Research Paper: Mental Health Status of Medical Staff Working in Ardabil Prehospital Emergency During COVID-19 Pandemic

Hosein Asadi[1], **Aghil Habibi Soola**[2*], **Mahnaz Davari**[1]

1. Students Research Committee, School of Nursing and Midwifery, Ardabil University of Medical Sciences, Ardabil, Iran.
2. Department of Nursing, School of Nursing and Midwifery, Ardabil University of Medical Sciences, Ardabil, Iran.

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ABSTRACT

Background: Prehospital emergency staff usually encounter patients in situations that can affect the mental health of the medical staff and cause symptoms of depression, anxiety, and stress. This study aimed to determine depression, anxiety, and stress in prehospital emergency personnel during the COVID-19 epidemic in Ardabil City, Iran, 2020.

Materials and Methods: A descriptive cross-sectional study was conducted from March 2020 to April 2020 with the participation of 138 working staff in the prehospital emergency department of Ardabil City. The samples were selected by the census method. Necessary information was collected with a two-part questionnaire: a demographic questionnaire and the DASS-21 standard questionnaire. DASS-21 is a 21-item questionnaire that consists of three subscales of 7 questions: depression, anxiety, and stress. The obtained data were analyzed using descriptive statistics, including mean and standard deviation, and inferential analysis, including analysis of variance, independent t test, and multiple regression using SPSS software v. 22 statistical software.

Results: The results showed that 45.7% of the staff had moderate depression, 44.9% moderate anxiety, and 77.5% normal stress. There was a significant relationship between work experience and stress level (P=0.03). There were significant associations between age with depression (P=0.04), anxiety (P=0.00) and stress (P=0.01). There was also a significant relationship between gender and variables of stress (P=0.00) and anxiety (P=0.01). Multiple regression results showed that gender and education variables are predictors of anxiety and stress, and age and education variables are predictors of depression (P<0.05).

Conclusion: More than half of the staff had moderate to severe depression and anxiety. Considering that prehospital emergency personnel has a vital role in improving and promoting people's health in the community, eliminating the underlying factors that cause emotional reactions in them is considered a health priority.

*** Corresponding Author:**
Aghil Habobi Soola, PhD.
Address: *Department of Nursing, School of Nursing and Midwifery, Ardabil University of Medical Sciences, Ardabil, Iran.*
E-mail: *habibiarums@gmail.com*

1. Introduction

One of the most important components of the healthcare delivery system is the prehospital emergency system. The proper management of this system in critical situations is one of the key components of the health system [1]. Prehospital emergency centers must be prepared to deal with any crisis. Therefore, It is necessary to hire personnel with appropriate knowledge and performance in this field [2, 3]. This unit is, in fact, a community-oriented system that responds to the medical needs of the injured or emergency patients outside the medical centers until they are transferred to the above centers [4, 5]. The prehospital emergency is one of the most stressful areas of the health system [6]. A high-accident environment, heavy workload, the experience of death and severe injuries, exposure to violence, and witnessing gruesome scenes can be among the factors creating stress for prehospital emergency personnel [7, 8]. Therefore, as frontline forces providing clinical services, prehospital emergency personnel are constantly exposed to many stressors [9, 10].

A study in the United Kingdom found that compared to 25 other occupations, the emergency medical technician job ranks the highest in terms of physical stress, second in terms of dissatisfaction, and fourth most stressful job in terms of mental health problems [11]. A study in Thailand among nurses working in emergency medicine showed that 33.5% of working nurses had high stress, and 27.3% had low stress [12]. The results of a study in Kerman City, Iran, showed that 34.3% of prehospital emergency personnel had severe depression, 27.1% high anxiety, and 8.6% high stress [13]. Being in different situations and experiencing various work environments in the prehospital emergency may cause different results in the staff according to their work experience and mental states. People experience different degrees of psychological disorders in the face of stressful situations [14, 15].

Medical personnel in the crisis of diseases as the first line of treatment are directly exposed to the disease and are more likely to develop symptoms of depression and stress [16, 17]. During the SARS epidemic, one of the most important problems of medical personnel was the emergence of psychiatric disorders among this group and the long-term persistence of depression and stress in medical personnel [16]. Fear and anxiety caused by possible illness have created a high and destructive psychological burden that can lead to mental disorders, weakening the immune system and reducing the body's ability to fight disease in people in the community, including the treatment team (physicians, nurses, prehospital emergency personnel) [18]. Compared with other treatment staff in critical situations, prehospital emergency personnel show more serious mental health problems, among which anxiety, depression, and stress are the most common issues [19]. Iran's first case of coronavirus was reported in February 2020 in Qom City [20]. In Ardabil City, the admission of patients with COVID-19 started in March 2019 in medical centers, and gradually the number of patients increased until April 2020 [21].

