments of society need to be educated on this issue. The awareness of teachers, who are role models for their students and are responsible for educating them, gains even more importance.

5. Recommendations

Disaster awareness training, also known as disaster preparedness or emergency preparedness training is an educational program designed to increase the awareness and preparedness of individuals and communities for various types of disasters and emergencies. The primary goal of disaster awareness training is to provide people with the knowledge, skills, and resources needed to understand, respond to, and reduce the effects of disasters. Considering that it is unpredictable and likely to occur at any time,

everyone needs disaster awareness training. It is considered important to carry out detailed studies on this subject to create public opinion. Considering the limited findings, the following suggestions were made.

To increase disaster awareness of teacher candidates in Türkiye, which often faces disasters, a disaster education course, including practice, can be incorporated into the undergraduate program of education faculties.

By cooperating with NGOs and public institutions, the physical, social, and psychological development of disaster consciousness and awareness of teacher candidates can be supported through training provided in out-of-school learning environments.

Teacher candidates can be included in drills organized jointly by the relevant units of local governments, NGOs, and universities.

Comprehensive disaster education programs can be developed by designing and piloting disaster education programs at different educational levels.

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