

Original Research

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Factors Affecting the Disaster Attitudes of Volunteers in a Non-Governmental Organization: Path Analysis

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Abstract

Objectives: This study aimed to examine the effect of volunteers' health behaviors and disaster preparedness on disaster attitudes.

Methods: The sample comprised 378 volunteers aged 18 to 30 who were affiliated with the largest volunteer network in a non-governmental organization in Turkey. In the study, data were collected with Descriptive Information Form, the Disaster Preparedness Scale, and the Disaster Attitude Scale.

Results: The mean total score of the participants in the Disaster Attitude Scale was 3.06 ± 0.73 (1-5). The mean total scale score of the participants in the Disaster Preparedness Scale was 33.21 ± 8.02 (13-54). Notably, factors such as using alcohol, the status of general health checkups status, and scores on the physical protection and assistance subscales the Disaster Preparedness Scale were significantly associated with the Disaster Attitude Scale total score ($P < 0.05$).

Conclusions: In this study, regular general health check-ups, alcohol use in general, and physical protection and assistance sub-scales are critical determinants of volunteers' attitudes toward disasters. The disaster volunteers, health professionals particularly nurses, should develop training programs to enhance volunteers' disaster attitudes focusing on promoting disaster preparedness and positive health behaviors in both governmental and non-governmental organizations.

Disasters can pose significant public health challenges due to their sudden onset, the resultant loss of life and property, economic damages, and the long-term health issues they can cause individuals.¹ The implementation of a good disaster management plan is essential for the identification of risks, preparation for disasters, rapid response during disasters, and minimization of losses following the event.^{2,3} The frequency of disasters has increased by 60% worldwide in recent years. This has further highlighted the importance of disaster preparedness. A recent seismic event, registering a magnitude of 7.7,⁴ devastated the Kahramanmaraş area of Turkey and Syria, leading to extensive loss of life and property. The earthquake's effects were far-reaching, impacting an estimated 15 million individuals in Turkey alone, and resulting in the lamentable loss of 50 783 people. Following the devastating earthquake, an extensive network of volunteers significantly contributed to the emergency relief efforts. Over 13 000 emergency workers from 100 countries, including health care workers, soldiers, firefighters, police officers, non-governmental organization (NGO) workers, and non-professional volunteers, provided services to the affected areas of the earthquake. All of these groups faced challenging conditions that could lead to long-term psychological outcomes in addition to physical challenges.⁵

The common attitude of all communities after a disaster is that awareness reaches its highest level immediately following the event, but as time passes, this decreases. The underlying reason is that the mechanisms that maintain a heightened awareness and the disaster culture that ensures the sustainability of these operations have not been sufficiently developed. This finding shows that individual and social preparedness and awareness levels should develop simultaneously.⁶ It is critically important that volunteers who respond to disasters are identified in advance and cultivated through systematic training programs to enable them to exhibit a proactive approach to such events.⁷

Disaster preparedness is a fundamental part of disaster risk management and is vital in ensuring an effective response and mitigating possible impacts. The participation of volunteers is an effective component of a society's disaster mitigation resources.^{2,8} In disaster management processes, preparing volunteers to be ready for disasters and shaping their knowledge, behavior, and emotions to contribute effectively to intervention and recovery activities are fundamental pillars of a successful disaster management strategy. Unprepared volunteers disrupt work and slow down working processes of other trained volunteers due to their learning processes.^{8,9} By identifying the health risks to which volunteers are likely to be exposed in advance and preparing them for the disaster will prevent a "helping" state from becoming a "help-seeking" state.^{10–12}

Volunteers in disaster areas could be exposed to physical risks, such as injuries, infections, diseases, poisoning, heat or cold stress, dehydration, fatigue, sleep deprivation, and asbestos released from destruction. In addition, psychological risks, including trauma, stress, depression, anxiety, anger, guilt, fear, sadness, helplessness, loneliness, and hopelessness have been determined. Social risks in disaster areas include distancing from support systems involving family, friends, work, and community and may result in social isolation, social conflicts, discrimination, abuse, and violence.^{13–15} Disaster zones may pose increased risks for individuals with chronic illnesses. For instance, those suffering from asthma and other respiratory diseases may experience exacerbated breathing difficulties during disasters characterized by fires, dust, smoke, and the dispersion of chemical substances. Similarly, individuals with heart conditions may face heightened risks due to strenuous physical conditions and stress. Such environments can further aggravate the conditions of those with mental health issues. Therefore, it is imperative to ensure that individuals assigned to work in disaster areas are free from serious chronic diseases, thus prioritizing their health and safety.¹⁶

