

An Examination of the Factors Related to Depression, Anxiety, and Stress During the COVID-19 Pandemic in Radiology Technicians*

Radyoloji Teknisyenlerinde COVID-19 Salgını Sırasında Depresyon, Anksiyete ve Stresle İlişkili Faktörlerin İncelenmesi

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ABSTRACT

Aim: The aim of this cross-sectional study was to examine the relationships between depression, anxiety, stress and social support and stress coping variables in radiology technicians during the COVID-19 period.

Method: The study data were obtained from 429 individuals registered with the Turkish Medical Radiotechnology Association between 01.03.2021 and 01.05.2021. The Depression Anxiety Stress Scale (DASS), the Multi-dimensional Perceived Social Support Scale, the Coping with Stressful Situations Inventory-Short Form (CISS-SF), and the Work and Personal Characteristics Information Form were used in this study. Descriptive statistics, correlation analysis, and regression analysis were used to evaluate the data.

Results: In the study, negative significant relationships were determined between depression, anxiety, stress and social support sub-dimensions. Positive significant relationships were found between depression, anxiety, stress, and "emotion-oriented coping". At the same time, positive significant relationships were found between anxiety, stress, and "avoidance coping". It has been determined that the factors affecting depression and stress are only "significant other" in the dimension of social support, and "emotion-oriented coping" in the dimensions of coping with stress. Among the factors affecting anxiety, it was observed that only "friend" in the dimension of social support and "emotion-oriented coping" from the dimensions of coping with stress.

Conclusion: The negative relationships between depression, anxiety, and stress with social support and coping strategies during the COVID-19 period emphasize the importance of social support systems and effective coping methods in strengthening mental health.

Keywords: COVID-19, Depression, Anxiety, Social support, Mental health, Radiology technician

ÖZ

Amaç: Bu kesitsel çalışmanın amacı, COVID-19 döneminde radyoloji teknisyenlerinde depresyon, anksiyete, stres ile sosyal destek ve stresle başa çıkma değişkenleri arasındaki ilişkileri incelemektir.

Yöntem: Çalışma verileri 01.03.2021-01.05.2021 tarihleri arasında Türk Medikal Radyoteknoloji Derneği'ne kayıtlı 429 kişiden elde edilmiştir. Araştırmada Depresyon Anksiyete Stres Ölçeği (DASS), Çok Boyutlu Algılanan Sosyal Destek Ölçeği, Stresli Durumlarla Başa Çıkma Envanteri-Kısa Form (CISS-SF) ve İş ve Kişisel Özellikler Bilgi Formu kullanılmıştır. Verilerin değerlendirilmesinde tanımlayıcı istatistikler, korelasyon analizi ve regresyon analizi kullanılmıştır.

Bulgular: Çalışmada depresyon, anksiyete, stres ile sosyal destek alt boyutları arasında negatif yönde anlamlı ilişkiler belirlenmiştir. Depresyon, anksiyete, stres ile "duygusal başa çıkma" arasında pozitif yönde anlamlı ilişkiler bulunmuştur. Aynı zamanda anksiyete, stres ve "kaçınmacı başa çıkma" arasında pozitif yönde anlamlı ilişkiler bulunmuştur. Depresyon ve stresi etkileyen faktörlerin yalnızca sosyal destek boyutunda "özel insan", stresle başa çıkma boyutlarında ise "duygusal başa çıkma" olduğu belirlenmiştir. Anksiyeteyi etkileyen faktörler arasında sosyal destek boyutunda sadece "arkadaş", stresle başa çıkma boyutlarından ise "duygusal başa çıkma" faktörlerinin yer aldığı görülmüştür.

Sonuç: COVID-19 sürecinde depresyon, anksiyete ve stres ile sosyal destek ve başa çıkma stratejileri arasındaki olumsuz ilişkiler, ruh sağlığının güçlendirilmesi açısından sosyal destek sistemlerinin ve etkili başa çıkma yöntemlerinin önemini ortaya koymaktadır.

