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Frequency of Post Traumatic Stress Disorder and Associated Factors Among Survivors of Van Avalanche: 6-Month Follow-up Study

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ABSTRACT

Objective: We aimed to evaluate the frequency of Post Traumatic Stress Disorder (PTSD), to determine the risk factors, and to monitor the change of symptoms after 6 months among individuals who survived the avalanche disaster in Van.

Method: Face-to-face interviews were conducted with 35 people who were rescued from two consecutive avalanche disasters in Van 2 months and 6 months after the avalanche disaster. The socio-demographic and clinical data of the cases were evaluated. The Post Traumatic Stress Disorder Symptom Scale-Self Report version (PSS-SR) and clinical interviews were used for PTSD diagnosis. The level of trauma was assessed by using the Impact of Event Scale (IES).

Results: All participants were rescuers who went to the avalanche site for rescue mission. Of the cases, 16 were volunteers from the local community and 19 were professional rescuers. The frequency of PTSD was 71.4% in the early assessment, and 57.1% in the long term. Staying in avalanche for more than 30 minutes, the absence of a history of disaster exposure and being in the group of volunteers were found to increase the risk for PTSD development.

Conclusion: There is a high risk of developing PTSD as a result of an avalanche. People who will intervene with the disasters should be educated and prepared in terms of preventing negative psychological consequences of the disaster. The relationship between the severity of trauma and PTSD was replicated in our study.

Keywords: Avalanche, Psychiatric Disorders, Post-Traumatic Stress Disorder

INTRODUCTION

A disaster is a serious problem occurring over a short or long period of time that causes widespread human, material, economic or environmental losses that exceed the ability of the affected community to cope with its own resources (IFRC 2023, WHO 2023). In the literature, disasters are often examined under three groups: human-made disasters, unintentional technological disasters and natural disasters (Mc Farlane and Norris 2006, Goldmann and Galea 2014, IFRC 2023). Natural or intentional or unintentional human-caused disasters affect millions of people around the world every year. Goldman and Galea (2014) state that 13-19% of the adult population has experienced some type of disaster in their lifetime. Studies show that disasters can have a variety of negative physical and psychological effects (Afari et al. 2014, Kessler et al. 2018). Post-Traumatic Stress Disorder (PTSD) is one of these mental effects. PTSD is a psychiatric disorder that can occur after experiencing a life-threatening traumatic event or witnessing a traumatic event. Symptoms are grouped in three clusters: avoidance of stimuli that remind of the trauma, hyperarousal, and re-experiencing the traumatic event (Dattilo 2019). In addition to these three clusters, DSM-5 defines a fourth group as negative changes in mood and cognition (APA 2022).

The results of studies on disasters have revealed that disasters are associated with various psychopathologies. These studies

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show that PTSD is among the most studied and most frequently encountered psychopathologies after disasters (Rodrigues et al. 2021). Many studies have aimed to find risk factors for the development of PTSD after disasters and other traumatic events (Rodrigues et al. 2021). Determining the factors related to the risk of developing PTSD in those exposed to a traumatic event is important in predicting negative health outcomes after a disaster. According to the results of research on this subject, risk factors affecting the development of PTSD can be divided into three groups: 1) Risk factors before trauma; Mental health problems, gender and age before the trauma 2) Risk factors during the trauma; for example, the degree of exposure and proximity to the trauma or the severity of the trauma, 3) Risk factors after the trauma; job loss, property damage, lack of social support (Goldman and Galea 2014). Although genetic predisposition is likely to have an effect in the development of PTSD, it is stated that environmental stress and early trauma play a significant role (Dattilo 2019). In their study examining the relationship between the type of trauma exposed and PTSD symptoms, Cankardaş and Sofuoğlu (2019) observed that people perceive more life threats and their perception of control over the event was lower during an earthquake than during a fire, and that these two findings and the physical symptoms experienced predict the development of PTSD. In this respect, it can be said that different traumatic events may have different consequences in terms of PTSD. Avalanche events, like other disasters, are life-threatening disasters that can result in physical and psychological trauma. There are few studies in the literature regarding the psychological consequences of avalanche disasters. In these studies, it is seen that the psychological consequences of several avalanche disasters that affected a group or town collectively, as well as the avalanche events that occurred to individuals skiing in the Northern Alps of France, are presented (Thordardottir et al. 2015, 2016a, 2016b, 2016c, Bakker et al. 2019a, Léonard et al. 2021). According to these studies, it has been reported that after avalanche disasters, post-traumatic stress disorder, sleep disorders, musculoskeletal system problems, and gastrointestinal system problems can be observed in people living in the area where the avalanche occurred, even long after the avalanche (Thordardottir et al. 2015, Thordardottir et al. 2016a, Bakker et al. 2019a). Thordardottir and colleagues reported that, despite 16 years after the disaster, fifteen percent of residents exposed to avalanches still have PTSD. They found that those who experienced an avalanche disaster as a child had more sleep-expressive behaviors such as REM Sleep Behavior Disorder, while those who experienced an avalanche in adulthood had sleep problems such as nightmares (Thordardottir et al. 2016c). 15 military personnel, who survived an avalanche disaster in 1986, was examined in a qualitative study 30 years after the avalanche, and it has been reported that some of these soldiers experience sleep quality problems and associated hyperarousal symptoms (Bakker et al. 2019b). Bakker and his colleagues evaluated the negative consequences of indirect exposure to the disaster in their qualitative study with soldiers who were indirectly exposed to this avalanche, which resulted in the death of 16 of their colleagues (Bakker et al. 2021). These findings show that after avalanche events, various psychiatric symptoms, PTSD and other psychiatric disorders may develop in the early and late post-avalanche periods in individuals directly or indirectly exposed to the avalanche, and some may become chronic.