To protect volunteers from these risks and ensure the smooth functioning of disaster management, it is necessary to monitor the health of volunteers, prevent health risks, and ensure access to health care.^{17,18} In addition, the health behaviors of individual volunteers themselves can also affect their work in disaster management processes.^{19–21} It has been reported that individuals with positive health behaviors could be more prepared for disasters.^{20,21} A study conducted during the COVID-19 pandemic found that health beliefs were effective in developing preventive behaviors.²² In this context, there may be a relationship between disaster preparedness, disaster attitudes, and the health status and practices of volunteers. In addition, attitudes may also improve of volunteers' health behaviors. However, no study has been found that examines the effect of health behaviors and disaster preparedness on disaster attitudes. Therefore, this study aimed to examine the effect of volunteers' health behaviors and disaster preparedness on disaster attitudes.

Methods

Study Design and Sample

This cross-sectional study includes a sample of staff who volunteered in the youth branches of the Turkish Red Crescent, which has the largest volunteer network in Turkey. The sample was calculated employing the known universe sampling method (± 5 margin of error and 95% confidence interval) and the study was completed with 378 participants.²³ Research data were collected between May 2023 and September 2023.

Inclusion Criteria

The study included young Turkish Red Crescent volunteers. Consequently, the inclusion criteria encompassed the age range of 18–30, which is the requirement for participation as a young Turkish Red Crescent volunteer. Participants had volunteered for at least 1 year in the Turkish Red Crescent.

Exclusion Criteria

The exclusion criteria, based on the volunteers' statements, included not being a health care professional or a student in any health sciences faculty.

Data Collection

Data for the study were collected via an online form, which was created in Google Forms software and sent to the participants via a link. When they completed the survey, their responses were sent to the authors in Excel format. When all data was completed, the authors analyzed the data that met the research criteria by transferring it to SPSS statistical software. Staff at the Turkish Red Crescent reached the volunteers through the link to the online form in social media communication groups for volunteers across Turkey. In the study, information about the purpose of the study and an option for participants to consent to participation were added prior to receiving the survey forms. Participants answered the research questions only after clicking the "I agree" option.

Instruments

In this study, data were collected using the 23-item Descriptive Information Form developed by the researcher through a literature review to collect personal information, the Disaster Preparedness Scale (DPS), and the Disaster Attitude Scale (DAS).

The descriptive information form

The first section of this form contains sociodemographic data, such as age, marital status, employment status, place of residence, and income. The second section of the form contains questions about experiences before, during, and after a disaster. These questions measure volunteers' participation in disaster preparedness training and initiatives,²⁴ disaster preparedness kits (water, water, flashlight, whistle, dry canned foods, climate-appropriate clothing [underwear, coats, socks, etc.], hygienic pads, wet wipes, medicines, mask, toilet paper, etc.), disaster experiences, volunteer work in disaster areas, general health habits, and health practices during disaster processes.^{1,17,25–28}

Disaster Preparedness Scale

The DPS developed by Sentuna and Caki (2020),²⁹ is a 13-item measurement tool that is divided into 4 subscales: disaster physical protection, disaster planning, disaster assistance, and disaster warning systems. The disaster physical protection subscale consists of 5 items; the disaster planning subscale consists of 3 items; the disaster assistance subscale consists of 3 items; and the disaster warning systems subscale consists of 2 items. The DPS physical protection subscale includes individuals' status of having a disaster kit, preventing non-structural risks at home, having disaster insurance, and taking disaster training classes with individuals in their neighborhood. The DPS planning subscale questions whether actions to be taken in case of a disaster have been planned. The DPS assistance subscale includes information as to whether volunteers know the emergency numbers of all individuals in their families, their ability to turn off electricity, water, and natural gas services, and whether someone in the family knows first aid. The warning subscale questions the purpose of warning systems in the family and the city in disaster situations. The items on the scale are in a 4-point Likert format, with the following response options: "1-Definitely No," "2-No," "3-Yes," and "4-Definitely Yes." The minimum score that can be obtained from the scale is 13, and the maximum score is 52. Higher scores indicate an increased level of disaster preparedness.²⁹ After this scale was developed, it was used and adopted in other studies.^{30,31} In our study, the Cronbach's alpha coefficient calculated for the entire scale was 0.85, while the Cronbach's alpha coefficients for the subscales were 0.69 for the

disaster physical protection subscale, 0.72 for the disaster planning subscale, 0.74 for the disaster assistance subscale, and 0.65 for the disaster warning systems subscale.

