



Determination of Medical Students' Perception on Disaster Awareness

Tıp Fakültesi Öğrencilerinin Afet Farkındalığı Algısının Belirlenmesi

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ABSTRACT

Objective: Medical students and general practitioners have a vital role in disasters both in the “preparedness and mitigation” and “response and recovery” phases. To prepare students management of disasters as health professionals, the level of disaster preparedness perceptions of the students should be evaluated. So, the undergraduate medical curriculum can be structured to ensure the readiness of the students for disaster. The aim of the study was to determine the level of disaster preparedness perception of medical students.

Methods: This descriptive study was conducted in the Faculty of Medicine of a state university. The population of the study consisted of students studying in the fourth, fifth and sixth grades of the medical faculty which had a training on disaster module in the fifth year. The study was completed with the participation of 288 students. In the data collection process, “personal information form” and the “disaster preparedness perception scale of personnel working in prehospital emergency health services” were used.

Results: It was found that exposure to disasters, presence of individuals exposed to disasters in the family and environment, participation in disaster exercises, receiving disaster training, willingness to volunteer in disasters, the level of participants' perception of themselves as prepared for disasters, the level of perception of the disaster risk of the region of residence, were effective on the mean total score of the scale.

ÖZ

Amaç: Tıp öğrencileri ve pratisyen hekimler afetlerde hem “hazırlık ve zararı azaltma” hem de “müdahale ve iyileştirme” aşamalarında kritik rol oynamaktadır. Öğrencileri sağlık profesyonelleri olarak afet yönetimine hazırlamak için, afet hazırlık algılarının değerlendirilmesi gerekmektedir. Böylece, mezuniyet öncesi tıp eğitimi programı öğrencilerin afete hazırlıklarını sağlayacak şekilde yapılandırılabilir. Bu çalışmanın amacı tıp fakültesi öğrencilerinin afet hazırlık algısı düzeyini belirlemektir.

Yöntemler: Tanımlayıcı türdeki çalışma bir üniversitenin tıp fakültesinde yapıldı. Çalışmanın evrenini beşinci sınıfta afet eğitimi yer alan tıp fakültesinin dördüncü, beşinci ve altıncı sınıfında öğrenim gören öğrenciler oluşturdu. Çalışma 288 öğrencinin katılımıyla tamamlandı. Veri toplama sürecinde “kişisel bilgi formu” ve “hastane öncesi acil sağlık hizmetlerinde çalışan personelin afetlere hazırlık algısı ölçeği” kullanıldı.

Bulgular: Afet geçmişinin olması, aile ve çevrede afet geçmişi olan bireylerin varlığı, afet tatbikatlarına katılım, afet eğitimi alma, afetlerde gönüllü olma isteği, katılımcıların kendilerini afetlere hazırlıklı görme düzeyi ve yaşanan bölgenin algılanan afet riskinin ölçek toplam puan ortalaması üzerinde etkili olduğu görüldü.

Sonuç: Afet hazırlık algısı düzeyi, afet yönetiminde yetkinlik kazandırılmasında ilk adım olarak görülebilir. Çalışmamızda dönem 5'te yer alan teorik temelli afet eğitiminin öğrencilerinin

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ABSTRACT

Conclusion: Disaster preparedness perception can be seen as a first step toward competency in disaster management in medical students. Conducting simulation-based well-structured training modules is recommended to improve the disaster preparedness perceptions of the students. Further studies are needed to evaluate the effect of simulation-based training in disaster management.

Keywords: Disaster, disaster preparedness, medical education, disaster preparedness perception, medical student

ÖZ

afet hazırlık algı düzeyinde artış sağladığı öne çıkan bulgular arasındadır. Alanyazında simülasyona dayalı eğitim modüllerinin yapılandırılması öğrencilerin afet hazırlık algı düzeylerinin geliştirilmesi için önerilmektedir. Simülasyona dayalı eğitimlerin etkisinin değerlendirilmesi için ileri çalışmalar önerilir.

Anahtar Sözcükler: Afet, afet hazırlığı, tıp eğitimi, afet hazırlık algısı, tıp öğrencisi

Introduction

Disaster is defined as a situation that occurs suddenly, slows down or stops daily life, requires urgent intervention and the struggle is not sufficient to be provided by local resources (1). Millions of people in the world are faced with disasters. As a result of disasters, physical, social, economic and psychological problems arise, and loss of life and property occur. To prevent or reduce the impact of the disasters, an effective disaster management is required (2,3).