Avalanche disasters, which occur from time to time in our country, are worth examining in this respect. Avalanches are not uncommon in Turkey, especially in the Eastern and Southeastern Anatolia Region. Avalanche disasters reached an alarming level in the winter of 1992 and 1993, causing the death of a total of 453 people (Gürer 2002). However, with the effect of the measures taken in the following years, the number of casualties in avalanche disasters in our country decreased significantly (Gürer 2002). While this was the case, two consecutive avalanches occurred in Van's Bahçesaray district in 2020, causing the death of 42 people. Until this avalanche disaster, no study had been found examining the psychiatric consequences of avalanche disasters in Turkey. It is important to monitor and examine survivors of disasters from a psychiatric perspective in order to understand who is susceptible to the development of mental illness, especially PTSD, and how the symptoms will progress after traumatic events.

This study aims to determine the frequency of Post-Traumatic Stress Disorder (PTSD) in 35 people who were rescued from two consecutive avalanche disasters that occurred in Van's Bahçesaray district and caused the death of 42 people and who were brought to the Van Yüzüncü Yıl University Faculty of Medicine Hospital Emergency Service. Additionally, it is aimed to examine how PTSD symptoms change over a 6-month follow-up period and to examine clinical and sociodemographic risk factors associated with the development and persistence of PTSD symptoms. Another aim of this study is to make a comparison between professional rescue workers and volunteer rescuers in terms of the risk of developing PTSD, the course of PTSD symptoms, and the factors affecting the risk of developing PTSD.

METHOD

Participants: Two avalanches hit the Van Bahçesaray highway on 4-5 February 2020, and 5 people died in the first avalanche. The second avalanche fell on the rescue teams dispatched to the region to save two people trapped under the avalanche, and a total of 42 people lost their lives in these two avalanches. Among the rescue workers who went to this

avalanche disaster for rescue purposes and were themselves trapped under the avalanche, 35 of the 84 survivors received first aid at Van Yüzüncü Yıl University Faculty of Medicine Hospital Emergency Service. The study was conducted with these 35 people. In order to provide psychosocial support to these people as part of the emergency response, between 5-10 February 2020, ACÖ, CA, FK, MI, DD, IT interviewed them in the emergency department or inpatient services to which they were transferred, and 35 individuals were followed up. All of the individuals stated that they were trapped under an avalanche.

Procedure: After being admitted to the emergency room, the first psychiatric interview was conducted within the scope of the psychosocial support program and the participants were followed up and evaluated face to face again two and six months after the incident. During the evaluation in the 2nd and 6th months, the Post-Traumatic Stress Disorder Symptom Scale-Self-Report Scale (PTSD-SR) and the Impact of Events Scale (IES) were applied to the participants by psychiatrists and psychologists working in the field of mental health to assist in the diagnostic evaluation and to monitor the severity of symptoms.

For this study, ethical approval was received from Van Yüzüncü Yıl University Clinical Research Ethics Committee with decision number 2020/03-27, and written informed consent was obtained from all participants for their participation in the study.