Disaster Attitude Scale

The Disaster Attitude Scale (DAS), developed by Turkan, Kılıc and Tiryakioglu (2019),⁶ is a 23-item scale that is divided into 3 dimensions: cognitive (first 7 items), affective (Items 8-16), and behavioral (Items 17-23 items). Each item on the scale is rated on a 5-point Likert scale, with students' levels of agreement with each item being scored on a scale of 1 (not at all) to 5 (completely). After this scale was developed, it was used and adopted in other studies.³² When the internal consistency of the scale was examined, the Cronbach's alpha coefficient for the overall scale was calculated to be 0.81, and all subscales were found to be above 0.80.⁶ According to the results of this study, the Cronbach's alpha coefficient for the total scale score was 0.90, the cognitive subscale was 0.91, the affective subscale was 0.91, and the behavioral subscale was 0.86.

Ethical Issues

Prior to the study, written permission was obtained from the Volunteer Services Directorate of the relevant non-governmental organization. Volunteers who wished to participate in the study also provided written consent electronically. Ethical approval was obtained from the Gülhane Scientific Researches Ethics Committee of the Health Sciences University (with number 46418926 and decision number 2023-181) to conduct the study.

Data Analysis

In this study, the data were analyzed using IBM SPSS V23 and IBM AMOS V24. The normality of the distribution was examined using skewness and kurtosis coefficients and (± 2) coefficients.³³ The Pearson correlation coefficient was used to examine the relationship between continuous parameters that conform to normal distribution. The independent samples *t* test was used to compare data showing normal distribution in 2 groups. Path analysis was used to examine the factors affecting the total score and subscale scores of the Disaster Attitude Scale. The Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Incremental Fit Index (IFI), and the Tucker-Lewis Index tests³⁴ were used to determine the fit indices of the path analysis model. Analysis results were presented in the form of frequency (percentage) for categorical variables, mean \pm standard deviation, and median (minimum-maximum) for quantitative variables. The statistical significance level was determined to be $P < 0.05$.

Results

Sociodemographic Characteristics

The mean age of the participants was 21.9 years; 69% were female; the majority (93.7%) were single; and 57.9% had a university degree or higher. Of the participants, 81.2% reported that they were not working; 81.5% reported that they lived at home; and 51.9% reported that their income was equal to their expenses (Table 1).

Disaster Process

Of the volunteers, 38.6% had received disaster training, and 65.1% had experienced a disaster. The proportion of those who had a

Table 1. Descriptive characteristics of volunteers ($n=378$)

Characteristics	Mean \pm SD	Median (Min-Max)
Age	21.9 \pm 3.17	21 (18 – 30)
	<i>n</i>	<i>%</i>
Gender		
Woman	261	69
Male	117	31
Marital status		
Single	354	93.7
Married	24	6.3
Education status		
Secondary school graduate	17	4.5
High school graduate	142	37.6
University degree and above	219	57.9
Employment status		
No	307	81.2
Yes	71	18.8
Place of residence		
In a dormitory	70	18.5
At home	308	81.5
Income situation		
Income less than expenses	129	34.1
Income equal to expenditure	196	51.9
Income more than expenditure	53	14

SD: standard deviation; Min: minimum; Max: maximum

Table 2. Distribution of participants' responses to questions related to disaster ($n=378$)

	<i>n</i>	<i>%</i>
Training on disasters before		
Yes	146	38.6
No	232	61.4
Experience a disaster before		
Yes	246	65.1
No	132	34.9
Disaster readiness kit		
Yes	141	37.3
No	237	62.7
Contents of the disaster readiness kit		
Water	133	85.8
Flashlight	132	85.2
Whistle	123	79.4
Dry canned foods	94	60.6
Climate-appropriate clothing (underwear, coats, socks, etc.)	93	60
Hygienic pads	91	58.7
Wet wipes	89	57.4

(Continued)

Table 2. (Continued)

	<i>n</i>	%
Medicines	81	52.3
Pocket knife, scissors	80	51.6
Mask	76	49
Toilet paper	74	47.7
Sleeping bag, blanket	61	39.4
Disinfectant	56	36.1
Toothbrush and toothpaste	50	32.3
Battery radio	42	27.1
Soap	42	27.1
Working situation in disaster area		
Yes	154	40.7
No	224	59.2