Anahtar Kelimeler: COVID-19, Depresyon, Anksiyete, Sosyal destek, Ruh sağlığı, Radyoloji teknisyeni

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Introduction

The COVID-19 pandemic has presented immense challenges to healthcare systems worldwide. It has led to severe health crises on a global scale, causing widespread economic and social disruptions. The pandemic placed significant strain on healthcare systems, driving up the demand for medical services and substantially increasing the workload of healthcare personnel. As a result, healthcare workers experienced profound mental, physical, and social impacts.¹⁻⁴ Healthcare workers had to deal more with patients infected with the virus in hospitals at that time. It has been suggested that depression was a common mental health problem for healthcare workers during the COVID-19 pandemic, and that frontline workers in particular were much more affected.^{1,5,6} Reasons such as a family member contracting the virus, rising death rates due to the virus, inadequate or insufficient personal protective equipment, and prolonged close contact with patients have been identified in the literature as factors contributing to stress among healthcare workers, increasing burnout, and leading to depression and anxiety.^{5,7-10}

Therefore, the provision of psychological support has been recommended to protect healthcare workers against depression, anxiety, and stress.¹¹ Both the challenges imposed by the crisis and the health policies implemented (eg., the forbidding of resignations, excessive workload, inadequate institutional precautions) made life extremely difficult for healthcare workers, and this was exacerbated by the loss of lives during the pandemic.¹² To cope with problems such as depression, stress, and anxiety in extraordinary conditions such as a pandemic or crisis, social support and stress interventions have been shown as coping mechanisms in literature.

Coping with problems alone under destructive living conditions requires help and support from others.¹³ Emotion-oriented coping is an important mechanism in adapting to the uncertainties created by the COVID-19 pandemic in every area of daily life. As the problem becomes uncontrollable in emotion-oriented coping, a defence mechanism is developed by changing the way of thinking and the perception of the situation and the feelings of the individual. In addition, the use of task-oriented coping is important to learn and adopt behaviours which will be able to prevent the spread of the fatal and highly infectious virus. Here, the individual focusses on identifying the problem, forming new solutions, and selecting the most appropriate of these by evaluating the alternatives in respect of costs and benefits.^{14,15}

Radiological examinations play an important role in the diagnosis and treatment of suspected or definitively diagnosed COVID-19 patients.^{16,17} Radiology technicians have a key role in the diagnosis and treatment of COVID-19 as frontline healthcare workers in direct interaction with patients.¹⁸ The nature of the work means that radiology technicians are working with radiation and radioactive materials. They are more exposed to and more affected by radiation than other professional groups. In addition to this risk, radiology technicians have been extremely negatively affected by COVID-19.

During the pandemic, a series of regulations related to employees and working conditions were implemented at both the institutional level and the state level. Some of these precautions were the postponement of non-emergency procedures in radiology units, and precautions to reduce the high risk of infection in interventions to be applied to COVID-19 patients, including not remaining in the same closed environment for more than 15 minutes, and maintaining a distance of at least 2 metres.^{19,20} In another study in the USA of 689 radiologists in 44 states, the anxiety levels related to COVID-19 of 61% of the participants were rated as $\geq 7/10$.²¹ The aim of this cross-sectional study was to determine the factors affecting the depression, anxiety, and stress levels of radiology technicians during the COVID-19 pandemic in Turkey.

Material and Methods

The study universe consisted of 2042 radiology technicians registered in the Turkish Medical Radiotechnology Association. Sample size for the research was calculated to be 324 subjects, using the openEpi version 3 program with 50% frequency, 95% confidence interval, and ± 5 error.²² To evaluate the applicability of the data collection tools, a pilot study was first conducted with 15 radiology technicians working in the Radiology Department of Mersin University Medical Faculty Hospital, who were not included in the main study. As a result of the pilot study, some adjustments were made to the data collection form.

The study data were collected using an online data collection form between 01.03.2021 and 01.05.2021. A total of 442 radiology technicians participated in the study, and after the exclusion of 13 questionnaires that were not fully completed, the analyses were applied to 429 questionnaires.

Data collection tools

The Depression Anxiety Stress Scale (DASS), the Multi-dimensional Perceived Social Support Scale, the Coping with Stressful Situations Inventory-Short Form (CISS-SF), and the Work and Personal Characteristics Information Form were used in this study.