Disaster management includes several initiatives to be implemented before, during and after the disaster. In the preparedness and mitigation phase, risk and damage reduction and preparation stages take place. Intervention initiatives during the disaster, and improvement and reconstruction initiatives after the disaster are carried out (4,5). In order to be carried out effectively, the disaster preparedness levels of individuals and societies should be high. Disaster preparedness is of vital importance to increase the resilience of societies and individuals, minimise the loss of life and property, and respond effectively in emergencies. This preparedness requires collaboration between healthcare providers, emergency responders and community members (6).

In the literature, there are studies examining the disaster preparedness levels of individuals from different segments of the society. In a study involving hospital employees, it was stated that more than half of the participants (57.9%) did not have sufficient information about hospital disaster plans. Not knowing the hospital disaster plan completely will cause disruptions in the management of the disaster by the responsible persons in case of a disaster. In this case, deficiencies will be seen in the provision of health services, which are among the services at risk in disasters (6). It is shown that the level of disaster preparedness of psychiatric nurses is high in Türkiye (7). In a different study, it was observed that gender, age, having a history of disaster, working experience in disasters, and receiving disaster training outside the National Medical Rescue Team (NMRT) had effects on the disaster preparedness levels of the NMRT employees (8).

Krishnan et al. (9) showed that interventions for improving disaster preparedness were effective in improving medical students' confidence level in disaster preparedness. Stating there were not any structured training programs in undergraduate

medical education for disaster management, the importance of well-structured training programs was emphasised in several studies all over the world (9-11). In Türkiye, the National Core Curriculum for undergraduate medical education recommends a structured program for disasters under the disasters subheading (12). There is structured, lecture-based training with case discussions in the fifth-year curriculum in our study context.

The aim of this study was to determine the levels of disaster preparedness perceptions of future medical doctors, medical students, who had an important role in providing health services in disasters. The research questions were:

1. What are the levels of disaster preparedness perceptions of medical students?
2. What is the effect of disaster management training on disaster preparedness perceptions of medical students?

Methods

Type of Study: This descriptive study was conducted to determine the level of disaster preparedness perception of medical students.

Location of the Study: The study was conducted at the Karadeniz Technical University in Trabzon, located in the Eastern Black Sea Region of Türkiye.

Population and Sample of the Study: Training on disasters module placed in the fifth-year curriculum as a part of emergency medicine rotation. To compare the students who had trained on disasters and who had not; fourth, fifth, and sixth-grade medical students were invited to the study (n=656). OpenEpi programme was used for the sample calculation of the study. As a result of the analysis, it was determined that at least 243 students should be reached to reach 80% power at 95% confidence interval. The research was completed with the participation of 288 students.

Data Collection Tools: In the data collection process of the study, the "personal information form" developed by the researchers as a result of the literature review and the "Disaster Preparedness Perception Scale of Personnel Working in Prehospital Emergency Health Services (DPPSPWPEHS)" developed by Tercan and Şahinöz (13) were used.

Personal Information Form: The form developed by the researchers as a result of the literature review includes 16

questions related to sociodemographic characteristics such as age, gender, and class of study, and situations such as previous exposure to disaster, participation in disaster drills, and receiving disaster training outside of medical education (8,14,15).

Disaster Preparedness Perception Scale of Personnel Working in Prehospital Emergency Health Services: The scale developed by Tercan and Şahinöz (13) consists of five sub-dimensions and a total of 28 items. The sub-dimensions are self-efficacy, willingness, intervention skill, benefit, and importance. The items in the scale are answered as “strongly disagree” (1 point), “disagree” (2 points), “undecided” (3 points), “agree” (4 points) and “strongly agree” (5 points). A minimum of 28 and a maximum of 140 points can be obtained from the scale. As the score obtained from the scale increases, the perception of preparedness for disasters increases. Cronbach alpha coefficient of the scale was found to be 0.925 in the reliability analysis conducted to determine the work consistency of the scale. The scale has a high level of reliability (13).

Statistical Analysis

The data collection form and scale were applied to the students in the classroom environment by face-to-face interview method. It took an average of 15 minutes to complete the form and scale. After the data collection process was completed, the data were entered into the Statistical Package for Social Sciences (SPSS) 18.0 programme. Frequency, percentage, mean, standard deviation and mean rank values were used to analyse the data. In addition, independent samples t-test was used for two-group comparisons and one-way ANOVA test was used for comparisons with three or more groups in which the data showed normal distribution. Mann-Whitney U test was used for two-group comparisons and Kruskal-Wallis H test was used for comparisons with three or more groups in which the data were not normally distributed,

Ethical aspects of the study: Institutional permission (number: E-46362034-299-40418, date: 15.02.2023) was obtained from Dean’s Office of the Faculty of Medicine at Karadeniz Technical University for the conduct of the study. Ethical permission was obtained from Karadeniz Technical University Faculty of Medicine Scientific Research Ethics Committee for ethical compliance (protocol number: 2023/55, date: 10.05.2023). In addition, the participants were informed about the study and signed the informed consent form.