In the study, individuals' sociodemographic data and possible risk factors for the development of PTSD were recorded in the sociodemographic data form. Avalanche exposure times were divided into two categories: 0-30 minutes and over 30 minutes. The diagnosis of PTSD was made according to the DSM-5 Post-Traumatic Stress Disorder diagnostic criteria, using structured interviews by mental health professionals and the PTSD-SR scale. The severity of symptoms was assessed with the Impact of Events Scale.

Scales

The Post-Traumatic Stress Disorder Symptom Scale-Self Report (PTSD-SR): Designed by Foa et al. to assess PTSD symptoms, it is a 17-item, Likert-type self-assessment scale scored between 0 and 3 (Foa et al. 1993). Scores of thirteen or higher indicate the possibility of PTSD. The Turkish validity and reliability study was conducted by Aydın et al., and the internal consistency coefficient was calculated as 0.90 (Aydın et al. 2012).

Impact of Events Scale (IES): It was developed by Weiss and Marmar in 1997. It is a 5-point Likert type scale that aims to examine possible stress disorders after trauma. It consists of three subscales: reexperiencing, avoidance, and hyperarousal. Scores that can be obtained from the scale range between 0 to 88, with higher scores indicating high levels of traumatic stress. The Turkish validity and reliability study was conducted by Çorapçıoğlu et al., and its internal consistency was found to be 0.94 (Çorapçıoğlu et al. 2006).

Statistical Analysis

The data obtained in the study were analyzed in IBM SPSS 23.0 package program (SPSS Inc., Chicago IL, USA). Chi-square test was used to compare the risk factors of cases with and without a diagnosis of PTSD, and t-test for independent groups was used to compare the mean scores of PTSD-KD and OES according to risk factors. In comparing the score difference between the 2nd and 6th months of the PTSD-SR and IES, t-test was used for independent groups, and in comparing the scores of 2nd and 6th months of PTSD-KD and OES, T-test was used for dependent groups. The significance level was taken as $p<0.05$.

RESULTS

It was determined that the ages of the participants in the study were between 25-46 (mean=31.97, SD=5.47) and all of them were male. 49% of the cases stated that they were university graduates, 31% were primary school graduates, 14% were high school graduates, 6% were secondary school graduates, and 66% were married. It was observed that 45.7% (n=16) of the participants were search and rescue volunteers, citizens living in the region, and 54.3% (n=19) were professional search and rescue team officers.

In the study, according to the clinical interview based on the DSM-5 PTSD diagnostic criteria, the PTSD rates 2 and 6 months after the avalanche disaster were found to be 71.4% and 57.1%, respectively. While 25 people were diagnosed with PTSD in the 2nd month of the avalanche disaster, this number decreased to 20 in the 6th month.

19 of the cases (54%) reported being under the avalanche for 0-30 minutes; 16 of them (46%) stated that they stayed longer than 30 minutes. 17 of the cases (49%) stated that they had been exposed to a disaster before.

The comparison of risk factors between cases diagnosed with and without a diagnosis of PTSD in the evaluation 2 months and 6 months after the avalanche disaster is shown in Table 1.

When the characteristics of the cases who developed and did not develop PTSD were examined, it was determined that 87.5% (14 of 16 participants) of the cases who stayed under an avalanche for 30 minutes or more developed PTSD, and as the duration of stay under the avalanche increased, the risk of developing PTSD increased in the 2nd month ($p<0.05$); at the 6th month, no difference was detected between the two groups in this respect. In order to examine the effects of being under

Table 1. Sociodemographic Characteristics and Risk Factors

2nd month	**Cases with PTSD**		**Cases without PTSD**		
Marital status					
Married	17	73.9	6	26.1	.20
Single	8	33.3	4	66.7	
Disaster History					
Yes	10	58.8	7	41.2	2.57
No	15	83.3	3	16.7	
Duration of avalanche					
0-30 mins	11	57.9	8	42.1	3.73*
Over 30 minutes	14	87.5	2	12.5	
Occupation					
Volunteers (People living in the region)	13	81.3	3	18.8	1.39
Professionals	12	63.2	7	36.8	
6th month	**Cases with PTSD**		**Cases without PTSD**		χ^2
Marital status					
Married	13	56.5	10	43.5	.011
Single	7	58.3	5	41.7	
Disaster History					
Yes	7	41.2	10	58.8	3.44
No	13	72.2	5	27.8	
Duration of avalanche					
0-30 minutes	9	47.4	10	52.6	1.62
Over 30 minutes	11	68.8	5	31.3	
Occupation					
Professionals	10	52.6	9	47.4	0.34
Volunteers (People living in the region)	10	62.5	6	37.5	

*p<0.05 PTSD: Post Traumatic Stress Disorder

an avalanche for less than or longer than 30 minutes, being a rescue professional/volunteer rescuer, and having a history of disasters in the past on the development of PTSD, the mean scores of the participants in the 2nd month of the PTSD-SR and IES were compared. It was determined that those who stayed under an avalanche for more than 30 minutes, those who voluntarily joined the rescue team, and those who had no history of disasters received significantly higher scores on the PTSD-SR and IES scales (Table 2). No difference was found between the PTSD-SR and IES scores in terms of the other variables examined.