Work Characteristics and Personal Information Form: This form was used to collect information including age, gender, marital status, working hours per week, problems encountered in the institution where the subjects worked, and type of violence to which they had been subjected.

Depression Anxiety Stress Scale: This scale, developed by Lovibond and Lovibond (1995), is formed of a total of 42 statements, as 14 related to depression, 14 to anxiety, and 14 to stress. High points obtained in any of the depression, anxiety, and stress sections show that the individual has this problem. The participants were instructed to complete the scale by considering how each of the items applied to their own situation in the last week. The items are evaluated with 4-point Likert-type responses; 0=does not apply to me at all, 1= sometimes applies to me, 2= generally applies to me, 3= completely applies to me.²³ Validity and reliability studies of the scale in Turkish were performed by Akın and Çetin (2007).²³

Multi-dimensional Perceived Social Support Scale: This scale was developed by Zimet, Dahlem, Zimet and Farley in 1988 to evaluate the perceptions of social support. Reliability and validity studies of this scale in Turkish were performed by Eker, Arkar and Yaldız.²⁴ The scale consists of 12 items in 3 dimensions of family (4 items), friends (4 items) and significant other (4 items). The responses are graded from 1-7 where 1 = definitely no and 7= definitely yes. Higher points obtained on the scale indicate a high level of perceived social support, and low points that support is not perceived or that support is low or absent.²⁴

Coping Inventory for Stressful Situations -Short Form: To determine the methods used by the study participants to cope with stressful situations, the CISS-SF was used. This inventory, which was developed to be able to evaluate generally preferred coping styles, consists of 21 items in 3 sub-dimensions of emotion-oriented coping, task-oriented coping, and avoidance coping. The 7 items in each sub-dimension are scored with 5-point Likert-type responses from 1= definitely does not apply to me to 5= completely applies to me.²⁵ Reliability and validity studies of this scale in Turkish were performed by Boysan (2012).²⁵

Statistical Analysis

Data obtained in the study were analyzed using demo version of spss package program. In the evaluation of the conformity of continuous variables to normal distribution, decisions were made according to skewness values between -1.64 and 0.21 and kurtosis values of 0.90 -0.17. For continuous variables showing normal distribution, descriptive statistics were stated as mean \pm standard deviation (SD) values, and categorical variables as number (n) and percentage (%). Correlation coefficients were obtained in the calculation of the

relationships between continuous variables, and these were used in multivariate regression analysis. A value of $p < 0.05$ was accepted as statistically significant.

Approval for the study was granted by the Human and Social Sciences Ethics Committee of Mersin University (Date 03.02.2021, No: 2021/02) and permission for the research was obtained from the Turkish Medical Radiotechnology Association. Informed consent for participation in the study was provided by all the study participants.

Results

The 429 study participants comprised 57.1% males and 42.9% females with a mean age of 32.3 ± 8.8 years (range, 21-59 years), and 50.1% were single. The hours of working in the radiology department were reported as mean 39.8 ± 7.2 hours per week (range, 19-66 hours), and the mean duration of working in the department was 10.3 ± 8.3 years (range, 1-39 years).

Almost half ($n:212$, 49.4%) of the radiology technicians in this study reported that they had been subjected to violence during the pandemic. The types of violence were stated to be emotional violence by 146 (68.9%), economic violence by 132 (62.2%), and verbal violence by 102 (48.1%). The most important factors creating stress for the radiology technicians were determined to be fear of spreading the COVID-19 virus to parents /other family members (90.4%), fear of losing a family member (75.6%), and not being able to meet the social needs of the family (56.2%) (**Table 1**).