Results

The study was completed with the participation of 288 students. Of the participants 62.5% were female and 55.6% of them were studying in the fourth grade. The mean age of the students was 23.40±2.33 years and 80.9% were between 18-24 years (Table 1).

Of the participants 78.8% had not been exposed to any disaster before and 51.4% of them had individuals with a history of disaster in their environment and family. Of the students 71.2% had participated in disaster exercises, 93.7% had not intervened in disasters and 84% had not received any disaster training other than medical education. Newspapers, magazines and internet

sources were preferred by 81.3% of the participants to access information on disaster medicine. Of the participants 67.7% wanted to work voluntarily in disasters. After the 6 February earthquake, 86.8% of the students’ perspectives on disasters changed, 85.4% of the students’ level of concern about disasters increased and 69.8% of the students’ interest in disaster medicine increased. Of the students 63.2% did not think of changing the region they lived in after the earthquake. Of the participants 53.5% considered themselves prepared for disasters at the level of 1-2 and the mean level of self-preparedness against disasters was 2.45±0.95. In addition, 72.9% of the participants considered the disaster risk of the region they lived in at the level of 3-5. The mean level of the participants’ perception of the disaster risk of their region was found to be 3.17±1.06 (Table 2).

Table 3 shows the mean scores of the DPPSPWPEHS Scale sub-dimensions and the mean total score of the participants.

Table 4 shows the mean scores of the scale sub-dimensions and the total scores of the participants.

There was no difference between the mean total scores of the students participating in the study in terms of gender. When the mean scores of the sub-dimensions were compared, it was determined that the mean score of the willing sub-dimension of females was significantly higher than that of males (p=0.016). On the other hand, when analysed in terms of the mean score of the self-efficacy sub-dimension, it was determined that the mean score of males was significantly higher than the mean score of females (p=0.018).

A statistically significant difference was found between the mean total scores of the scale according to the grade level of the participants (p=0.000). In the analyses, the scale total mean score of the fourth grade students was significantly lower than the fifth and sixth grade students (p=0.003 and p=0.000, respectively). The mean score of the willing sub-dimension showed a significant difference between the classes (p=0.011). In pairwise comparisons, it was found that the mean scores of the sixth grade students in the willing sub-dimension were higher than the mean scores of the fourth grade students (p=0.008). The intervention skill sub-dimension mean score showed a significant difference between

Table 1. Sociodemographic characteristics of the participants

Sociodemographic characteristics	n	%
Gender		
Female	180	62.5
Male	108	37.5
Classroom		
Fourth	160	55.6
Fifth	73	25.3
Sixth	55	19.1
Age (mean ± standard deviation: 23.40±2.33)		
18-24	233	80.9
25 and above	55	19.1

Table 2. Characteristics of the participants regarding disasters

Feature related to disasters	n	%
Exposure to disaster		
Disaster exposure (+)	61	21.2
Disaster exposure (-)	227	78.8
Exposure to disaster in family and environment		
Disaster exposure (+)	148	51.4
Disaster exposure (-)	140	48.6
Participation in disaster exercises		
Participated in the exercise	205	71.2
Did not participate in the exercise	83	28.8
Disaster response status		
Responded to the disaster	18	6.3
No disaster response	270	93.7
Disaster training other than medical education		
Received training	46	16.0
Received no training	242	84.0
Sources used in access to disaster medicine information*		
Newspaper-magazine-internet	234	81.3
TV-radio	111	38.5
Conference-seminar-course	52	18.1
People in the environment	93	32.3
Medical education	147	51.0
Willing to volunteer work in case of disaster		
Willing to work	195	67.7
Not willing to work	13	4.5
Undecided	80	27.8
Change in perspective on disasters after the 6 February earthquake		
Changed	250	86.8
Unchanged	29	10.1
Undecided	9	3.1
Increase in post-earthquake disaster concern		
Increased	246	85.4
No increase	31	10.8
Undecided	11	3.8
Increased interest in disaster medicine after the 6 February earthquake		
Increased	201	69.8
No increase	42	14.6
Undecided	45	15.6
Willingness to change the region of residence after the 6 February earthquake		
Wanted	84	29.2
Didn't want	182	63.2
Undecided	22	7.6
Level of self-preparedness for disasters (mean ± SD: 2.45±0.95)		
1-2	154	53.5
3-5	134	46.5

Table 2. Continued

Feature related to disasters	n	%
Level of perception of disaster risk of the region of residence (mean ± SD: 3.17±1.06)		
1-2	78	27.1
3-5	210	72.9