Prehospital emergency personnel who are in direct contact with patients with COVID-19 are more prone to physical and psychological harm than other treatment groups due to work overload, inadequate personal protective equipment, and lack of psychological support [22]. Personnel concerns about personal safety, family safety, and patient mortality can cause and exacerbate psychological disorders in this group [12, 22, 23]. Therefore, understanding the psychological impact of the COVID-19 pandemic on prehospital emergency personnel is one of the essential components of health promotion [24].

The physical and mental health of prehospital emergency personnel is directly related to the quality of their performance in patient care, increasing work efficiency, increasing satisfaction, and improving clinical indicators [16, 25]. Thus, due to limited studies in this field in Iran, we conducted this study to investigate anxiety, stress, and depression in prehospital emergency personnel in Ardabil City during the COVID-19 pandemic.

2. Materials and Methods

The present study was a cross-sectional descriptive study with census method, was conducted from March 2020 to April 2020 with the participation of 138 prehospital emergency personnel in Ardabil during the COVID-19 pandemic. After the study approval by the Research Council of Ardabil University of Medical Sciences and obtaining the sampling permit and the code of ethics (IR.ARUMS.REC.1399.041), the researchers identified the eligible people to enter the study based on the personnel list. The inclusion criteria included the willingness to participate in the investigation, with a role in COVID-19 patient transfer, with an associate's degree or higher, with at least six months of experience in prehospital emergency, and without participating in other similar research simultaneously. The exclusion criteria included incomplete completion of the questionnaire and being in a critical situation other than the coronavirus outbreak, such as the death of loved ones, fire,

and accident at the time of the study. Since during the study period, all operational personnel was involved in the transfer of patients with COVID-19, all personnel met the inclusion criteria. The total number of qualified personnel was 140, of whom 138 questionnaires were delivered to researchers.

Because of the COVID-19 pandemic and the need to observe safety principles, questionnaires were sent by e-mail to all eligible personnel participating in the study. Social networks or a paper questionnaire were used for personnel who could not be sent an e-mail. When present in an emergency station, the researcher entered the emergency base by observing personal protection principles. After explaining the study purpose and the staff's consent, the researchers obtained their informed consent to participate in the study. Then, the contents of the questionnaire and the method of completing it were explained. In addition, the participants were assured about the confidentiality of the information by coding the questionnaire as the units under study.

Data collection tools included a demographic questionnaire with six questions (age, gender, marital status, years of service, employment status, and level of education) and a standardized Depression Anxiety and Stress Scale (DASS-21) questionnaire that assessed depression, anxiety, and stress. Lovibond first introduced this questionnaire in 1995 [26]. This questionnaire includes 21 questions with a Likert scale scoring. Seven questions are related to stress, seven to anxiety, and seven to depression. In the study of Najafi et al. in Iran, the internal consistency of the questionnaire through the Cronbach α calculation was determined 0.85 for the stress scale, 0.86 for anxiety, and 0.83 for depression [27].

The final score of each DASS 21 subscale is obtained through the scores of the questions related to that subscale. Each question is scored from 0 (does not apply to me at all) to 3 (absolutely applies to me). Since this questionnaire is a short form of the original scale (42 questions), the final score of each subscale should be doubled [24]. The reason for using the short form of the DASS questionnaire was the current critical situation and personnel involvement with the COVID-19 crisis. In addition, in several studies, the short form of the above questionnaire has been used to assess anxiety, stress, and depression [5, 22, 23].

SPSS software v. 22 was used to analyze the research findings. Descriptive statistics (frequency distribution, mean, and standard deviation) were used to describe and categorize the data, and t test, ANOVA, and multiple regression were used to correlate demographic variables and DASS-21 scores. The Kolmogorov-Smirnov test assessed the normal distribution of quantitative variables. A 95% confidence level and 0.05 significance level were considered in all tests.

3. Results

Of 138 personnel participating in this study, 91.3% were male with a Mean±SD age of 34.18±6.24 years, with a maximum age of 52 years and a minimum age of 24 years. Most study participants, 108 (87.3%), were married, 103 (74.6%) were officially employed, and 108 (78.3%) had a bachelor's degree (nursing, emergency medicine). The highest clinical work experience of personnel was between 5-10 years (30.4%), and the most frequent age range was 31-40 years with 70 staff (50.7%) (Table 1).

The results showed that 63 people (45.7%) had moderate depression, 62 (44.9%) moderate anxiety and 107 (77.5%) had normal stress (Table 2).

The results showed a significant relationship between gender and the variables of stress (P=0.0001) and anxiety (P=0.01) so that the mean score of stress and anxiety in women was higher than men. There was also a significant relationship between age and the studied variables (P<0.05). People aged 30 years and younger had higher mean scores of stress, anxiety, and depression than the other two age groups. There was a significant relationship between work experience and stress (P<0.05) but no significant relationship with depression and anxiety (P>0.05). Also, regarding the variable of education, the results showed that people with an associate degree had a higher mean score of stress and anxiety than other groups, and people with a bachelor's degree had a higher mean score of depression than other groups (Table 3).