Table 3. Participants' health status and health behaviours during the disaster

	<i>n</i>	%
Health perception	Very good	62 16.4
	Good	161 42.6
	Normal	146 38.6
	Bad	9 2.4
Health problems	Yes	42 11.1
	No	336 88.9
General health check-up (the last 6 months)	In the last 6 months	153 40.5
	6 months–1 year	61 16.1
	1–2 years	31 8.2
	More than 2 years	26 6.9
	Never had it done	107 28.3
Regular physical activity (the last 6 months)	Yes	244 64.6
	No.	134 35.4
Smoking	Yes	73 19.3
	I was smoking. I quit.	35 9.3
	I don't smoking, I never smoke before	270 71.4
Using alcohol	Never consumed	322 85.2
	1–2 times a year	40 10.6
	2–3 times a month	8 2.1
	1 time a week	3 0.8
	2–3 times a week	5 1.3
Using personal protective equipment during the disaster process	Yes	144 93.5
	No	10 6.5
Which protective equipment*	Surgical mask	83 53.9
	N95/FFP2 mask	28 18.2
	Glove	100 64.9

(Continued)

Table 3. (Continued)

	<i>n</i>	%
Practices for the prevention of infectious diseases during the disaster process	Yes	124 80.5
	No	30 19.5
Which practices for the prevention of infectious diseases during the disaster process*	Did not consume mains water during disasters such as earthquakes/floods/mudslides/storms/tsunamis.	95 61.7
	Paid attention to food safety in the disaster area	91 59.1
	Used protective masks in earthquake/fire situations	79 51.3
	Ensured proper management of waste in the disaster area	47 30.3
	Did not consume foods touched by flood waters	31 20.1
	Had the necessary vaccinations before going to the disaster area.	22 14.3
Regarding the disaster, were you in the area*	First 72 hours	69 55.2
	Second week	54 35.1
	First month	48 31.2
	After 1 month	40 26.0

*multiple options

Table 4. Descriptive statistics and reliability coefficients of scale total scores and sub-dimensions

	Mean ± SD	Median (Min-Max)	Cronbach's Alpha
Behavioral	2.62 ± 0.96	2.57 (1 – 5)	0.867
Cognitive	3.05 ± 0.99	3 (1 – 5)	0.917
Affective	3.4 ± 0.98	3.33 (1 – 5)	0.916
DAS total	3.06 ± 0.73	3.02 (1 – 5)	0.909
Physical protection	12.98 ± 3.61	13 (5 – 22)	0.690
Disaster Planning	6.94 ± 2.36	7 (3 – 12)	0.722
Disaster Assistance	8.19 ± 2.32	8 (3 – 12)	0.746
Disaster Warning Systems	5.11 ± 1.7	5 (2 – 8)	0.652
DPS total	33.21 ± 8.02	34 (13 – 54)	0.858

SD: standard deviation; Min: minimum; Max: maximum; DAS: Disaster Attitude Scale; DPS: Disaster Preparedness Scale

disaster readiness kit was 37.3%. Those with a kit reported that they usually had water (85.8%) and a flashlight (85.2%). The proportion of those who had previously volunteered in a disaster area was 37.3% (Table 2).

Table 5. Comparison of DAS total score and sub-dimensions according to disaster and health-related characteristics

	Behavioral	Cognitive	Affective	DAS total
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Working situation in disaster area				
Yes	3.04 ± 0.97	3.59 ± 0.88	3.4 ± 1	3.35 ± 0.73
No	2.35 ± 0.86	2.71 ± 0.9	3.4 ± 0.97	2.87 ± 0.66
Test Statistic	-7.202	-9.304	-0.064	-6.589
<i>P</i> *	<0.001	<0.001	0.949	<0.001
Physical activities				
Yes	2.78 ± 0.99	3.16 ± 0.98	3.36 ± 0.93	3.12 ± 0.73
No	2.34 ± 0.84	2.86 ± 0.97	3.47 ± 1.06	2.94 ± 0.7
Test Statistic	-4.565	-2.869	0.957	-2.383
<i>P</i> *	<0.001	0.004	0.340	0.018
Using personal protective equipment during the disaster process				
Yes	2.94 ± 0.92	3.43 ± 0.90	3.33 ± 0.96	3.24 ± 0.71
No	2.32 ± 0.91	2.82 ± 1.01	3.31 ± 0.86	2.86 ± 0.81
Test Statistic	0.488	0.474	0.520	0.998
<i>P</i> *	0.65	0.95	0.946	0.179
Practice to prevent infectious diseases				
Yes	3.0 ± 0.92	3.49 ± 0.9	3.33 ± 0.93	3.28 ± 0.71
No	2.51 ± 0.87	3.0 ± 0.88	3.3 ± 1	2.97 ± 0.74
Test Statistic	0.856	0.673	0.460	0.623
<i>P</i> *	0.010	0.010	0.860	0.045

SD: standard deviation; Min: minimum; Max: maximum; DAS: Disaster Attitude Scale; *P*<0.05 was accepted as statistical significance.

