

The Factors Influencing on Stress Coping and Resilience of Firefighters

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Abstract

This study was attempted to provide basic data on mental health by identifying factors affecting the resilience of firefighting officers. The data collection was conducted from May 1, 2018 to May 31, 2018, with the consent of the target person and the questionnaire was conducted. The number of participants used in the final analysis was 147. The questionnaire consisted of demographic characteristics, stress coping, and resilience. The collected data were analyzed using SPSS 21.0 statistical program using descriptive statistics, t-test, ANOVA, Pearson's correlation, and Multiplier regression. The results of this study showed that the difference in resilience according to general characteristics was the result of subjective health condition, stress relief method, and subjective health condition in stress coping. Resilience showed a static correlation with stress coping, and stress coping showed a positive correlation between active coping and passive coping.

Keywords: firefighters, resilience, stress, coping behavior

1. Introduction

Firefighters are special civil servants who are responsible for emergency rescue functions at all disaster sites, including fire and human disasters [1].

As a result of various risk factors such as fire, disaster, disaster, rescue and emergency, firefighters are easily fatigued due to psychological and physical stresses arising from special work environment and work besides physical diseases, and stress was felt to be serious, such as excitement or anger at minor things [2].

A prior study on the coping of stress by firefighters, firefighters have found that they use a lot of passive coping methods when solving sudden and difficult cases [3]. In addition, in a study of firefighting officers on mental health, it was said that people who use passive coping need mediation to improve active coping because they are unhealthy in terms of mental health rather than those who use active coping [4]. Therefore, firefighters who are in a high stress

¹ Article history:

Received (January 7, 2019), Review Result (February 9, 2019), Accepted (March 11, 2019)

situation compared to other occupational groups need to know what coping methods are mainly used.

Resilience was found to be different among individuals, and it was found that people with high resilience showed less post-traumatic symptoms in relation to major events than those with low resilience [5]. In addition to disasters, it was found that people with high resilience also had a high recovery in relation to stress [6].

The Goyumi saw resilience as a function that allows the lost level of adaptation to return and recover due to the stress environment [7], it as a positive force to adapt and overcome adversity and stress environment [8]. Resilience as social psychological ability to cope with personal adversity, adapt to environment, and mental growth ability [9].

It is considered necessary to confirm the important resilience to cope with the stress to the firefighting officers exposed to many stress situations, but there is a lack of prior research on this.

This study confirms the degree of stress coping and resilience of firefighters and confirms the relationship between stress coping style and resilience. In addition, we conducted this study to identify the factors affecting resilience and to use it as basic data to improve the mental health of firefighting officers and to help them find ways to cope with stress.

2. Research method

2.1. Research Design

This study is a descriptive research using structured questionnaires to investigate the effect of stress coping on the resilience of fire fighter.

2.2. Research subjects

This study was conducted for firefighting officers in G city and Y city in Gangwondo Province. The purpose of this research was understood and it was conveniently extracted to those who voluntarily agreed to participate in the research.

2.3. Data collection method

Data collection was made through the one-to-one interview by each individual with a researcher and 3 research assistants, who were trained in advance, from May 1, 2018, to May 31. A structured questionnaire was used in subjects with a written consent of participating in the research. A total of 160 copies were distributed in consideration of the number of dropouts, and 150 copies were collected. Among them, 146 data were used for the final analysis except for 3 cases where the response was insufficient.

2.4. Research Tools

2.4.1. Stress coping

Stress coping implies a constantly changing cognitive and behavioral effort to control the external and internal demands that are burdened by the individual or that he or she is considered to transcend resources [10]. It was developed by Lazarus and Folkman [10], and translated by Kim et al [11] and used by the Bang [12]. This tool consists of active coping (coping with problems and coping with social support) and passive coping (coping with emotions and coping with desires).

2.4.2 Resilience

Resilience means a combination of capabilities and characteristics that includes a process of dynamic interaction, allowing individuals to recover from their original state, adapt successfully, and adapt to their physical condition despite stress or to interact dynamically [13]. It was used what Bae [14] translated the Resiliency measurement tool developed by Connor [15] (K-CD-RISC: Korean Connor Davidson Resilience Scale).

2.5. Data analysis method

The collected data are analyzed using the SPSS 21.0 program as follows. Resilience and stress coping level, according to the demographic characteristics of the subjects was analyzed with descriptive statistics, t-test, ANOVA, and post-test were used for Scheffe test. The correlations between resilience and stress coping were analyzed using Pearson's correlation. The effects of the resilience were analyzed by multiple regression.

3. Results and Discussion

3.1. Difference in resilience, stress coping of according to general characteristics

The resilience differences in general characteristics was statistically significant with subjective health state ($F=7.38, p<.001$), stress relief ($F=3.77, p<.05$). Stress coping differences in general characteristics was statistically significant with stress relief ($F=3.16, p<.05$). (Table 1).