The results of multiple linear regression showed the variables of gender and education as predictors of anxiety and stress and the variables of age and education as predictors of depression (Table 4).

4. Discussion

This study aimed to evaluate the anxiety, stress, and depression level of prehospital emergency personnel in Ardabil City, Iran, during the COVID-19 pandemic. The results showed that the prehospital emergency staff of Ardabil had moderate depression, moderate anxiety, and normal stress. According to the results of previous studies obtained at the time of the SARS and Ebola epidemic,

Table 1. Demographic characteristics of prehospital emergency personnel in Ardabil, 2020

Variables	Sub-groups	No.(%)
Gender	Man	126(91.3)
	Female	12(8.7)
Marital status	Single	30(21.7)
	Married	108(78.3)
Age (y)	≤30	48(34.8)
	31-40	70(50.7)
	≥41	20(14.5)
Employment Status	Official	103(74.6)
	Contract	6(4.3)
	Company contract	15(10.9)
	Project	14(10.1)
Work experience (y)	<5	33(23.9)
	5-10 years	42(30.4)
	11-15 years	34(24.6)
	16-20 years	21(15.2)
	Over 20 years	8(5.8)
Education	Associate degree	16(11.6)
	Bachelor's degree	108(78.3)
	Master's degree and higher	14(10.1)

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the prevalence rates of psychological disorders such as anxiety, stress, and depression have been reported to be high [23]. The results of a study by Lai et al. on hospital healthcare staff in Wuhan, China, during the COVID-19 pandemic showed that medical care staff experienced high levels of depressive symptoms (50.4%) and anxiety (44.6%) [28]. The results of Soltaninejad et al.'s study on depression, anxiety, and stress in prehospital emergency personnel showed that most of the personnel had moderate depression, anxiety, and stress [13]. The results of another study conducted on the SARS epidemic in Hong Kong showed that nurses greatly suffered anxiety after direct contact with SARS-infected patients [29]. The results of Harenberg et al.'s study on the depression, anxiety, and stress of Canadian prehospital emergency air rescue personnel under normal (non-critical) conditions showed that most personnel experienced normal depression, anxiety, and stress [30]. Comparison of the above studies shows different results in reporting the rate of depression, anxiety, and stress among staff, which may be due to individual and environmental differences and the level of access to personal equipment and tools used to measure psychological disorders.

In the present study, there was a significant relationship between age and the variables of anxiety, stress, and depression, and people aged 30 and younger had a higher mean score than the other two age groups. Asad Zandi et al. found a significant relationship between age and variables of anxiety and stress [31]. Taleghani et al. reported no significant relationship between age and stress, anxiety and depression [32]. Young age, insufficient preparation for critical situations, and low experience in dealing with critical situations can be the cause of different results.

Table 2. Frequency of depression, anxiety, and stress in Ardabil prehospital emergency personnel, in 2020

Intensity	No.(%)		
	Depression	Anxiety	Stress
Normal	41(29.7)	34(24.6)	107(77.5)
Mild	29(21.0)	8(5.8)	16(11.6)
Medium	63(45.7)	62(44.9)	13(9.4)
Intense	5(3.6)	22(15.9)	2(1.4)
Very intense	0(0)	12(8.7)	0(0)

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Table 3. Relationship between stress, anxiety, and depression with demographic variables of Ardabil prehospital pmergency personnel in 2020

Variables		Stress	Statistics	Depression	Statistics	Anxiety	Statistics
Gender	Man	3.61±2.5	t=-7.86 P=0.00	6.23±2.7	t=0.56 P=0.57	5.47±2.5	t=-2.43 P=0.01
	Female	11.08±1.4		5.75±2.9		7.44±3.6	
Marital status	Single	6.06±2.2	t=-0.06 P=0.95	6.90±2.0	t=1.91 P=0.06	6.26±2.5	t=1.41 P=0.16
	Married	6.10±2.9		5.99±2.9		5.47±2.7	
Age (y)	30≥	6.89±2.7	F=-4.43 P=0.01	7.06±2.2	F=-5.89 P=0.00	6.47±2.3	F=-6.58 P=0.00
	40-31	5.90±2.5		6.02±2.6		5.55±2.5	
	41≤	4.85±3.0		4.65±3.5		3.96±3.2	
Employment status	Official	6.08±2.7	F=0.06 P=0.97	5.96±2.9	F=1.02 P=0.38	5.36±2.7	F=1.65 P=0.18
	Contract	5.83±2.0		7.00±1.8		6.83±2.6	
	Company contract	6.00±2.4		7.13±2.0		6.13±2.9	
	Project	6.35±3.2		3.50±2.6		6.71±2.1	
Work experience (y)	<5	5.87±2.6	F=2.75 P=0.03	6.78±2.2	F=0.68 P=0.60	6.18±2.4	F=0.80 P=0.52
	10-5	7.14±2.2		6.19±2.9		5.81±2.3	
	15-11	5.14±2.7		5.91±2.8		5.35±2.8	
	20-16	5.808±3.6		5.61±3.3		5.33±3.1	
	> 20	7.14±2.1		6.37±2.8		4.62±3.7	
Education	Associate Degree	6.56±2.0	F=3.82 P=0.01	6.37±2.3	F=6.58 P=0.00	6.06±2.7	F=7.08 P=0.00
	Bachelor's degree	6.31±2.7		6.52±2.6		5.97±2.6	
	Master's degree and higher	3.85±2.9		3.35±3.0		2.66±1.4	