*Since participants gave more than one answer, n and percentage were multiplied, SD: Standard deviation

Table 3. Participants' DPPSPWPEHS scale sub-dimensions and total score averages

Sub-dimensions	Mean ± standard deviation
Willing	10.22±2.89
Importance	23.15±2.76
Self-efficacy	20.61±6.08
Intervention skill	27.44±5.90
Benefit	12.59±3.38
Total	94.03±13.65

DPPSPWPEHS: Disaster Preparedness Perception Scale of Personnel Working in Prehospital Emergency Health Services

the classes (p=0.000). The intervention skill sub-dimension mean score of the fourth grade students was significantly lower than the fifth and sixth grade students (p=0.000 and p=0.000, respectively). There was also a difference between the mean scores of the benefit sub-dimension according to the grades of the students (p=0.000). The mean scores of fourth grade students were significantly lower than those of fifth and sixth grade students (p=0.006 and p=0.000, respectively).

Age factor was found to be effective on the scale total mean score and the mean scores of self-efficacy, intervention skill and benefit sub-dimensions. Participants aged 25 years and older had significantly higher mean scale total scores and mean scores of self-efficacy, intervention skill and benefit sub-dimensions compared to participants aged 18-24 years (p=0.000, p=0.018, p=0.000 and p=0.008, respectively).

Table 5 shows the mean scores of the scale sub-dimensions and total scores according to the status of the participants regarding disasters. As a result of the analyses, it was seen that exposure to disasters, having individuals exposed to disasters in the family and environment, participation in disaster exercises, receiving disaster training, willingness to volunteer in disasters, participants' level of seeing themselves as prepared for disasters and the level of perceiving the disaster risk of the region where they lived were effective on the mean total score of the DPPSPWPEHS scale.

The mean total scale score of the participants who were exposed to disasters was significantly higher than the participants who were not exposed to disasters, the mean total scale score of the participants who had a history of disaster in their family and environment was significantly higher than the participants who had no disaster experience in their family and environment, and

the mean total scale score of the participants who participated in disaster exercises was significantly higher than the participants who did not participate in exercises ($p=0.031$, $p=0.041$, $p=0.005$). The mean scale scores of the participants who received disaster training other than medical education were significantly higher than those who did not receive disaster training other than medical education, and those who wanted to work voluntarily in case of a disaster were significantly higher than those who did not want to work voluntarily and those who were undecided ($p=0.001$ and $p=0.001$, respectively). The scale total mean score of the participants who considered themselves prepared for disasters at the level of 3-5 was significantly higher than those who considered themselves prepared for disasters at the level of 1-2 ($p=0.000$). In addition, the scale total mean score of those who considered the disaster risk of the region they lived in between 3-5 was significantly higher than those who considered the disaster risk of the region they lived in between 1-2 ($p=0.035$).

In the analyses related to the mean scores of the sub-dimensions of the scale, it was found that the mean scores of the self-efficacy and benefit sub-dimension of the participants who had been exposed to disaster in their family and environment were significantly higher than those who had no history of disaster in their family and environment ($p=0.017$ and $p=0.005$, respectively). The mean scores of self-efficacy and intervention skill sub-dimension of the students who participated in disaster exercises were significantly higher than those who did not participate in disaster drills ($p=0.030$, $p=0.015$). The mean ranks of willingness, self-efficacy and intervention skill sub-dimension scores of the students who

received disaster education other than medical education were significantly higher than those who did not receive disaster education other than medical education ($p=0.007$, $p=0.015$ and $p=0.001$, respectively). Willingness to volunteer in disasters created a statistically significant difference in willingness and importance sub-dimensions. The mean ranks of the willing sub-dimension of those who wanted to volunteer were significantly higher than those who were undecided, and the mean scores of the importance sub-dimension of those who wanted to volunteer were significantly higher than those who did not want to volunteer and those who were undecided ($p=0.001$ and $p=0.000$, respectively). The mean ranks of the self-efficacy and intervention skill sub-dimensions of the students whose perspective on disasters did not change after the earthquake were significantly higher than those whose perspective changed ($p=0.020$ and $p=0.029$, respectively). The mean ranks of intervention skill sub-dimension of the participants who said that the level of concern about disasters increased after the earthquake and the participants who said that it did not increase were higher than the students who remained undecided ($p=0.015$). The mean rank of the participants whose level of concern about disasters did not increase was significantly higher than those who were undecided ($p=0.016$).

