



ORIGINAL ARTICLE

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Covid-19 related anxiety levels of emergency service personnel: A cross-sectional study from Turkey

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Abstract

COVID-19 pandemic significantly affects the mental health of the personnel working in the frontline of the healthcare system. The present study aimed to determine the prevalence of anxiety and risk factors in people who served in the emergency health system during the COVID-19 pandemic. The study was designed as a cross-sectional online survey conducted on healthcare staff working in emergency services throughout the country between May 15 and June 15, 2020. The questionnaire form consisted of two parts. The first part included sociodemographic questions (13 questions), while the second part consisted of 20 questions found in STAI (State-Trait Anxiety Inventory) anxiety. Multivariate logistic regression analysis was performed to identify the potential risk factors for anxiety symptoms in the participants. Relationships between risk factors and their consequences were stated as rates (ORs) and 95% CI. A total 1014 completed the survey. Among the respondents, 54.3% male, 41.3% 18–29 age group, 60.4% married, 44.9% doctors, and 63.4% working in the city center. Analysis showed that anxiety triggering factors included being a female (OR, 1.50; 95% CI, 1.13–1.99; $p = 0.004$), working as an emergency medical technician (OR, 7.42; 95% CI, 1.09–50.53; $p = 0.041$), large family (OR, 1.69; 95% CI, 1.06–2.70; $p = 0.041$), few children (OR, 1.28; 95% CI, 0.84–2.15; $p = 0.068$), and working in the town center (OR, 1.43; 95% CI, 1.06–1.93; $p = 0.017$). Our results showed that the anxiety level is high for a significant portion of the emergency staff during the pandemic and that risk-enhancing factors exist in their home and work lives during this period. It is important to carry out supportive administrative studies aimed at reducing stress and anxiety levels, especially for the health staff working in the frontline during the pandemic.

Keywords: Healthcare workers, Anxiety, COVID-19, Turkey

Introduction

A new cause of pneumonia, called the novel type of coronavirus disease 2019 (COVID-19), which originated from Wuhan, China, was reported in the second half of December 2019. The clinical

picture of the virus was also described as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. As of January 30, 2020, the virus is also seen in many other countries. Owing to the fact that it can undergo human-to-human transmission, the World Health Organization held an emergency meeting and declared COVID-19 as a pandemic [2,3]. In Turkey, the first case was diagnosed on March 11, 2020 after the neighboring regions such as Europe and Iran reported the disease [4].

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The disease can exacerbate the risk of developing psychiatric symptoms by affecting the psychologies of the hospital staff who have been working in the frontline during the pandemic and

dealing with all kinds of care from the admission of COVID-19 patients until their discharge. High workload due to the increasing number of definitive and doubtful cases, having limited access to personal protection equipment, widespread impact of the media, and lack of specific drugs can contribute to the mental burden of individuals working within the health system. Studies carried out during previous pandemics have shown that adverse psychological reactions were observed in the 2003 epidemic of SARS, especially among healthcare staff. Research showed that healthcare personnel are afraid of infecting their family, friends, and colleagues, feel that they are stigmatized by the society owing to the uncertainty during the course of the pandemic, come to work unwillingly, consider resignation, and demonstrate a high level of pandemic-related stress, anxiety, and depression [5-7].

Telephone, internet, and application-based psychological assistance services related to this critical situation are provided by local and national mental health institutions in many countries around the world. The Ministry of Health established psychosocial support lines delivering uninterrupted 24/7 service in 81 cities from March to provide assistance during the pandemic in Turkey [8]. However, evidence-based assessments targeting healthcare professionals, the group at risk, are very few despite all these efforts. Healthcare staffs are exposed to various emotional and physical stress factors in their work environments [9].

Changing healthcare organizations, financing, and alterations in the field of application create new opportunities along with new stress factors. Besides, the working environment can pose psychosocial, ergonomic, and physicochemical threats to the health workers [10]. The job satisfaction of the healthcare staff is especially low because of the highly stressful environment, severe stress due to life-threatening situations, disaster situations, and pandemics and these factors cause anxiety [11-12]. Anxiety disorder is the most common mental disease in the world. Population-based studies showed that the rate of occurrence of this condition throughout life is 33.7% [13]. Studies in various countries identified that anxiety disorders are more common in doctors and medical students than in the general population [14].