Health Status

Most volunteers (42.6%) rated their health as “good,” 11.1% of the volunteers had reported a significant health problem. Of the total number of volunteers 40.5% had a general health check-up within the last 6 months, and 64.6% reported involvement in physical activity. The majority of volunteers did not smoke (80.7%) or drink alcohol (85.2%) (Table 3).

Health Behaviors in the Disaster Process

In disaster response processes, 93.5% of volunteers used personal protective equipment (PPE). Gloves were the most commonly used

PPE (64.9%). A majority of volunteers (80.5%) reported that they had implemented at least 1 practice to prevent infectious diseases in the disaster area, and most (61.7%) reported that they did not consume tap water. A total of 55.2% of participants reported being in the disaster area for the first 72 hours (Table 3).

Disaster Attitudes and Preparedness

The mean total score of the participants in the DAS was 3.06 ± 0.73. The mean score of the behavioral subscale of the DAS was 2.62 ± 0.96, while the mean score of the cognitive subscale was 3.05 ± 0.99, and the mean score of the emotional subscale was 3.4 ± 0.98. The mean total scale score of the participants in the DPS was 33.21 ± 8.02. The mean score of the physical protection subscale of the DPS was 12.98 ± 3.61, the mean score of the planning subscale was 6.94 ± 2.36, the mean score of the assistance subscale was 8.19 ± 2.32, and the mean score of the warning systems subscale was 5.11 ± 1.7 (Table 4).

There is a statistically significant positive moderate correlation between the total scores of the disaster attitude scale and the total scores of the disaster preparedness scale (*r*=0.431; *P* < 0.001) (Table 5).

A statistically significant relationship was found between the status of volunteers receiving disaster training, regular physical activity, and the total and behavioral and cognitive subscales of the DAS (*P* < 0.05). No statistically significant relationship was found between the status of volunteers using protective equipment in the disaster area and the total of the DAS subscales (*P* > 0.05). There was a statistically significant relationship between the practices made by volunteers in the disaster area to prevent the spread of infectious diseases and the total behavioral and cognitive subscales of the DAS (Table 6).

Research Model

The health behavior and disaster preparedness status that could affect the disaster attitudes of volunteers were determined following a literature review.^{1,17,25–28} The following variables were included in the model: alcohol use during the disaster process, volunteers’ level of regular physical activity, volunteers’ status of health evaluations, the status of volunteers’ check-ups, volunteers’ use of protective equipment, smoking status, and the DAS variables. However, the status of volunteers participating in interventions to prevent infectious diseases and having a health problem could not be included in the model due to the problem of multicollinearity and the low number of observations. Alcohol use, general health checkups, and the DPS physical protection and assistance subscales affected

Table 6. The relationship between the total scores and sub-scales of the DPS and DAS

		Physical protection	Planning	Assistance	Warning systems	DPS total
Behavioral	<i>r</i>	0.561	0.280	0.470	0.283	0.531
	<i>P</i>	<0.001	<0.001	<0.001	<0.001	<0.001
Cognitive	<i>r</i>	0.487	0.230	0.384	0.258	0.452
	<i>P</i>	<0.001	<0.001	<0.001	<0.001	<0.001
Affective	<i>r</i>	0.086	-0.003	0.020	0.053	0.055
	<i>P</i>	0.096	0.950	0.699	0.302	0.289
DAS total	<i>r</i>	0.474	0.207	0.359	0.249	0.431
	<i>P</i>	<0.001	<0.001	<0.001	<0.001	<0.001

DAS: Disaster Attitude Scale; DPS: Disaster Preparedness Scale; *r*: Pearson correlation coefficient; *P*<0.05 was accepted as statistical significance.