When the level of interest in disaster medicine after the earthquake was analysed, it was found that the mean ranks of the willing and importance sub-dimensions of those whose interest in disaster medicine increased were significantly higher than those whose interest level did not increase ($p=0.001$ and $p=0.000$, respectively). When the level of participants' perceiving

Table 4. DPPSPWPEHS scale sub-dimensions and total score averages according to sociodemographic characteristics of the participants

Sociodemographic characteristics	Willing mean ± SD	Importance mean ± SD	Self-efficacy mean ± SD	Intervention skill mean ± SD	Benefit mean ± SD	Scale total score mean ± SD
Gender						
Female	10.53±2.77	23.31±2.75	19.96±6.03	26.99±5.53	12.62±3.26	93.43±13.42
Male	9.69±3.02	22.87±2.77	21.71±6.04	28.18±6.43	12.55±3.57	95.02±14.02
	t=-2.413	t=-1.300	t=2.383	t=1.661	t=-0.162	t=0.959
	p=0.016	p=0.195	p=0.018	p=0.098	p=0.872	p=0.338
Classroom						
Fourth	9.82±3.03	23.10±2.84	20.21±6.31	25.42±5.61	11.83±3.26	90.40±13.45
Fifth	10.38±2.56	22.95±2.68	20.63±5.60	29.20±5.45	13.27±3.22	96.45±11.48
Sixth	11.16±2.71	23.56±2.63	21.76±6.00	30.96±4.87	13.90±3.37	101.36±13.41
	F=4.630	F=0.814	F=1.321	F=26.306	F=10.269	F=16.291
	p=0.011	p=0.444	p=0.269	p=0.000	p=0.000	p=0.000
	post-hoc: 6>4			5>4 and 6>4	5>4 and 6>4	5>4 and 6>4
Age						
18-24	10.18±2.86	23.05±2.94	20.20±6.17	26.78±5.92	12.34±3.39	92.57±13.43
25 and above	10.38±3.05	23.58±1.78	22.36±5.43	30.20±5.00	13.67±3.13	100.20±12.93
	t=-0.453	t=-1.280	t=-2.383	t=-3.948	t=-2.651	t=-3.813
	p=0.651	p=0.201	p=0.018	p=0.000	p=0.008	p=0.000

SD: Standard deviation, DPPSPWPEHS: Disaster Preparedness Perception Scale of Personnel Working in Prehospital Emergency Health Services

Table 5. DPPSPWPEHS scale sub-dimensions and total score averages according to the disaster related characteristics of the participants

Feature related to disasters	Willing mean \pm SD	Importance mean \pm SD	Self-efficacy mean \pm SD	Intervention skill mean \pm SD	Benefit mean \pm SD	Scale total score mean \pm SD
Exposure to disaster						
Disaster exposure (+)	10.50 \pm 2.98	23.16 \pm 3.15	21.91 \pm 6.20	28.60 \pm 6.17	13.18 \pm 3.62	97.37 \pm 14.59
Disaster exposure (-)	10.14 \pm 2.87	23.14 \pm 2.65	20.26 \pm 6.02	27.12 \pm 5.80	12.44 \pm 3.30	93.13 \pm 13.27
	t=0.867 p=0.386	t=0.035 p=0.972	t=1.887 p=0.060	t=1.742 p=0.083	t=1.521 p=0.129	t=2.170 p=0.031
Exposure to disaster in family and environment						
Disaster exposure (+)	10.46 \pm 2.92	23.08 \pm 3.30	21.45 \pm 6.21	27.48 \pm 6.11	13.14 \pm 3.33	95.62 \pm 14.05
Disaster exposure (-)	9.96 \pm 2.85	23.22 \pm 2.05	19.73 \pm 5.84	27.39 \pm 5.70	12.02 \pm 3.34	92.34 \pm 13.04 t=2.053
	t=1.472 p=0.142	t=-0.452 p=0.652	t=2.412 p=0.017	t=0.134 p=0.893	t=2.846 p=0.005	p=0.041
Participation in disaster exercises						
Participated in the exercises	10.31 \pm 2.79	23.22 \pm 2.72	21.11 \pm 6.16	27.98 \pm 5.92	12.81 \pm 3.34	95.45 \pm 13.93
Did not participate in the exercises	9.98 \pm 3.15	22.96 \pm 2.87	19.39 \pm 5.76	26.10 \pm 5.66	12.06 \pm 3.42	90.51 \pm 12.31 t=2.812
	t=0.872 p=0.384	t=0.737 p=0.462	t=2.179 p=0.030	t=2.458 p=0.015	t=1.721 p=0.086	p=0.005
Disaster response status*						
Responded to the disaster	165.36	134.33	127.64	155.19	142.86	142.67
No disaster response	143.11	145.18	145.62	143.79	144.61	144.62
	Z=-1.111 U=2054.500 p=0.266	Z=-0.558 U=2247.000 p=0.374	Z=-0.888 U=2126.500 p=0.374	Z=-0.564 U=2237.500 p=0.573	Z=-0.087 U=2400.500 p=0.931	Z=-0.096 U=2397.000 p=0.923
Receiving disaster training other than medical education*						
Received training	174.41	149.33	171.72	181.59	161.12	181.54
Received no training	138.81	143.58	139.33	137.45	141.34	137.46
	Z=-2.691 U=4190.000 p=0.007	Z=-0.448 U=5344.000 p=0.654	Z=-2.422 U=4314.000 p=0.015	Z=-3.302 U=3860.000 p=0.001	Z=-1.483 U=4801.500 p=0.138	Z=-3.292 U=3862.000 p=0.001
Willingness to volunteer in case of disaster*						
Willing to work	156.45	162.08	148.35	149.03	152.47	156.55
Not willing to work	106.08	74.88	117.77	120.46	121.73	96.15
Undecided	121.61	112.95	139.45	137.36	128.77	122.99
	X ² =13.147 p=0.001 works > undecided	X ² =31,896 p=0.000 works > does not work and works > undecided	X ² =2.057 p=0.358	X ² =2.259 p=0.323	X ² =5.664 p=0.059	X ² =13.804 p=0.001 works > does not work and works > undecided
Change in perspective on disasters after the earthquake*						
Changed	143.55	148.14	139.14	139.79	142.66	140.61
Unchanged	146.93	115.36	179.48	183.10	154.29	171.98
Undecided	163.11	137.33	180.67	150.89	163.94	163.89
	X ² =0.520 p=0.771	X ² =4.463 p=0.107	X ² =7.872 p=0.020 unchanged > changed	X ² =7.113 p=0.029 unchanged > changed	X ² =1.022 p=0.600	X ² =4.193 p=0.123