In light of this information, healthcare personnel have serious concerns about their work environments after the declaration of the COVID-19 pandemic in the world. Particularly in hospital environments, the fact that the possible and doubtful contact cases are first evaluated in emergency services can pose serious concerns for the healthcare staff working in emergency services.

Materials and Methods

The Ethics Committee of Non-Interventional Clinical Research at Kütahya University of Health Sciences Rectorate approved the study. Before starting the survey, a preliminary information form was created for all participants, and verbal informed consent was obtained from them. Participants were allowed to terminate the survey at any time. The survey forms were anonymous, and the confidentiality of the information was ensured.

This is a cross-sectional online survey involving healthcare personnel working in emergency services in Turkey between May 15 and June 15, 2020. During this period, the Ministry of Health stated that the total number of confirmed COVID-19 cases

in Turkey had exceeded 190,000. This study was carried out nationwide; thus, there was no regional division. An invitation was sent to all healthcare staff working in emergency services throughout the country without choosing any hospital in particular, and they were asked to complete the questionnaire. The following formula was used to determine the sample size: $N = Z\alpha^2P(1-P)/d^2$. For this formula, $\alpha = 0.05$ and $Z\alpha = 1.96$, and the acceptable error margin for d was calculated as 0.1. Based on a similar study conducted during the SARS epidemic, the proportion of healthcare staff whose psychological symptoms were detected was 35% [15].

In our study, we calculated the number of target participants as 856 by increasing the sample size by 40% to perform subgroup analysis.

The questionnaires included questions from the STAI (State-Trait Anxiety Inventory = Status Continuity Anxiety Inventory) anxiety scale as well as sociodemographic questions. This inventory was developed by Spielberger et al. (1970) and consisted of two subscales, continuity and status, each comprising 20 questions. It can be applied to individuals older than 14 years of age. The status anxiety subscale determines the feeling of an individual at a certain moment and in certain conditions, while the continuity anxiety subscale determines the feeling of an individual regardless of the situations and conditions. This scale provides a four-point Likert type measurement. One point indicates that the situation specified in the question does not reflect the participant's feelings at all; four points imply that the situation specified in the question completely reflects the participant's feelings. The total score of the scale ranges between 20 and 80. A high score indicates a high level of anxiety [16].

Demographics were classified as follows: gender, age, marital status, level of education, family income level, time in service, working status, occupational group, family type, presence and number of children, working mode, and work location. This study was approved by the local ethics committee (This study has approval from Kütahya Medical Sciences University Medical Faculty Ethics Committee (approval date and number: 11 May 2020, 2020-08/11)).

Data analysis was performed using Statistical Package for Social Sciences (SPSS) 25.0 software. Numerical variables were given as mean \pm standard deviation (mean \pm SS), while categorical variables were provided in percentage. Mann-Whitney U test was performed for nonparametric data and Kruskal-Wallis test to compare the severity of both symptoms among two or more groups. Multivariate logistic regression analysis was carried out to identify the potential risk factors for anxiety symptoms in the participants. The relationships between risk factors and their consequences were specified as rates (ORs) and 95% CI.

Results

Demographic characteristics

A total of 1033 emergency service field staff participated in our study, among which 1014 completed the questionnaire. Most of the respondents were male (511 [54.3%]); fell in the 18–29 age group (419 [41.3%]); were married (612 [60.4%]); had an undergraduate and master's degree (695 [68.5%]); had an income of \geq TL 3001 (917 [90.4%]); were in service for at least 121 months

(435 [42.9%]); worked as a permanent staff (745 [73.5%]); were doctors (455 [44.9%]); had an elementary family (910 [89.7%]); had children (531 [52.4%]); worked on 24 h shifts (906 [89.3%]); and worked in the city center (643 [63.4%]) (Table 1).

Measurement scores and related factors

Mean STAI-I total scores were investigated in terms of

sociodemographic characteristics, and it was found that gender, age, education, income level, and working mode did not present a statistically significant difference between their corresponding subcategories. However, marital status, service time, occupation group, family type, number of children, and work location showed a statistically significant difference between their corresponding subgroups (Table 1).