Table 1. Exposure to violence in their place of residence (neighbourhood, housing complex, etc) during the COVID-19 pandemic and factors creating stress

Violence	n	%
I have been subjected to violence	212	49.4
I have not been subjected to violence	217	50.6
Types of Violence		
Emotional violence	146*	68.9
Economic violence	132*	62.2
Verbal violence	102*	48.1
Physical violence	16*	7.6
Factors causing stress		
Fear of spreading the COVID-19 virus to parents /other family members	388**	90.4
Fear of losing a family member	325**	75.6
Not being able to meet the social needs of the family	241**	56.2
Being separated and not able to see the family	238**	55.5
Fear of contracting the virüs	217**	50.6
Fear on infecting patients with the virüs	204**	47.6
Fear of death	127**	29.6

* Number within the total 212 cases who reported violence

** Number within the total 429 respondents

Problems in the workplace during the COVID-19 pandemic were reported as insufficient ventilation by 20.6% of the radiology technicians, insufficient personal protective equipment by 20.5%, administration problems by 19.8%, and long working hours by 16.3% (**Table 2**).

Table 1. Problems encountered in the workplace during the COVID-19 pandemic

	n	%
Insufficient ventilation in the workplace	198	20.6
Insufficient personal protective equipment	197	20.5
Administration problems	190	19.8
Long working hours	156	16.3
Food and accommodation	140	14.7
A lack of specific diagnosis, treatment protocols, and training materials	78	8.1
Total	959*	100.0

* Multiple responses were given

The correlations between the Depression, Anxiety, Stress scores and other variables were analyzed. According to the results of the correlation analyses, significant low-level negative correlations were determined between depression and the social support dimensions (family: $r=-0.207$, $p<0.01$; friends: $r=-0.216$, $p<0.01$; significant other: $r=-0.236$, $p<0.01$). A significant moderate-level positive correlation was determined between depression and the emotion-oriented coping sub-dimension ($r=0.439$, $p<0.01$) (**Table 3**).

Table 2. Reliability scores of the correlations between variables

	Cronbach Alpha	Mean ± SD	Depression	Anxiety	Stress
DASS					
Depression	0.93	14.70±11.48	1		
Anxiety	0.93	11.38±9.39	0.832**	1	
Stress	0.95	16.96±10.89	0.880**	0.837**	1
Social support					
Family	0.95	21.55±7.34	-0.207**	-0.200**	-0.116*
Friends	0.94	20.62±7.03	-0.216**	-0.224**	-0.135**
Significant other	0.95	19.52±8.05	-0.236**	-0.174**	-0.191**
CISS-SF					
Emotion-oriented coping	0.86	19.49±6.64	0.439**	0.459**	0.447**
Task-oriented coping	0.90	24.19±6.53	-0.041	-0.027	0.01
Avoidance coping	0.80	19.99±6.27	0.081	0.160**	0.128**
Working Life					
Working hours per week		39.8±7.2	0.11*	0.11*	0.11*

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

The Cronbach's alpha values for the variables were found to be between 0.80 and 0.90. Significant low-level negative correlations were determined between anxiety and the social support dimensions (family: $r=-0.200$, $p<0.01$; friends: $r=-0.224$, $p<0.01$; significant other: $r=-0.174$, $p<0.01$). A significant low-level positive correlation was determined between anxiety and the coping with stress sub-dimensions of emotion-oriented coping ($r=0.459$, $p<0.01$) and avoidance coping ($r=0.160$, $p<0.01$).

Significant low-level negative correlations were determined between stress and the social support dimensions (family: $r=-0.116$, $p<0.05$; friends: $r=-0.135$, $p<0.01$; significant other : $r=-0.191$, $p<0.01$). A significant low-level positive correlation was determined between stress and the emotion-oriented coping sub-dimension($r=0.447$, $p<0.01$) and avoidance coping ($r=0.128$, $p<0.01$). As the working hours per week increased for the radiology technicians, so the depression, anxiety, and stress levels were determined to increase (**Table 3**).

Multivariate regression analysis was performed to determine the effect on depression of the sub-dimensions of social support and coping with stress variables. The regression model established was seen to be significant ($F=25.233$, $p=0.001$). Of the variables included in the model, “significant other” and “emotion-oriented coping” were determined to be significantly predictive of depression and explained 26% of the total change in depression. As support from a significant other increased, so the level of depression decreased, and with an increase in the emotion-oriented coping sub-dimension points, the level of depression was seen to increase ($p<0.05$). The variable of “emotion-oriented coping” was seen to make the greatest contribution to the model (std. $\beta= 0.466$). Thus it can be said that rather than solving the problem, it was seen as emotional and no effort was made to solve it (**Table 4**).