Table 7. Examining the factors affecting the total score of the disaster attitude scale using path analysis

Independent variable			Unstandardized beta (95% CI)	Standardized beta (95% CI)	S. Error	P
Using alcohol (reference: I have never consumed alcohol)	Two or 3 times a month	→ DAS total	0.402(0.092 – 0.716)	0.083(0.015 – 0.146)	0.157	0.021
	Once per week	→ DAS total	0.541(0.137 – 0.919)	0.069(0.012 – 0.127)	0.196	0.009
	Two or 3 times a week	→ DAS total	0.414(0.096 – 0.746)	0.068(0.012 – 0.122)	0.160	0.021
	Once or twice a year	→ DAS total	0.023(–0.209 – 0.263)	0.01(–0.091 – 0.115)	0.121	0.836
Smoking (Reference: I have never smoked)	Yes	→ DAS total	0.066(–0.131 – 0.251)	0.037(–0.073 – 0.144)	0.098	0.508
	I quit	→ DAS total	0.058(–0.142 – 0.241)	0.024(–0.057 – 0.098)	0.098	0.548
Health status (Reference: Very good)	Good	→ DAS total	–0.021(–0.244 – 0.201)	–0.015(–0.176 – 0.146)	0.112	0.827
	Poor	→ DAS total	0.317(–0.013 – 0.656)	0.069(–0.003 – 0.146)	0.170	0.059
	Normal	→ DAS total	–0.080.318 – 0.142)	–0.056(–0.216 – 0.1)	0.117	0.460
Physical activity (Reference: No)		→ DAS total	0.058(–0.078 – 0.187)	0.04(–0.052 – 0.128)	0.069	0.421
When was the last time you had a general health check, excluding illness or injury (Reference: I have never had one)	1–2 years	→ DAS total	0.341(0.104 – 0.597)	0.134(0.039 – 0.234)	0.128	0.006
	More than 2 years	→ DAS total	0.19(–0.134 – 0.497)	0.069(–0.046 – 0.18)	0.159	0.239
	6 months–1 year	→ DAS total	0.251(0.056 – 0.437)	0.132(0.029 – 0.232)	0.098	0.010
	In the last 6 months	→ DAS total	0.304(0.136 – 0.468)	0.223(0.099 – 0.343)	0.084	<0.001
Using personal protective equipment (Reference: No)		→ DAS total	–0.028(–0.266 – 0.212)	–0.012(–0.116 – 0.092)	0.123	0.791
DPS sub-scales	Disaster planning	→ DAS total	–0.024(–0.059 – 0.012)	–0.081(–0.198 – 0.039)	0.018	0.181
	Disaster warning systems	→ DAS total	–0.023(–0.069 – 0.024)	–0.055(–0.167 – 0.058)	0.024	0.352
	Disaster assistance	→ DAS total	0.048(0.002 – 0.093)	0.16(0.005 – 0.306)	0.023	0.043
	Disaster physical protection	→ DAS total	0.083(0.056 – 0.111)	0.394(0.271 – 0.515)	0.014	<0.001

R²: 0.252, Full path model representing direct effects between variables in the model using all available data
 DAS: Disaster Attitude Scale; DPS: Disaster Preparedness Scale; S.error: standard error; CI: confidence Interval.

the total DAS score ($P < 0.05$) (Table 7) (Figure 1). The other parameters included in the model did not have a statistically significant effect on the total DAS score ($P > 0.05$). The model fit indices for the total score were obtained as GFI=0.926, CFI=0.879, RMSEA=0.048, SRMR=0.071, IFI=0.882, and TLI=0.855.

Discussion

In this study, disaster preparedness and attitudes and health behaviors of volunteers in NGOs were investigated, and preparedness, disaster attitudes, and health behaviors were compared.

In disaster management, especially in the post-disaster period, NGO volunteers were involved in meeting the needs of disaster victims.^{35,36} The preparedness and high disaster attitudes of volunteers involved in disaster processes facilitated disaster management.¹³ In this study, the disaster preparedness of volunteers was found to be moderate (Table 4). Participants were typically individuals who were not health professionals and had not received specialized disaster training. In studies examining the factors that affected disaster preparedness, disaster preparedness was found to be low in those conducted with non-health care workers,³⁷ while it was found to be high in studies conducted with health care workers.³² The fact that these individuals have a lower level of disaster preparedness than volunteers composed of health care workers reveals their need for information about disaster processes.

In the present research, the disaster attitudes of volunteers were also determined to be moderate, with the behavioral subscale even below average (Table 4). In the literature, general disaster attitudes

and knowledge levels were found to be above average in studies conducted with disaster assistance and disaster management students,³² individuals who were residents in high-risk earthquake areas,³⁸ and health care workers.³⁹ The low levels of behavioral levels are attributed to the fact that behavior change is more difficult than cognitive and affective processes.