In the evaluation made 6 months after the avalanche disaster, it was determined that the total and subscale scores of PTSD-SR and IES were significantly lower than the scale scores applied 2 months after the disaster (Table 3).

It was observed that the scores obtained from the PTSD-SR scale and the IES hyperarousal, re-experiencing subscale and total scores 2 and 6 months after the avalanche disaster were significantly different from each other according to the duration of exposure to the avalanche (Table 3). It was determined that in individuals who stayed under an avalanche for more than 30 minutes, the change in overarousal, re-experiencing and total scores of PTSD-SR and IES was more evident between the 2nd and 6th month. Additionally, a further decrease in symptom severity was observed.

It was observed that the changes in the total and subscale scores of the PTSD-SR scale and IES, performed 2 and 6 months after the avalanche disaster, were significantly different between individuals who had been exposed to disasters in the past and individuals who did not have a history of disasters. It has been determined that the score difference between the 2nd and 6th month after the avalanche disaster for individuals who have been exposed to disasters in the past is lower than that of individuals without a disaster history (Table 3).

It was observed that the difference in the PTSD-SR scale, IES subscales and total scores of the volunteer group consisting of local people between the 2nd and 6th months after the avalanche disaster was higher than that of professional rescue workers (Table 4).

When the characteristics of the volunteer rescuers and professional rescue team members who participated in the rescue operation from the local people are examined; it was

Table 2. Comparison of PTSD-SR and IES Scores According to Risk Factors

Being buried under the avalanche	**0-30 mins mean±SD**	**>30 mins mean±SD**	**T (df=33)**
PSS-SR	16.89±9.15	29.19±10.46	-3.71**
IES total	26.74±16.19	48.44±19.9	-3.56**
IES avoidance	8.68±5.33	14.56±6.52	-2.94**
IES hyperarousal	7.84±5.19	16±6.61	-4.09***
IES intrusion	10.21±6.37	17.88±7.74	-3.22**
Having disaster history	**Yes mean±SD**	**No mean±SD**	
PSS-SR	14.88±6.34	29.72±10.54	-5.01***
IES total	22.41±8.31	50.11±20.2	-5.25***
IES avoidance	7.47±2.9	15.06±6.92	-4.19***
IES hyperarousal	6.88±3.2	16±6.98	-4.92***
IES intrusion	8.06±3.15	19.06±7.37	-5.68***
Occupation	**Volunteers mean±SD**	**Professionals mean±SD**	
PSS-SR	28.94±11.52	17.11±8.35	3.52**
IES total	50.75±21.14	24.79±11.03	4.66***
IES avoidance	15±7.44	8.32±3.59	3.47**
IES hyperarousal	16.19±7.18	7.68±4.19	4.36***
IES intrusion	19.56±7.61	8.79±3.82	5.42***

*p<0.05; **p<0.01; ***p<0.001 t-test for independent samples was applied; PTSD-SR: Post Traumatic Stress Disorder Symptom Scale-Self Report; IES: Impact of Event Scale; mean±SD:mean±standard deviation

Table 3. The Mean Values of the 2nd and 6th Month PTSD-SR and IES Scores

	2nd month (n=35) mean±SD	**6th month (n=35) mean±SD**	**t (df=34)**
PTSD-SR	22.51±11.45	16.83±9.29	5.30*
IES total	11.37±6.53	8.34±4.69	5.45*
IES avoidance	11.57±7.11	9.37±5.42	3.93*
IES hyperarousal	13.71±7.93	10.54±6.70	6.16*
IES intrusion	36.66±20.83	28.09±15.69	5.94*

*p<0.001 PTSD-SR: Post Traumatic Stress Disorder Symptom Scale-Self Report; IES: Impact of Event Scale; mean±SD: Mean±standard deviation.