Table 3. Factors affecting the level of depression of the radiology technicians

	Non-standardised coefficients		Standardised coefficients			Correlations		Collinearity statistics	
	Beta (β)	Std. Error	Beta (β)	t	p	Paired r	Partial r	Tolerance	VIF
Constant	9.810	2.297		4.272	0.001				
Family	-0.054	0.115	-0.035	-0.475	0.635	-0.207	-0.023	0.324	3.089
Friends	-0.135	0.124	-0.083	-1.090	0.277	-0.216	-0.053	0.304	3.289
Significant other	-0.202	0.090	-0.141	-2.249	0.025*	-0.236	-0.109	0.441	2.267
Emotion-oriented coping	0.805	0.080	0.466	10.059	0.001*	0.439	0.440	0.812	1.231
Task-oriented coping	-0.095	0.094	-0.054	-1.005	0.315	-0.041	-0.049	0.605	1.654
Avoidance coping	-0.031	0.101	-0.017	-0.309	0.757	0.081	-0.015	0.571	1.751

R= 0.514; R²= 0.264
 F(6.422)= 25.233; p= 0.001
 Durbin-Watson= 1.927

The results of the regression analysis performed to determine the independent variables explaining anxiety are shown in Table 5. The multivariate regression model established was seen to be significant (F=27.122, p=0.001). The independent variables in the model explained 28% of the total change in the variable of anxiety (**Table 5**).

Table 4. Factors affecting the level of anxiety of the radiology technicians

	Non-standardised coefficients		Standardised coefficients			Correlations		Collinearity statistics	
	Beta (β)	Std. Error	Beta (β)	t	p	Paired r	Partial r	Tolerance	VIF
Constant	6.099	1.861		3.278	0.001				
Family	-0.072	0.093	-0.056	-0.774	0.439	-0.200	-0.038	0.324	3.089
Friends	-0.256	0.100	-0.192	-2.557	0.011*	-0.224	-0.124	0.304	3.289
Significant other	-0.003	0.073	-0.002	-0.040	0.968	-0.174	-0.002	0.441	2.267
Emotion-oriented coping	0.637	0.065	0.451	9.824	0.001*	0.459	0.431	0.812	1.231
Task-related coping	-0.123	0.076	-0.085	-1.604	0.109	-0.027	-0.078	0.605	1.654
Avoidance coping	0.136	0.082	0.091	1.659	0.098	0.160	0.081	0.571	1.751

R= 0.528; R²= 0.278
 F (6.422)= 27.122; p= 0.001
 Durbin-Watson= 1.797

Of the independent variables in the model, the “friends” variable from the social support scale and the “emotion-oriented coping” variable from the coping with stress inventory were found to make a statistically significant contribution to the model (p<0.05). As support from a friends increased, so the level of anxiety decreased, and with an increase in the emotion-oriented coping sub-dimension points, the level of anxiety was seen to increase (p<0.05). The study participants reported that it was not possible to cope with the pandemic and they tended to see it as an emotional problem. The variable of “emotion-oriented coping” was seen to make the greatest contribution to the model (std. β= 0.451) (**Table 5**).

The results of the regression analysis performed to determine the independent variables explaining stress are shown in Table 6. The multivariate regression model established was seen to be significant (F=22.390,

p=0.001). The independent variables in the model explained 24% of the total change in the variable of stress (**Table 6**).

