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Assessment of Anxiety, Depression and Sleep Disorder Among Cardiology Physicians During COVID-19 Pandemic

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Abstract

Background: In this study, the anxiety levels and sleep qualities of cardiologists who continue to treat cardiac emergency patients in addition to their epidemic duties during the period when the COVID 19 pandemic was the most intense and the unknown was the most in our country.

Methods: This cross-sectional study included 347 cardiologists throughout Turkey from April 17 to 20, 2020. The research was conducted by means of a confidential on-line survey. The research used the Turkish versions of the 7-item Generalized Anxiety Disorder Scale, 7-item Insomnia Severity Index and 9 –item Patient Health Questionnaire.

Results: Of the total number of respondents, n= 193 (55.6 %) were aged 31 to 40 years and n= 84 (24.2%) were women. 79% of the participants were working in tertiary care centres where cardiac patients and covid patients were admitted and treated more. A considerable proportion of participants reported symptoms of anxiety (54.2 %), insomnia (44.1%), and depression (%71.1). Women cardiologist reported more severe degrees of all measurements of anxiety symptoms and depression symptoms than male cardiologists. Mean Generalized Anxiety Disorder scale scores among women vs male: 6.6 ± 3.5 vs 5.0 ± 4.3; $p = 0.005$; mean Insomnia Severity Index scores among women vs male doctors: 7.3±4.3   vs 6.9±4.6; $P > 0.05$; mean Impact of Event Scale–Revised scores among women vs male cardiologists: 8.0 ± 3.9 vs 6.8± 4.7; $p = 0.02$.

Conclusions: In this survey, during this outbreak most of the cardiologists were found to be mentally challenged while continuing their profession. Especially the anxiety and depression symptoms of female doctor are higher than their male counterparts. The anxiety and stress disorder created by this pandemic may have serious consequences in the future, especially for physicians in intensive branches such as cardiology, who have to serve large patient groups in like low and middle-income countries. It should not be ignored that female doctors working in these branches are more sensitive to burnout syndrome.

Introduction

The disease that acute respiratory distress syndrome caused by SARS-CoV2, a member of the Coronavirus family named COVID-19. This disease was first reported in Wuhan, China in December 2019. In the months that followed, this virus spread worldwide, causing an epidemic. The first case was detected on March 11, 2020 in our country and on the same day,

the World Health Organization defined COVID-19 disease as a pandemic. The characteristic of SARS-CoV2, which was defined for the first time in the Coronavirus family, it's rapid transmission rate and the problems experienced by the countries affected by the pandemic have affected the health workers mentally in our country. Prior to this, it is known that healthcare workers are at risk and healthcare workers who lost their lives due to the outbreaks of different Respiro

viruses occurring in different localizations in the world [1, 2]. The first scientific data and observations from China were very valuable in this sense because the COVID-19 pandemic has never been experienced before and it contains many unknowns and the whole medical world was following closely. Zhou F et al reported that advanced age as a risk factor for mortality in patients treated with COVID-19 in Wuhan [3]. However, it was also noted that hypertension, diabetes and coronary artery disease were the most frequently observed in patients. It was recognized in the same report that patients who died had significantly more hypertension. In many articles that were quickly accepted and published following this, it was pointed out that the presence of advanced age, hypertension, coronary artery disease is a risk factor for COVID-19 disease an even increases the risk of mortality [4]. During this period, the drugs used by heart patients were questioned and it was stated that some antihypertensive drug groups may pose risk in terms of SARS-CoV2. In the light of these developments, cardiology physicians, who already follow the risk groups specified for COVID-19 disease, have suddenly become physicians who play an active role in the process. This situation, all over the world and in our country has challenged cardiology physicians both academically and mentally. This study was aimed to evaluate depression symptoms and the anxiety levels of cardiologists in our country when the cases are at their most significant but the unknowns are highest.