Table 4. Comparison of PTSD-SR and IES 2nd and 6th Month Scores in Terms of Duration of Being Buried Under Avalanche, Presence of Disaster History and Occupation

	2nd month	**6th month**	**2nd month**	**6th month**	
Being buried under the avalanche	**0-30 mins mean±SD**		**over 30 mins mean±SD**		**t (df=33)**
PSS-SR	16.89±9.15	14.32±8.6	29.19±10.46	19.81±9.45	-3.70**
IES total	8.68±5.33	6.53±3.34	14.56±6.52	10.5±5.23	-1.76
IES avoidance	7.84±5.19	6.95±4.39	16±6.61	12.25±5.21	-2.78**
IES hyperarousal	10.21±6.37	8.16±6.21	17.88±7.74	13.38±6.29	-2.56*
IES intrusion	26.74±16.19	21.32±12.33	48.44±19.9	36.13±15.76	-2.56*
Having disaster history	**Yes mean±SD**		**No mean±SD**		
PSS-SR	14.88±6.34	11.82±5.50	29.72±10.54	21.56±9.77	-2.57**
IES total	7.47±2.9	5.88±2.69	15.06±6.92	10.67±5.04	-2.75**
IES avoidance	6.88±3.2	6.29±2.1	16±6.98	12.28±5.64	-3.14**
IES hyperarousal	8.06±3.15	6.76±3.4	19.06±7.37	14.11±7.14	-4.40***
IES intrusion	22.41±8.31	18.94±8.13	50.11±20.2	36.72±16.36	-4.18***
Occupation	**Volunteers mean±SD**		**Professionals mean±SD**		
PSS-SR	28.94±11.52	20±11.32	17.11±8.35	14.16±6.3	3.12**
IES total	15±7.44	10.19±5.6	8.32±3.59	6.79±3.14	3.37**
IES avoidance	16.19±7.18	12.69±5.72	7.68±4.19	6.58±3.18	2.25*
IES hyperarousal	19.56±7.61	14.25±7.66	8.79±3.82	7.42±3.66	4.98***
IES intrusion	50.75±21.14	36.44±17.97	24.79±11.03	21.05±9.05	4.61***

*p0<.05; ** p<0.01; *** p0<.001 t test was used for independent groups; PTSD-SR: Post Traumatic Stress Disorder Symptom Scale-Self Report; IES: Impact of Event Scale; mean±SD: Mean±standard deviation.

determined that the rate of those in the volunteer group who stayed under the avalanche for more than 30 minutes (69%, n=11) was significantly higher than that of the professional rescue team (26.3%, n=5) (p=0.01). It was determined that the rate of those who had been exposed to disaster in the past was significantly higher in the professional rescue team than in volunteer rescuers [(79% (n=15) vs 12.5% (n=2); p=0.000)].

DISCUSSION

This is the first study in our country to investigate the symptoms of PTSD, the frequency of PTSD and possible risk factors of PTSD that occur after an avalanche disaster. The most important findings of this study are that the diagnosis of PTSD is still high in rescue workers exposed to disaster 2 and 6 months after the avalanche disaster, the length of time spent under avalanche, not having a history of disaster in the past, and not being a professional rescue worker increase the risk of developing PTSD.

Many studies state that natural disasters are associated with psychiatric symptoms (Armenian et al. 2000, Lai et al. 2004, Altındağ et al. 2015). Some studies have not found a relationship between the severity of trauma exposure and the development of PTSD (McFarlane 1988). This study found that the length of time spent in an avalanche was associated with the development of PTSD. Within two months after the avalanche, 25 of the 35 participants were found to have developed PTSD. In the 6th month of the disaster, although the number of cases meeting the PTSD diagnostic criteria decreased to 20, PTSD was still detected at a rate as high as 57%. In the studies conducted on this subject, except for one of the studies, it was reported that PTSD and other psychiatric symptoms increased in rescue workers after disasters. (Ersland et al. 1980, Berah et al, 1984, Dyregrov and Solomon 1991, Alexander and Wells 1991, North et al. 2002, Guo et al. 2004, Haraldsdottir et al. 2014, Skogstad et al. 2016). Only one of these studies examined rescue workers responding to an avalanche disaster (Haraldsdottir et al. 2014).