Table 1. Demographic characteristics

Characteristics	Subgroups	n (%)	STAI-I (x ± SD)	STAI (t/F, p)
Gender	Male	551 (54.3)	39.84 ± 4.70	t = 1.612
	Female	463 (45.7)	39.38 ± 4.41	p = 0.107
Age group	18–29	419 (41.3)	39.93 ± 4.82	F = 1.792
	30–39	416 (41.0)	39.5 ± 4.34	p = 0.167
	≥40 years	179 (17.7)	39.22 ± 4.50	
Marital status	Married	612 (60.4)	39.30 ± 4.33	F = 4.201.
	Bachelor	366 (36.1)	40.18 ± 4.93	p = 0.015*
	Widow/ Divorced	36 (3.6)	39.66 ± 4.39	
Education	Primary school	9 (0.9)	40.88 ± 5.08	
	High School/Vocational High School	114 (11.2)	40.00 ± 5.01	F = 0.667
	Associate Degree	196 (19.3)	39.77 ± 4.74	p = 0.572
	Bachelor/Master's Degree	695 (68.5)	39.52 ± 4.45	
Income level	1000–2000 TL	17 (1.7)	37.47 ± 4.33	F = 1.940
	2001–3000 TL	80 (7.9)	39.70 ± 5.13	p = 0.1144
	3000 TL and above	917 (90.4)	39.67 ± 4.52	
Service time	0–60 Months	325 (32.1)	40.02 ± 4.71	F = 2.701
	61–120 Months	254 (25)	39.13 ± 4.28	p = 0.068**
	≥121 Months	435 (42.9)	39.63 ± 4.62	
Working status	Staffed	745 (73.5)	39.75 ± 4.51	t = 1.420
	Contractual	269 (26.5)	39.29 ± 4.75	p = 0.156
Occupational group	Doctor	455 (44.9)	39.21 ± 4.30	
	Health Officer	58 (5.7)	39.44 ± 5.56	
	Nurse	156 (15.4)	40.82 ± 4.85	
	Midwives	10 (1.0)	39.50 ± 3.86	
	Emergency Medical Technician	208 (20.5)	39.90 ± 4.40	F = 3.261
	Paramedic	30 (3.0)	41.56 ± 5.25	p = 0.001*
	Secretary	50 (4.9)	38.26 ± 4.71	
	Security	6 (0.6)	40.83 ± 6.24	
	Ambulance Driver	19 (1.9)	37.73 ± 3.29	
Family type	Core Family	910 (89.7)	39.73 ± 4.63	t = 2.348
	Large Family	104 (10.3)	38.75 ± 3.99	p = 0.020*
Number of children	No children	478 (47.1)	40.26 ± 4.80	F = 9.307
	1–2	485 (47.8)	39.00 ± 4.27	p = 0.000 *
	≥3 and above	51 (5.0)	39.76 ± 4.49	
Working mode	With a 24 h shift	906 (89.3)	39.69 ± 4.63	T = 1.210
	Without 24 h shift	108 (10.7)	39.12 ± 4.09	p = 0.226
Work location	City center	643 (63.4)	39.83 ± 4.60	t = 1.787
	District center	371 (36.6)	39.29 ± 4.51	p = 0.074 **

SD: standart deviation, *:p < 0.05, **:p < 0.10

Table 2. The factors for anxiety identified by multivariate logistics regression analysis

Characteristics	OR	95% CI	Significance
Gender (Female)	1.505	1.137 -1.991	0.004
Occupational group (Midwives)	3.018	1.011 -9.015	0.048
Occupational group (Emergency Medical Technician)	7.420	1.090-50.533	0.041
Family type (Large Family)	1.694	1.060 -2.706	0.027
Number of children (1-2)	1.286	0.849– 2.157	0.037
Number of children (≥ 3 and above)	0.548	0.287 -1.047	0.068
Work location (District center)	1.438	1.066 -1.939	0.017

OR: odds ratio; CI: confidence interval

A comparison of the statistically significant groups revealed that the unmarried participants had a higher anxiety rate compared to other groups ($p = 0.015$). Further analysis showed that the group with an occupational experience of 0–60 months ($p = 0.068$), the group consisting of paramedics, nurses, and security guards ($p = 0.001$), the group with an elementary family ($p = 0.020$), the group without children ($p = 0.000$), and the group working in the town center ($p = 0.074$) experienced high anxiety during the pandemic according to the STAI scale.