Table 1. Difference in resilience, stress coping of according to general characteristics

(N=147)

Characteristic s	Categorie s	n(%)	Resilience		Stress coping	
			M±SD	t/F(p), Scheffe	M±SD	t/F(p), Scheffe
Gender	Male	134(91.2)	93.01±13.92	1.87(.063)	79.56±11.64	1.17(.241)
	Female	13(8.8)	85.53±11.08		75.46±15.36	
Age(year)	20~29	20(13.4)	90.90±16.03	0.46(.711)	78.85±13.70	0.29(.826)
	30~39	54(36.6)	92.11±14.06		79.57±12.17	
	40~49	60(40.7)	92.16±12.47		78.43±10.77	
	50~59	13(9.2)	96.46±16.09		81.76±14.86	
Education	High school	35(23.8)	93.00±15.75	0.47(.700)	79.60±13.63	1.00(.391)
	College	33(22.4)	90.96±13.97		77.09±12.99	

	University	77(52.4)	92.89±12.95		80.19±10.80	
	Graduate school	2(1.4)	83.00±14.14		69.00±5.65	
Religion	Yes	43(29.3)	92.88±15.58	0.29(.765)	80.20±14.07	0.65(.516)
	No	104(70.7)	92.13±13.10		78.78±11.09	
Position	Fireman a	24(16.3)	86.37±12.37	2.05(.109)	76.62±12.16	1.25(.292)
	Semi firefighter b	35(24)	95.17±16.02		82.40±13.91	
	Fire sergeant c	42(28.8)	92.38±12.84		78.95±10.96	
	Above fire lieutenant d	46(30.9)	93.04±13.12		78.48±11.22	
Subjective health state	Very healthy a	21(14.3)	101.42±10.32	7.38(<.001)	84.86±17.57	1.51(.205)
	General health b	69(46.9)	94.92±13.17	a,b>c,d>e	80.20±17.02	
	Usually c	36(24.5)	87.00±14.07		78.02±10.24	
	Slight disease d	19(12.9)	84.78±11.40		77.49±9.96	
	Serious disease e	2(1.4)	76.50±4.94		81.88±10.75	
Stress relief	Talk with colleagues a	51(34.7)	91.31±12.56	3.77(.002)	79.78±10.26	3.16(.006)
	Hobby b	53(36.1)	96.86±13.14	e>a,b,d>c,f,g	82.41±11.39	e>a,b,c,d,f>g
	Alcohol c	23(15.6)	87.26±14.94		75.26±13.44	
	Talk to family d	7(4.8)	91.00±14.13		77.14±6.46	
	Religious activities e	2(1.4)	115.00±11.31		87.50±2.12	
	Keep in mind f	5(3.4)	86.40±8.17		74.80±7.88	
	No solution g	6(4.1)	79.83±11.37		64.33±20.20	
Consider counseling, treatment help	Yes	23(15.6)	88.65±12.98	-	75.91±9.91	
	No	124(84.4)	93.04±13.92	1.40(.163)	79.81±12.29	-1.43(.153)

3.2. Level of resilience and stress coping

The resilience was 92.35 ± 13.82 on the scale of 125 points. The level of Stress coping was 79.20 ± 12.01 on the scale of 120, in the sub domain, aggressive coping was 41.34 ± 7.04 on the scale of 60, passive coping was 43.60 ± 5.86 on the scale of 60 points. (Table 2).

Table 2. Level of resilience and stress coping

(N=147)		
Variable	Range	M±SD
Resilience	25~125	92.35±13.82
Stress coping	24~120	79.20±12.01
Aggressive coping	12~60	41.34±7.04
Passive coping	12~60	43.60±5.86

3.3. Correlation between resilience and stress coping

The resilience was positively correlated with stress coping ($r=.666, p<.001$), Stress coping sub-domain of aggressive coping ($r=.774, p<.001$), and passive coping ($r=.429, p<.001$). Stress coping showed a significant positive correlation in the aggressive coping ($r=.903, p<.001$), and passive coping ($r=.899, p<.001$). Aggressive coping showed a significant positive correlation in the passive coping ($r=.631, p<.001$). (Table 3).

Table 3. Correlation between resilience and stress coping

(N=147)				
Variable	Resilience	Stress coping	Aggressive coping	Passive coping
Resilience	1			
Stress coping	.666**	1		
Aggressive coping	.774**	.903**	1	
Passive coping	.429**	.899**	.631**	1

The results of the study showed that the resilience of firefighters and the coping with stress were positively correlated, and the same results were reported in the study of the effects of resilience on post-traumatic stress symptoms in domestic firefighters [16]. In addition, firefighters reported that mental stress was higher than physical stress [17], and firefighters with severe post-traumatic stress symptoms reported depression and alcohol problems and low resilience [18].

The study found that the methods of relieving stress were in the order of colleagues and stories (34.7%), hobbies (36.1%), alcohol (15.6%), family stories (4.8%), religious activities (1.4%), and no solution (4.1%). They use relatively positive and positive methods such as talking with colleagues and family, and hobbies, however, 20% of respondents said that they

do not have a solution or solution for drinking, therefore it is necessary to pay attention to the method of relieving the stress of the fire service personnel.

4. Conclusion

This study has tried to identify the relationship between stress coping and resilience of firefighters, to identify factors affecting resilience and to cope with stress, and to make a basic data to improve the mental health of firefighters.

Based on the results of this study, it is necessary to study stress management programs, including counseling, for firefighters who have to face sudden and difficult situations continuously.

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