Factors that affected disaster attitudes included age, the likelihood of being exposed to disasters, potential damages and losses that can occur as a result of a disaster, willingness to prepare for a disaster, financial circumstances that hinder and complicate disaster preparedness, transportation, self-efficacy,⁴⁰ disaster-related training,¹⁴ health behaviors,¹⁹ and health beliefs.²² Studies have shown that young adults, in particular, have better disaster attitudes than adults.⁴¹ In our study, a significant difference was found between age and disaster attitude. This result may be due to the fact that the study sample consisted of young volunteers. Volunteers who had insufficient knowledge about disaster processes were more at risk in disaster areas.^{42,43} To eliminate these risks, volunteers should be given disaster training before going to the disaster area, and an orientation should be provided to ensure that they are ready to assist in the area.^{13,14,42,43}

Healthy life behaviors affect disaster attitudes of disaster volunteers.^{13,19} This study identified a relationship between regular physical activity, a crucial health behavior, and the disaster attitudes of volunteers. Promoting health behaviors among volunteers may indirectly affect their disaster attitudes. Therefore, training and consultancy are essential in improving the health responsibilities of disaster volunteers.^{8,19,44,45}

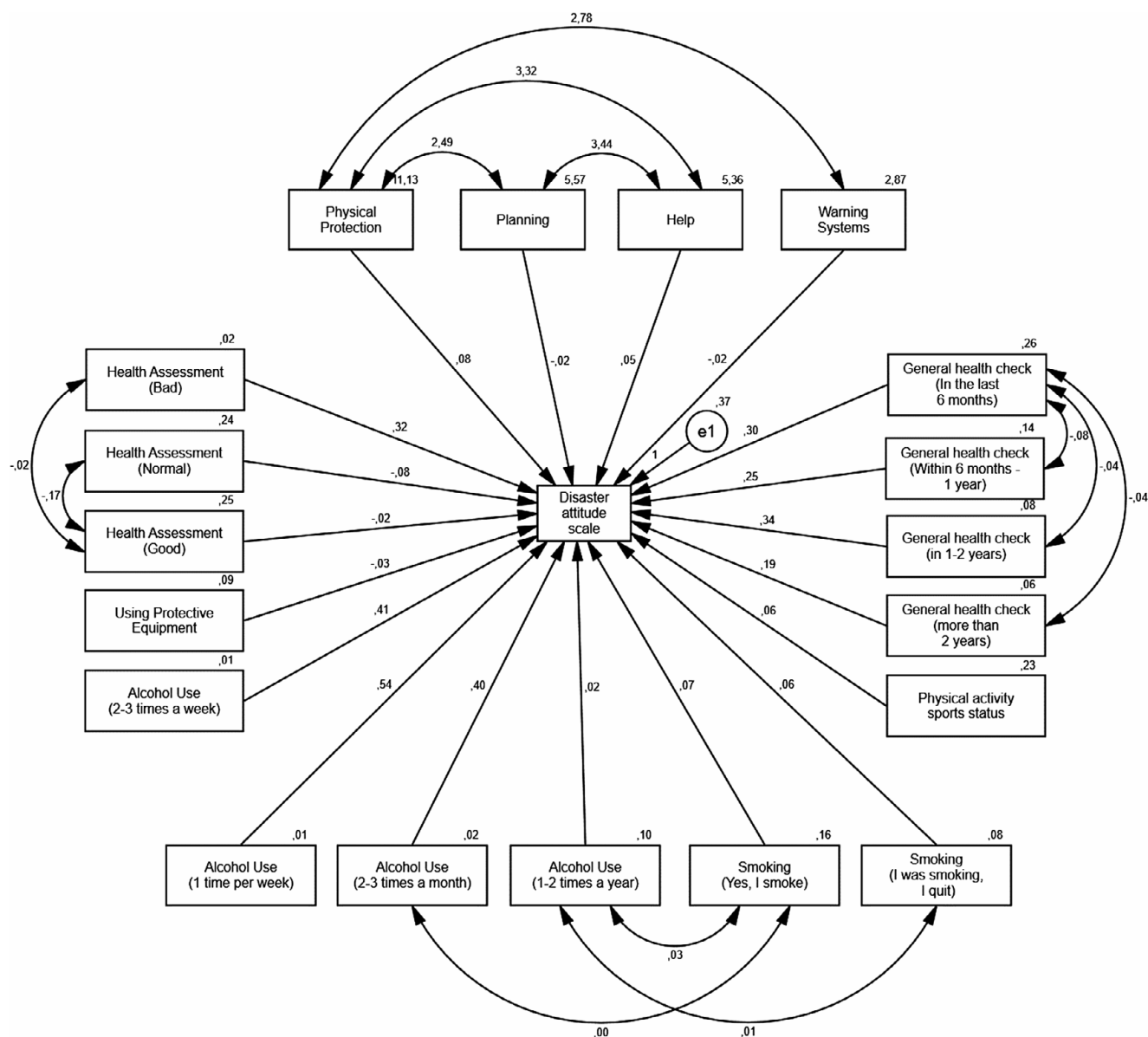


Figure 1. Path analysis of research model.

In this research, a relationship existed between the status of infectious disease-related practices among volunteers working in disaster areas and disaster attitudes (Table 5). Volunteers in disaster areas need to have positive attitudes toward risk assessment, protective equipment, vaccinations, safe food and water consumption, waste safety, and prevention of infectious diseases in order to be helpful to disaster victims and protect their own health.^{15,17}

Another important factor that affects disaster attitudes is disaster preparedness status. Our research determined that an increase in the disaster preparedness levels of volunteers improved their disaster attitudes ($r=0.431$; $P < 0.001$) (Table 6). Therefore, the systematic, regular, and professional maintenance of disaster preparedness processes for volunteers can positively affect their attitudes toward disaster processes.⁴⁶ In this context, disaster management organizations need to improve the health behaviors of disaster volunteers and manage their disaster preparedness processes.

Path analysis was used to examine the factors affecting the disaster attitudes of volunteers. According to the analysis results

of the model created, the status of alcohol use, general health check-up, DPS physical protection, and disaster assistance subscale scores of volunteers were found to affect the total DAS score (Table 7).