Table 5. Continued

Feature related to disasters	Willing mean ± SD	Importance mean ± SD	Self-efficacy mean ± SD	Intervention skill mean ± SD	Benefit mean ± SD	Scale total score mean ± SD
Increase in concern about disaster after the earthquake*						
Increased	144.55	145.70	142.98	144.91	143.88	145.27
Not increased	150.63	149.92	157.66	164.19	170.00	158.52
Undecided	126.14	102.45	141.50	79.82	86.59	87.77
	X ² =0.720	X ² =3.255	X ² =0.873	X ² =8.410	X ² =8.313	X ² =6.007
	p=0.698	p=0.196	p=0.646	p=0.015	p=0.016	p=0.05
				Increased > undecided and not increase > undecided	Not increased > undecided	
Increased interest in disaster medicine after the earthquake*						
Increased	153.81	155.66	146.88	143.29	143.74	148.87
Not increased	103.06	101.17	130.90	145.18	142.48	120.56
Undecided	141.61	135.09	146.57	149.29	149.77	147.31
	X ² =13.289	X ² =16,958	X ² =1.315	X ² =0.195	X ² =0.223	X ² =4.079
	p=0.001	p=0.000	p=0.518	p=0.907	p=0.894	p=0.130
	Increased > not increased	Increased > not increased				
Willingness to change the region of residence after the earthquake*						
Wanted	157.45	151.71	147.16	143.93	146.36	151.24
Didn't want to	136.00	141.50	142.27	146.59	145.10	141.78
Undecided	165.39	141.80	152.80	129.41	132.45	141.25
	X ² =5.443	X ² =0.970	X ² =0.436	X ² =0.844	X ² =0.516	X ² =0.778
	p=0.066	p=0.616	p=0.804	p=0.656	p=0.773	p=0.678
Level of self-preparedness for disasters*						
1-2	9.96±3.07	22.92±2.73	18.56±5.18	25.58±5.64	11.69±3.30	88.73±12.33
3-5	10.52±2.66	23.41±2.78	22.97±6.21	29.57±5.47	13.63±3.16	100.11±12.54
	t=-1.644	t=-1.478	t=-6.570	t=-6.065	t=-5.061	t=-.754
	p=0.101	p=0.141	p=0.000	p=0.000	p=0.000	p=0.000
Level of perception of disaster risk of the region*						
1-2	9.69±2.94	22.51±3.64	20.16±6.74	27.03±6.58	11.84±3.74	91.25±13.60
3-5	10.41±2.86	23.39±2.32	20.78±5.83	27.59±5.64	12.87±3.19	95.06±13.55
	t=-1.899	t=-2.413	t=-0.766	t=-0.704	t=-2.315	t=-2.115
	p=0.059	p=0.016	p=0.444	p=0.482	p=0.021	p=0.035
*In the evaluation of two-group data that do not fit the normal distribution, mean rank information was entered, DPPSPWPEHS: Disaster Preparedness Perception Scale of Personnel Working in Prehospital Emergency Health Services, SD: Standard deviation						