Risk factors of anxiety

We defined the threshold level for anxiety as 40 in the STAI scale while evaluating the risk factors in multivariate logistics regression analysis. Accordingly, we detected anxiety in 48.6% ($n = 493$) of the 1014 participants, whereas 51.4% ($n = 521$) did not demonstrate anxiety. We also identified the following as risk factors in the emergence of anxiety symptoms: being a female (OR, 0.50; 95% CI, 1.09–50.53; $p = 0.041$); working as an emergency medical technician (OR, 7.42; 95% CI, 1.09–50.53; $p = 0.041$); having a large family (OR, 1.69; 95% CI, 1.06–2.70; $p = 0.041$); having less number of children (OR, 1.28; 95% CI, 0.84–2.15; $p = 0.068$); and working in a town center (OR, 1.43; 95% CI, 1.06–1.93; $p = 0.017$) (Table 2).

Discussion

This cross-sectional survey was completed with the participation of 1014 individuals. We detected a significant anxiety rate among the healthcare workers who have been dealing with COVID-19 patients at the frontline in Turkey (48.6%, $n = 493$). We calculated the mean STAI score to be 39.63. Studies that claim a high level of anxiety for scores >40 exist in literature [17]. When compared with the previous studies, especially those carried out during pandemic periods, we found that the anxiety scores of the health workers were higher than those at normal times [18-20]. Uncertainty during the pandemic can be claimed as the reason for the higher anxiety scores.

Previous studies showed that anxiety, depression, and insomnia symptoms were more likely to occur in women than in men (1). Our study also found that females had higher anxiety symptoms than males (OR, 1.50; 95% CI, 1.13–1.99; $p = 0.004$). This observation can be explained by the fact that women have a higher

level of general anxiety and a greater focus on their emotions than men. We found that the occurrence rate of anxiety symptoms was less in the age group of 30–39, which can be described as middle-age when compared to other age groups. There are varying results in the literature in terms of age groups [21].

Doctors were observed to have the highest level of stress according to previous studies [22-24]. In the present study, however, we found that midwives and emergency medical technicians had higher incidence rates of anxiety symptoms than the other groups. This finding can be explained by the fact that these staffs are in close contact with the COVID-19 patients for long hours. There was a significant difference between the anxiety status of those who had direct contact with the COVID-19 patients and those who did not. This finding can be considered as an explanatory correlation between the epidemic and the anxiety situation, which constituted one of the objectives of the present study.

The correlation between the family type and the anxiety symptoms was investigated, and we found that it is more likely for people who live with the elders in a large family to develop anxiety symptoms. A possible explanation might be the fear of the participants that their families can be affected by the pandemic since people in the advanced age group generally have a higher likelihood of developing chronic diseases.

The work location-based analysis indicated that the participants working in the town center are more likely to develop anxiety symptoms than those working in the city center. We think that city centers have more alternatives for both protective equipment and treatment services than the town centers.

Conclusion

The likelihood of developing anxiety symptoms in the participants was 48.6%. Our findings showed that the COVID-19 pandemic significantly affects the mental health of individuals. Besides, we also found that females, occupational group working at the frontline, participants with a large family, and the group working in the district center were more affected than the others.

The high level of anxiety is a public health issue that needs to be investigated as it can adversely affect an individual's success and efficiency as well as pose serious psychological and social

problems. The anxiety experienced by the healthcare staff is a significant problem, especially in terms of being at the frontline during the pandemic. Based on the findings, it could be inferred that administrative reforms are needed to provide psychological support and improve the working conditions.

Conflict of interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Financial Disclosure

All authors declare no financial support.

Informed consent

Informed consent was obtained from the participants or their legally authorized representatives.

Ethical approval

This study was approved by the local ethics committee (This study has approval from Kutahya Medical Sciences University Medical Faculty Ethics Committee (approval date and number: 11 May 2020, 2020-08/11). Human rights statement: The study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki.

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