It has been observed that volunteers from rescue teams responding to both earthquake and avalanche disasters are diagnosed with PTSD more often than professional rescue workers (Guo et al. 2004, Haraldsdottir et al. 2014). In our study, it was observed that the volunteer group was diagnosed with PTSD at a higher rate and had higher PTSD scores both at two and six months after the avalanche disaster compared to the professional group. The prevalence of psychopathology among avalanche rescue workers is difficult to estimate. In many countries, in rural areas where these disasters are more likely to occur and where the first response to the disaster is made, the number of mental health professionals such as psychiatrists and psychologists is insufficient, and therefore the likelihood of diagnosis and access to relevant care is low (Belanger et al. 2018). In our study, it was found that professional rescue workers developed fewer PTSD symptoms and the severity of PTSD symptoms was lower than volunteer rescuers. This may be due to the fact that the rate of those who stayed under an avalanche for more than 30 minutes in the volunteer group was higher, as well as the fact that professional rescue workers were knowledgeable, trained and prepared about trauma/disaster.

When volunteer and professional rescuers were evaluated together, the rates of PTSD two and six months after the avalanche disaster were found to be as high as 71.4% and 57.1%, respectively. Various studies report different rates of PTSD development after traumatic life events. There are no studies examining post-avalanche psychiatric symptoms in our country. Among the studies examining the frequency of PTSD after various disasters, earthquake-related PTSD rates were found to be 23-42% in our country (Şalcıoğlu et al. 2003, Altındağ et al. 2005) and 24% worldwide (Dai et al. 2016). The prevalence of PTSD was found to be 28.3% and 18.7%, respectively, one month and twelve months after a tornado disaster in Ankara (Bozkurt et al. 2011). The frequency of PTSD may depend on the sample chosen, the different tests used, the type, magnitude and duration of the trauma experienced. All of the cases participating in our study stated that they were trapped under the avalanche. For this reason, the fact that the participants were trapped under an avalanche even for a short time, had difficulty breathing, and came face to face with death due to fear and helplessness may be among the reasons for the high rate of PTSD in our study.

Our study showed that those who stayed under an avalanche for more than 30 minutes had higher PTSD scores. As the duration of exposure increases, the risk of developing PTSD increases and volunteer rescuers experience higher levels of PTSD symptoms, which is consistent with both the hypothesis of this study and the information in the literature (Guo et al. 2004, Haraldsdottir et al. 2014). The psychological preparedness of professional rescue workers for trauma may have reduced the rates of traumatization. This finding is consistent with Başoğlu et al.'s studies showing that psychological preparedness is protective against the development of PTSD (Başoğlu et al. 1997).

Many studies reveal that individuals exposed to more than one traumatic event may be at risk of more serious PTSD (Perrin et al. 2014, Kessler et al. 2017, Lassemo et al. 2017, Contractor et al. 2018). But in our study, it was found that not having a disaster history in the person's past was a risk factor for the development of PTSD. This finding seems to be incompatible with the literature. Almost all of those with a history of disaster are professional rescue team members. Professional rescue team members have encountered disasters for professional reasons and as prepared, knowledgeable and educated. In addition, it can be assumed that the resilience of

those who participated in the rescue mission, who have been exposed to any disaster in the past, may be higher than other people, and that they may have developed an altruistic coping mechanism to cope with the traumatic event after the trauma (Dursun and Söylemez 2020). Additionally, those who had PTSD after a past disaster experience are not expected to join the rescue team due to avoidance. When all these are evaluated together, the fact that the participants have a history of disaster in this group may seem like a protective factor.

The study has some limitations. Since our study only examined professional rescue workers and rescue volunteers who survived the avalanche disaster, it cannot be generalized to everyone who experienced an avalanche disaster. The two groups compared are not similar to each other in many respects, which is probably why findings that are incompatible with the literature were obtained on issues such as the impact of past trauma. Due to the small number of participants, multivariate analyses could not be performed to resolve this problem. One of the important limitations of our study is that gender comparison could not be made in our study because all individuals exposed to the avalanche disaster were male.

As a result, in this study, being stuck under an avalanche for a long time during the disaster and being a rescue volunteer (not being a professional rescue worker) were found to be risk factors for the development of PTSD. While the frequency of PTSD was 71.4% in the early period, it was observed that the frequency of PTSD decreased to 57.1% in the 6th month after the avalanche. The high rate of PTSD, 57%, in the 6th month after the avalanche disaster, and the high rate of PTSD seen even in professional rescuers who are trained and prepared, show that there is a high need for mental health services in those exposed to an avalanche disaster. For this reason, it is important to provide psychosocial support to rescue teams responding to traumatic events, to screen and monitor psychiatric symptoms and to direct them to treatment when necessary.

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