Table 5. Factors affecting the stress levels of the radiology technicians

	Non-standardised coefficients		Standardised coefficients		Correlations		Collinearity statistics		
	Beta (β)	Std. Error	Beta (β)	t	p	Paired r	Partial r	Tolerance	VIF
Constant	8.921	2.213		4.031	0.001				
Family	0.063	0.111	0.043	0.572	0.568	-0.116	0.028	0.324	3.089
Friends	-0.053	0.119	-0.034	-0.447	0.655	-0.135	-0.022	0.304	3.289
Significant other	-0.257	0.086	-0.190	-2.972	0.003*	-0.191	-0.143	0.441	2.267
Emotion-oriented coping	0.754	0.077	0.460	9.776	0.001*	0.447	0.430	0.812	1.231
Task-oriented coping	-0.084	0.091	-0.051	-0.930	0.353	0.010	-0.045	0.605	1.654
Avoidance coping	0.006	0.097	0.004	0.066	0.947	0.128	0.003	0.571	1.751

R= 0.491; R²= 0.241
 F (6.422) = 22.390; p= 0.001
 Durbin-Watson= 1.912

Of the independent variables in the model, the “significant other” variable from the social support scale and the “emotion-oriented coping” variable from the coping with stress inventory were found to make a statistically significant contribution to the model (p<0.05). As support from a significant other increased, so the level of stress decreased, and with an increase in the emotion-oriented coping sub-dimension points, the level of stress was seen to increase (p<0.05). These results suggested that to reduce the level of stress, the study participants saw the problem as an emotional problem (**Table 6**).

Discussion

In the modern world, all countries are affected by viruses. It is not possible to combat a virus successfully at an individual, societal, or national level alone. In this case, for an individual to overcome the problem, sources of social support are required and feelings attributed to the situation need to be changed. Evaluating the situation from a different perspective will reduce levels of stress and anxiety and allow the individual to feel better. As healthcare workers encountered restrictions to prevent the spread of COVID-19 even in their daily life, this strong external pressure forced them to adopt an emotion-oriented coping strategy. Rather than seeking a solution to the problem, subjective feelings are focussed in an emotion-oriented coping strategy.²⁶⁻²⁸

It has been suggested in literature that when an individual cannot control a problem or situation, they use emotion-oriented coping, and rather than changing the reality, try to change their feelings and attitudes related to the stress.²⁹ The current study, in which the factors affecting depression, anxiety, and stress in radiology technicians during the COVID-19 pandemic were examined, is one of very few such studies in literature.

From the study results it was determined that almost half of the radiology technicians were subjected to violence during the pandemic, the most frequent types of which were emotional and economic violence. In a previous study in the USA, it was stated that healthcare workers are at high risk, and hospital managers suggested that during the COVID-19 pandemic healthcare workers were attacked and threatened more than ever.^{30,31} It has also been suggested in another study that patients deliberately coughed or spat in the faces of healthcare workers as they believed the virus to have been spread by them.³² The International

Red Cross Committee reported that healthcare workers were subjected to more than 600 incidents of violence, harassment, or stigmatisation during the COVID-19 pandemic. Therefore, 13 humanitarian organisations have called on governments to implement laws, provide safer working environments and mental health support, and combat misinformation.³³

In the current study, the most important problems encountered in the workplace by radiology technicians were determined to be insufficient ventilation, insufficient personal protective equipment, and administrative problems. The use of personal protective equipment is one of the most important tools in combatting a pandemic. It has been reported in literature that healthcare workers had problems in accessing personal protective equipment during the COVID-19 pandemic, and this caused anxiety.³⁴⁻³⁷ The results of the current study were in parallel with these findings. In a study of 364 employees in the radiology units of 32 state hospitals in China, age, job, insufficient personal protective equipment, the presence of suspicious symptoms, and sensitivity to the feelings and behaviour of the people around were determined to be significant variables affecting anxiety.³⁸

Increased working hours are evaluated as a psychosocial risk factor for healthcare workers.³⁹ In the current study, there was a significant positive correlation between weekly working hours and depression, anxiety, and stress and it was determined that as the number of hours worked per week increased, so the depression, anxiety and stress points increased. There are other studies in literature supporting these results.^{40,41}