According to the model, those who consumed alcohol 2-3 times a week at the most had high DPS scores. Considering that alcohol users typically have high socioeconomic levels⁴⁷ and those with high socioeconomic levels also have high disaster preparedness levels,⁴⁸ the effect of alcohol use on DAS scores may be due to the moderating effect of the socioeconomic level. Although research on the relationship between these healthy lifestyle behaviors and disaster attitudes is very limited in the literature, a study conducted with municipal workers, similar to our research result, found that individuals' healthy lifestyle behaviors are effective in disaster attitudes.¹⁹

In the 1999 earthquake in the Kocaeli district of Turkey, half of the injured and approximately 3% of the fatalities were caused by non-structural risk factors.⁴⁹ The inclusion of physical protection components in the training processes of volunteers is critical to

prevent non-structural risks that can cause significant damage and loss.

Not only the volunteers' knowledge about disaster process but also family members' knowledge of what to do in an emergency during the disaster preparedness process will positively affect the disaster attitude. The family members of volunteers can also be included in disaster training processes. Increasing the health beliefs and responsibilities of volunteers will positively affect their disaster attitudes and enable them to exhibit positive health behaviors both in their normal lives and while on duty during disaster processes,²² thus preventing the disruption of disaster processes.

Limitations

One limitation of this study is that it was conducted with volunteers between the ages of 18 and 30 and in only 1 NGO, so it cannot be generalized to all age groups or to the country as a whole. Although the Cronbach's alpha coefficient of the 2 subdimensions of DPS were found to be 0.65 and 0.69, the coefficient of the entire scale was found to be 0.85. This situation was considered another limitation. Data were collected based on participants' self-reporting, which is also a limitation. In addition, the small number of observations prevented the inclusion of all potentially related factors in the model.

Conclusion

In this study, the factors affecting the disaster attitudes of volunteers were examined, and the effects of volunteers' disaster preparedness levels and health behaviors on their disaster attitudes were evaluated. The analyses revealed that the status of volunteers' maintaining health check-ups, alcohol use, and physical protection and assistance dimensions of disaster preparedness affected disaster attitudes. Although the model found that smoking, general health perception, and regular physical activity status did not affect disaster attitude, it was determined that there was a statistically significant relationship between regular physical activity and DAS scores in the pairwise comparisons. Based on these results, the government and NGOs with which volunteers are affiliated should organize training programs aimed at improving volunteers' disaster attitudes to a positive level by providing them with disaster preparedness and positive health behaviors. Nurses who have both theoretical and skill level training in disaster management processes and health behavior development in their undergraduate education should be involved in these training programs.

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