The data are presented as M ean±SD.

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Table 4. Results of multiple regression analysis of depression, anxiety, and stress in Ardabil Prehospital Emergency staff in 2020

Variables	Depression		Anxiety		Stress	
	Beta	P	Beta	P	Beta	P
Age	-0.395	0.036	-0.077	0.673	-0.221	0.151
Gender	-0.082	0.351	0. 206	0.018	0.559	0.0001
Marital status	-0.029	0.813	-0.029	0.808	-0.064	0.517
Employment Status	-0.033	0.785	0.030	0.797	-0.148	0.136
Work experience	-0.244	0.191	-0.001	0.994	0.150	0.327
Education	-0.202	0.025	-0.268	0.003	-0.260	0.001

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The results showed a significant relationship between gender and stress and anxiety, and the mean score of anxiety and stress was higher in women. Khamseh et al.'s study also showed a significant relationship between depression and stress with gender, and the mean score of stress and depression in women is higher than men's [33]. Anbari and Khodadadi reported a significant relationship between gender with anxiety, stress, and depression, and the mean score of anxiety, stress, and depression is higher in women [34]. The results of Yahaya et al.'s study showed no significant relationship between gender and depression and stress, but there was a significant relationship between gender and anxiety. The results also showed that the mean score of anxiety was higher in men than women [35]. The results can be justified by considering the different psychological characteristics of men and the greater vulnerability of women. In addition, the small number of women in the present study can also affect the results.

There was a significant relationship between education level and depression, anxiety, and stress. The mean score of anxiety and stress in people with an associate degree was higher than the other two groups. People with a Master's degree or higher had the lowest mean score of depression, stress, and anxiety. Alipour et al. found no significant relationship between education level with anxiety, stress, and depression [36]. The study of Taleghani et al. did not show a significant relationship between education level with anxiety, stress, and depression. In the study of Taleghani et al., individuals with a bachelor's degree had a higher depression score than other groups [32]. This finding was inconsistent with the present study results. Asad Zandi et al. found a significant relationship between education level and variables of anxiety, stress, and depression [31]. The level of education of individuals and the promotion of their level of knowledge can affect the results.

The present study results showed a significant relationship between work experience and stress. The results of Yahaya et al.'s study also showed no significant relationship between work experience and variables of anxiety, stress, and depression [35]. The study of Taleghani et al. also showed no significant relationship between work experience with anxiety, stress, and depression [32]. There was also no significant relationship between marital status and anxiety, stress, and depression. Anbari and Khodadadi's study showed a significant relationship between marital status and depression but no significant relationship with stress and anxiety [34]. Khamseh et al. reported a significant relationship between marital status and anxiety, stress, and depression, which was contrary to the present study [33]. The results of Anbari and Khodadadi's study also showed no significant relationship between marital status with anxiety, stress, and depression [34]. This finding was consistent with the results of the present study.

5. Conclusion

Based on the findings of this study, the rate of depression and anxiety in prehospital emergency personnel involved in the transfer of patients with COVID-19 is moderate. In this situation, maintaining the mental health of prehospital emergency personnel should be a priority in the planning of health system managers. Therefore, in the current critical situation, it is necessary to conduct more research to obtain more evidence in this field and identify personnel prone to psychological disorders whose mental health may be in danger. They can also take steps to improve the prehospital emergency system

by creating a suitable platform for the career promotion of personnel and increasing appropriate training courses.

One of the limitations of the present study is its cross-sectional nature, which may lead to more accurate results by increasing the duration of the research. Also, the study was conducted only on staff working in Ardabil, which should be considered in generalizing the results to other centers. Gender imbalance in the study participants was another limitation of the study. It is suggested that future studies be performed with a larger sample size and gender balance.

Ethical Considerations

Compliance with ethical guidelines

This article was approved by the Student Research Committee, School of Nursing and Midwifery, Ardabil University of Medical Sciences, with the ethical code number of IR.ARUMS.REC.1399.041.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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