In the current study, negative significant correlations were determined between the dependent variable of depression and the social support sub-dimensions of family, friends, and significant other, and a positive significant correlation was determined between depression and the coping with stress sub-dimension of emotion-oriented coping. As a result of the regression analyses, depression was determined to be affected negatively by the social support sub-dimension of support from a significant other, and positively by emotion-oriented coping. These results demonstrate that with support from a significant other, emotional avoidance can lower the depression level of the individual. There are other studies in literature proving that social support decreases depression levels. When it is considered that during the pandemic, healthcare workers were separated from those who could provide social support, the finding that depression increased with a decrease in social support becomes clearer.⁴²⁻⁴⁴ In a study from Jordan of healthcare workers dealing with the COVID-19 pandemic, it was emphasised that social support was provided by family and friends.⁴⁵ That social support has a protective effect against mental health problems has been shown in various studies.² In another study, there was determined to be a moderate-level positive correlation between depression and emotion-oriented coping.⁴⁶

According to the correlation analysis results of the current study, there were determined to be significant negative correlations between the level of anxiety and the social support sub-dimensions of family, friends, and significant other, and significant positive correlations between anxiety and the coping with stress sub-dimensions of emotion-oriented coping and avoidance coping. The regression analysis results showed that the level of anxiety was significantly affected by the friends sub-dimension of social support and the coping with stress sub-dimension of emotion-oriented coping. Perceived support from a friends and emotionally avoiding the pandemic problem greatly affected the level of anxiety. The increase in patient numbers and excessive workload during the pandemic caused the healthcare workers to spend less time with their families. As the healthcare workers had to spend the vast majority of their time in the hospital, the most important people from whom they could get support were work colleagues. In the current study, it was seen that as the support from friends increased, so anxiety decreased. An individual can obtain more meaningful support from another person who has similar concerns. In literature, it has been stated that

friends and peer support was important in protecting mental health (against anxiety and stress) during the pandemic, and seemed to perform a buffer function.^{47,48}

In the current study of radiology technicians, the correlation analysis results showed a negative correlation between stress and the social support sub-dimensions of family, friends, and significant other, and positive correlations between stress and the coping with stress sub-dimensions of emotion-oriented coping and avoidance coping. According to the regression analysis, stress was determined to be significantly affected by the social support sub-dimension of significant other and the coping with stress sub-dimension of emotion-oriented coping. In other words, with support from a significant other, emotional avoidance of the problem can lower the stress level of the individual. Decreasing social support has been determined to increase the stress level of healthcare workers. A previous study in Turkey reported that social support from family, friends, or a significant other was important for nurses during the COVID-19 pandemic. It was emphasized in that study that social support from the family was more effective than support from other sources.⁴⁹ A qualitative study of emergency healthcare workers in Pakistan applied religious coping strategies to cope with stress and anxiety originating from the COVID-19 pandemic.⁵⁰ In another study, it was reported that task-oriented coping was applied to work-related task and emotion-oriented coping to health-related problems.⁵¹

Limitations

There were some limitations to this study, primarily that it only included radiology technicians registered with the Turkish Medical Radiotechnology Association, and this limits the generalisation of the results. Another limitation could be said to be that the scales were completed online rather than in face-to-face interviews.

Conclusion

The findings obtained in this study included important findings on the subject of paying attention to the psychological well-being of radiology technicians. Hospital managers should provide psychological counseling services to support the psychological well-being of radiology technicians and other healthcare professionals, maintain work-life balance by regulating working hours, and increase anti-violence safety measures. Policymakers should organize stress coping trainings by developing national policies to protect the mental health of healthcare workers, improve working conditions and strengthen legal regulations to prevent violence against healthcare workers. Researchers, on the other hand, should examine the long-term psychological effects of the pandemic process by conducting studies comparing radiology technicians and other healthcare professionals, investigate the effectiveness of stress coping strategies and produce scientific data that will contribute to policy development.

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The authors declared no potential conflicts of interest.

Ethical Approval

Approval for the study was granted by the Human and Social Sciences Ethics Committee of Mersin University (Date 03.02.2021, No: 2021/02) and permission for the research was obtained from the Turkish Medical Radiotechnology Association. Informed consent for participation in the study was provided by all the study participants.

Author Contributions

Müge Bölükkaya: Concept, data collection, analyses and interpretation, literature search, writing-review.

Sabahattin Tekingündüz: Concept, design, supervision, analyses and interpretation, literature search, writing-review, editing.

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