themselves as prepared for disasters was analysed, it was seen that the mean scores of self-efficacy, intervention skill and benefit sub-dimension of those who perceived themselves as prepared at the 3-5 level were significantly higher than those who perceived themselves as prepared at the 1-2 level (p=0.000, p=0.000 and p=0.000, respectively). In addition, the mean scores of the importance and benefit sub-dimensions of the participants who perceived the disaster risk of the region at 3-5 level were significantly higher than those who perceived the disaster risk of the region at 1-2 level (p=0.016, p=0.021).

Discussion

In the study, the mean DPPSPWPEHS scale total score of the medical students was 94.03±13.65. The mean score of fourth year students who did not receive any training on disasters during medical education was significantly low (90.40±13.45) considering the mean scores of fifth and sixth year students who received training on disasters during medical education (96.45±11.48 and 101.36±13.41) with p<0.000 in both comparisons. Okan et al. (14) found that the mean DPPSPWPEHS scale total score was found to be 117.95±13.82 in emergency health service workers. The reason for this higher mean score can be explained by the participant characteristics differences. In our study, only fourth, fifth, and sixth year

medical students participated. On the other hand, in the study conducted by Okan et al. (14) emergency health service workers were the participants.

When the scale total score and sub-dimension mean scores according to sociodemographic characteristics were examined, it was found that the mean score of the self-efficacy sub-dimension of male students in our study was higher than that of females, while the mean score of the willing sub-dimension of female students was higher than that of males. Okan et al. (14) found that the mean scores of self-efficacy and intervention skill sub-dimension scores of male 112 workers were significantly higher than females in their study. In different studies, it has been shown that men have higher knowledge scores in terms of disaster preparedness than women (8,16,17) and have higher levels of disaster preparedness (15). Our findings are consistent with the literature. It is thought that the advantage of men over women in terms of physical strength is effective in the higher mean self-efficacy score in men (16). In addition, women may be more emotional than men and women may be more willing in disasters (16,18).

It was found that the grade level was effective in the perception of disaster preparedness. As the grade level increased, it was observed that the mean total score of the scale and the mean scores of the subscales of willingness, intervention skill and benefit increased. In the study of Durmuş Sarıkahya and Yorulmaz (16), it was determined that the level of disaster preparedness of nursing students did not change according to the grade level. In a different study, similar to our findings, it was shown that the level of preparedness of students studying for health care specialisation for intervention in disasters increased with the increase in class level (19). It is thought that the fact that students are more experienced in a theoretical and practical sense with the increase in class level brings with it an increase in self-confidence and has an effect on the perception of preparedness for disasters (20). In our context, the disaster training module is in the fifth year. So, the difference between the fourth and fifth + sixth year students can be explained by the effect of this module.

In our study, it was determined that the mean total score of the scale and the mean scores of self-efficacy, intervention skill and benefit sub-dimensions of the students aged 25 years and above were significantly higher than the students aged 18-24 years. In the study in which 112 employees' perceptions of disaster preparedness were examined, the mean scores of the intervention skill sub-dimension of the 22-32 age group were found to be significantly higher than those of the higher age groups. In addition, although it was not significant, the highest level of scale total mean scores was found in the 22-32 age group (14). In a different study, it was found that age had no effect on the perception of preparedness for disasters (21). Our findings are partially compatible with the literature. Reaching a maturity level is effective in increasing the perception of preparedness for disasters. However, it is thought that the perception of preparedness for disasters may decrease with the advancement of age, especially in terms of physical losses.

In our study, the mean total scale score of those who had a history of disaster was found to be significantly higher than those who had not experienced a disaster. In the study conducted by Durmuş Sarıkahya and Yorulmaz (16) with nursing students and Ünal et al. (8) with NMRT employees, it was found that individuals who had experienced disasters before were more prepared for disasters. Similarly, in a different study, it was determined that disaster experience increased nurses' perception of disaster preparedness (22). Being exposed to disasters may have increased the level of awareness of individuals about what needs to be done in the disaster management process and increased their perception of preparedness for disasters (23). The mean total score of the scale and the mean scores of self-efficacy and benefit sub-dimensions of the students whose family and friends had experienced disasters were significantly higher than the other students. Similar to having a disaster history, it could be expected that the students who were affected by disasters in their environment would increase their perception of preparedness for disasters thanks to the information they obtained from the relatives of disaster victims.