Methods

The study was conducted between April 17 and April 20, 2020, when measures were taken at the highest level for pandemics in our country, and the cases were at the busiest period. There were more than 80,000 patients who were tested positive and more than 2,000 deaths caused by COVID-19 in the past period in Turkey. Only research assistants and specialist physicians working in the field of cardiology were included in this study. The research was conducted by means of a confidential online survey. All participants signed the informed consent and voluntarily filled out the survey form. In our study, it was aimed to evaluate the symptoms of depression, anxiety and insomnia among cardiology physicians who continue their services during this pandemic process. In this study, the Turkish versions of the 7-item Generalized Anxiety Disorder Scale (range, 0–21), 7-item Insomnia Severity Index (ISI; range, 0–28), and 9 –item Patient Health

Questionnaire (PHQ-9; range, 0-27) questionnaires were used [5–7]. In these measurement evaluations, the total scores are classified as follows: GAD-7, normal (0-4), mild (5-9), moderate (10-14), severe (15-21) anxiety; ISI, normal (0-7), subthreshold (8–14), moderate (15-21) and serious (22-28) insomnia; and PHQ-9, normal (0-4), mild (5-9), moderate (10-14) and serious (15-21) depression. These categories established in the literature. The demographic characteristics of cardiology physicians were questioned in the questionnaire. These include gender (male or female), age (20-25, 26-30, 31-40, 41-50, 51-65, >65 years), marital status, living with someone over the age of 65 years old and under the age of 18 years old, the type of hospital, accompanying any chronic disease that would pose a risk for COVID-19 disease and working position for COVID-19 pandemic outbreak. The names of the respondents were not asked. The study was approved by the Turkish Ministry of Health and Ufuk University ethics committees.

Statistical Analysis

Continuous study data were presented as the mean ± standard deviation. Categoric variables were presented as the number and percentage. The difference between the groups with respect to continuous variables was tested with Student's t-test or the Mann-Whitney U test, with the former being used for normally distributed variables and the latter for non-normally distributed ones. The difference with regard to categoric variables was tested using the chi-squared test. All statistical analyses were performed using SPSS package for Windows version 21 (SPSS Inc., Chicago, IL, USA). For all statistical analyses, p-value of < 0.05 was considered statistically significant.

Result

347 cardiology physicians participated in the study between April 17-April 20 2020. Of the participants 55.6% (n = 193) were between 31–40 yrs. of age, 24.2% (n = 84) of them were female and 73% (n = 254) of the participants were married. 69.2% of them (n = 240) working in tertiary hospitals which are canters where heart patients and COVID-19 patients are more admitted and treated in Turkey. The presence of chronic diseases that could pose a risk for COVID 19 disease was detected in 12.7% of the cardiology physicians who participated in the study. Among all risk factors, hypertension is the most common with 43.8%. The demographic characteristics of the participants are summarized in Table 1.

Table 1: Demographic and occupational characteristics of participants.

Parameters	Participants (n: 347)
Gender, n (%)	
Female	84 (24.2%)
Male	263 (75.8%)
Age, years, n (%)	
20–25	2 (0.6%)
26–30	48(13.8%)
31–40	193(55.6%)
41–50	80 (23.1%)
51–65	19(5.5%)
Less than 65	5 (1.4%)
Marital Status, n (%)	
Married	254 (73.2%)
Single[a]	93 (26.8%)
Type of Hospital	
Tertiary	240 (69.2%)
Secondary	107 (30.8%)
Living with someone over the age of 65	
Yes	30 (8.6%)
No	317(91.4%)
Living with someone under the age of 18	
Yes	198 (57.1%)
No	149 (42.9%)
Accompanying chronic disease, n (%)	
Yes	44 (12.7%)
No	303 (87.3%)
The distribution of concomitant chronic diseases, n (%)	
Hypertension	19 (43.8%)
Diabetes Mellitus	6 (13%)
Chronic Kidney Failure	3 (6.8%)
Cancer	2 (4.5%)
Other	14 (31.8%)
Working position for COVİD pandemic outbreak	
Frontline	185 (53.3%)
Second line	162 (46.7%)
a: single included widowed and divorced participants.	

A considerable proportion of participants reported symptoms of anxiety (n=188; 54.2%), insomnia (n=153; 44.1%) and depression (n=247; 71.1%). Mean GAD 7 score of all participants was 5.3±4.1; ISI mean score: 7.0 ± 4.6, mean HPQ score: 7.1±4.5 (Table 2).

Table 2: The scores of mental health evaluation measurements among cardiology physicians.