Participation in disaster exercises was found to be another factor affecting the perception of disaster preparedness in our study. It was observed that the mean total scale score and the mean scores of self-efficacy and intervention skill sub-dimensions of those who participated in disaster exercises were higher than those who did not participate in the exercises. Okan et al. (14) found that those who received in-service training on disasters had significantly higher DPPSPWPEHS scale total score and sub-dimension score averages than those who did not receive training. Similarly, Dinçer and Kumru (24) found that those who participated in disaster exercises had higher perceptions of preparedness. Our findings are in parallel with the literature. Since information sharing and practical applications are included in the exercises, people who participate in the exercises are better equipped about what they should do in case of a disaster. It is thought that being equipped may be effective in increasing individuals' perceptions of disaster preparedness.

The mean ranks of the students who received disaster training other than medical education were found to be significantly higher than those who did not receive education in the mean ranks of willing, self-efficacy and intervention skill sub-dimensions. In a study examining the effects of disaster training on disaster nurses, it was found that the level of disaster preparedness increased significantly after disaster training compared to before disaster training (25). Similarly, Mirzaei et al. (26) found that the knowledge, attitudes and performances of hospital personnel who received disaster training significantly increased after the training. In a study in our country, the level of disaster preparedness of 112 employees who received in-service training on disasters was found to be significantly higher than those who did not receive training (14). Our findings are supported by the literature. Students receiving medical education have a certain level of knowledge and skills related to disasters. However, improving the curriculum on disasters should be targeted. Simulation-based training is one of the recommended

methods to improve students' knowledge and skills in disasters (27,28). In a study conducted on nursing students in Türkiye, a role-play scenario based method was used to examine the challenges students faced with disaster triage. It is shown that students need to receive structured programs in undergraduate education (29). The simulation-based training should be well-structured to avoid any harm to students (30) and low quality of training was shown as a negative predictor for willingness (31). To avoid harm, training should be prepared by experts in disaster management and simulation-based training.

In our study, the level of disaster preparedness of those who wanted to volunteer to work in disasters was found to be significantly higher than those who did not want to work and those who were undecided. In a study conducted in 2021, the willingness levels of the participants were found related to high levels of preparedness (31). It is thought that a high perception of preparedness for disasters triggers students' willingness to volunteer in disasters.

The level of perception of the disaster risk of the region where the students lived affected their disaster preparedness perceptions. The mean total score of the scale and the mean scores of importance and benefit sub-dimensions of those who perceived the disaster risk of the region where they lived between 3-5 were significantly higher than those who perceived the disaster risk of the region where they lived between 1-2. In a study, it was reported that the participants in Montalban city of the Philippines, where urban settlement is common and disaster risk is high, had a higher level of preparedness than the participants in Batasan city, which is less risky in terms of disaster. In the same study, it was shown that those living closer than one kilometer to the coastline of Thailand had a higher level of disaster preparedness (23). The fact that the region of residence carries a high risk in terms of disasters increases the possibility of people living in the region encountering disasters and being harmed by disasters. These possibilities require people to be more prepared before, during and after disasters in order to protect their lives. This situation is thought to be effective in the higher perception of disaster preparedness among those who perceive the disaster risk of the region they live in as high.

Study Limitations

The study was conducted only with the participation of students studying in the fourth, fifth and sixth grades of the medical faculty of a state university. Being a single-centred study was a limitation of the study. Another limitation was that the entire population could not be reached because some of the students were not willing to participate in the study and were absent during the data collection process.

Conclusion

As a result of the research, it was determined that the majority of the students studying at the faculty of medicine had individuals with disaster experience in their family and environment and that information on disaster medicine was mostly accessed from

newspapers, magazines and internet sources. The earthquake on 6 February caused a change in the perspective on disasters in the majority of the students. In addition, concern about disasters and interest in disaster medicine increased. Students' self-efficacy in disaster preparedness increased with the effect of participation in disaster exercises. In general, the perception of disaster preparedness was affected by modifiable and non-modifiable factors. It is recommended to conduct well-structured simulation-based training modules to improve students' perceptions of disaster preparedness and ensure students' learning.

Ethics

Ethics Committee Approval: Ethical permission was obtained from Karadeniz Technical University Faculty of Medicine Scientific Research Ethics Committee for ethical compliance (protocol number: 2023/55, date: 10.05.2023).

Informed Consent: Participants were informed about the study and signed the informed consent form.

Footnotes

Authorship Contributions

Concept: B.D., B.Y., A.G., Design: B.D., B.Y., A.G., Data Collection or Processing: A.S.Ş., B.Y., Analysis or Interpretation: E.B., Literature Search: B.D., A.S.Ş., E.B., B.Y., A.G., Writing: A.S.Ş., E.B., A.G.

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