Scale	Score, Mean (± SD)
GAD- 7, anxiety symptoms	5.3 ± 4.1
ISI Score	7.0 ± 4.6
PHQ Score	7.1 ± 4.5
Abbreviations: GAD-7: 7-item Generalized Anxiety Disorder Scalisi: 7-item Insomnia Severity Index	
PHQ: 9 –item: Patient Health Questionnaire	

Women cardiologist reported more severe degrees of all measurements of anxiety symptoms and depression symptoms than male cardiologists. Mean Generalized Anxiety Disorder scale scores among women vs male: 6.6±3.5 vs 5.0±4.3; p=0.005; mean Insomnia Severity Index scores among women vs male doctors: 7.3±4.3 vs 6.9±4.6; p > 0.05; mean Impact of Event Scale–Revised scores among women vs male cardiologists: 8.0±3.9 vs 6.8±4.7; p=0.02. The scale evaluations of the participants are summarized in Table 3. No relation was found between age groups and mental stress experienced by the participants. On the other hand, the

symptoms of deterioration in sleep quality and depression of young physicians aged 30 and under are higher, but this difference does not reach statistical significance (Table 3). Between the doctors directly involved in treating COVID-19 patients and the cardiologists that were not involved in the treatment process, no meaningful differences found resulting from anxiety, depression and sleep disorders.

Table 3: Comparison of the participants divided into groups in terms of GAD-7, ISI and PHQ scores.

Variables	GAD-7	ISI Score	PHQ Score
Gender Male	5.0 ± 4.3	6.9 ± 4.6	6.8 ± 4.7
Female	6.6 ± 3.5	7.3 ± 4.3	8.0 ± 3.9
p value	0.005*	Less than0.05	0.02*
Age groups 20-25 years	11 ± 4.2	9.5 ± 2.1	10.0 ± 7.0
26-30 years	5.3 ± 4.3	7.2 ± 4.8	7.9 ± 4.6
31-40 years	5.2 ± 4.2	6.7 ± 4.5	6.9 ± 4.5
41-50 years	5.8 ± 4.1	7.3 ± 4.8	7.5 ± 4.5
51-65 years	5.2 ± 3.2	6.6 ± 4.2	5.3 ± 3.2
Less than 65 years	2.6 ± 2.0	6.4 ± 4.1	3.6 ± 2.8
p value	0.22	0.86	0.94
Marital status Married	5.4 ± 4.1	7.1 ± 4.6	7.0 ± 4.5
Single	5.4 ± 4.3	6.6 ± 4.6	7.3 ± 4.5
p value	0.95	0.34	0.55
Living with someone over the age of 65 Yes	7.2 ± 5.5	8.4 ± 4.4	8.9 ± 6.7
No	5.2 ± 4.0	6.8 ± 4.6	6.9 ± 4.2
p value	0.01*	0.07	0.02*
Living with someone under the age of 18 Yes	5.7 ± 4.2	7.0 ± 4.4	7.0 ± 4.5
No	4.9 ± 4.1	6.9 ± 4.8	7.2 ± 4.6
p value	0.11	0.89	0.64
Accompanying chronic disease Yes	6.3 ± 4.0	8.7 ± 4.6	8.5 ± 4.8
No	5.2 ± 4.2	6.7 ± 4.6	6.8 ± 4.4
p value	0.11	0.005*	0.04*
Abbreviations: GAD-7: 7-item Generalized Anxiety Disorder Scalisi: 7-item Insomnia Severity Index			
PHQ: 9 –item: Patient Health Questionnaire			
*The mean difference is significant at the 0.05 level			

Multivariable logistic regression analysis showed physicians living in the same home with a family member over 65 years of age had more anxiety and depression symptoms (95%CI: 1.910–1.989, P: 0.01 and 95% CI 1.05–2.32, P:0.03, respectively). On the other hand, the presence of children under the age of 18 in the physician's home did not cause additional anxiety and depression.

Discussion

In this study, we observed that the mental health of the cardiology physicians participating in the study was affected while continuing their duties during the COVID 19 pandemic process. Impairment in sleep quality of 44%, anxiety findings in 49% albeit at different levels, and in 67% we found that depression symptoms were observed. In fact, when we examine the literature, it is a condition that is observed in the society and healthcare workers after significant epidemics [8]. Lai et al. found that the symptoms of anxiety and insomnia were significantly higher in healthcare workers in the COVID-19 outbreak [9]. On the other hand, in the psychological evaluation of physicians, the health system they serve and the socio-economic situation of the country should also be taken into consideration. For this reason, it is an important point for countries to make their own evaluations and to evaluate the stress of their physicians. Cardiology physicians, who continue their duties in our country, show anxiety and distress symptoms while performing their duties in this epidemic, regardless of their additional pandemic duties. Impaired sleep quality was also found among these mental problems. Especially, the psychological stress of female physicians has been detected more. Kiely et al. in their meta-analysis, this type of epidemic showed that acute and post-traumatic stress disorders were more common among the personnel who treated the patients [10]. Unlike being younger and being the parents of dependent children, which were pointed out as risk factors in the same study; in our study, the presence of individuals over

65 years old who lived together at home caused a significant increase in the anxiety of physicians. The reason for this anxiety increase may be the fear of transmitting the pathogen to the elderly individuals in the home due to the occupational exposure that physicians are exposed to. It is claimed in the literature that women are more sensitive in terms of mental health problems [11]. Referring to Chong et al. In the severe acute respiratory syndrome (SARS) epidemic, psychological morbidity has been shown to be higher especially in female healthcare workers [12]. In our study, the high level of anxiety and depression symptoms of female physicians is compatible with other studies. No statistically significant difference in psychiatric morbidity was found in relation to age, marital status or living conditions. With traditional social roles reasons accepted in Turkey, have serious dilemma among female physician's work with family care can be a factor in this case. Moreover, the relatively low number of female cardiologists in our country and their inability to express themselves comfortably in male-dominated cardiology clinics may have facilitated this situation. The important point is whether physicians will have the strength to overcome these stress disorders and continue their mentally healthy lives after surviving this initial shock. Wu et al stated that psychological stress in hospital workers can last up to three years after the SARS epidemic [13]. According the European Society of Cardiology (ESC) Atlas 2020, The number of cardiologists per million people in Turkey are 20–59. Turkey is one of the countries with the most limited number of cardiologists in Europe (14). This anxiety and stress disorder may have serious consequences in the future, especially for our country's cardiologists, who have a very intense daily practice life and feel intense social pressure and social media pressure while doing their profession. The prolongation of this pandemic process, self-isolation and persistence of fear, the increasing workload of non-pandemic cardiology can worsen symptoms and cause new mental health problems that may increase suicide risk in this group of physicians who have already developed psychological morbidity. This study was done in our country when the pandemic peaked. Anxiety levels of the participants in the study were not evaluated again. This study is an important limitation. On the other hand, this pandemic period is challenging and full of unknowns. We must meet this period with patience and wisdom and protect the common sense of medicine. At a point where all eyes are turned to the treated patients, the psychosocial evaluation of physicians whose daily practical life is already busy and bringing these points to the literature is at the point of necessity The effect of mental health problems may take longer than the real pandemic period, especially in the physicians of the branches, such as cardiology, whose normal practical life is stressed. In this sense, it will be appropriate to carry out national research and plan national strategies.

Conclusion

In this survey, during this outbreak most of the cardiologists were found to be mentally challenged while continuing their profession. Especially the anxiety and depression symptoms of female doctor are higher than their male counterparts. The anxiety and stress disorder created by this pandemic may have serious consequences in the future, especially for physicians in intensive branches such as cardiology, who have to serve large patient groups like low and middle-income countries. It should not be ignored that female doctors working in these branches are more sensitive to burnout syndrome.

Abbreviations

GADS: Generalized Anxiety Disorder Scale
ISI: Insomnia Severity Index
PHQ-9: Patient Health Questionnarie-9
SARS: Severe acute respiratory syndrome
ESC: European society of cardiology

Declaration

Ethics approval and constant to participate

The study was approved by the Turkish Ministry of Health and Ufuk University ethics committees. From the participants were taken informed consent

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request as data sharing is subject to Ethics Office approval.

Authors' contribution

OAO and BE performed conception and design. MZ, EIY and CO performed analysis and interpretation of

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