

Evaluation of Cardiac Anxiety in Nurses During the COVID-19 Pandemic

Covid-19 Pandemisi Sırasında Hemşirelerde Kardiyak Anksiyetenin Değerlendirilmesi

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Abstract

Introduction: The world has been struggling with the coronavirus disease 2019 (COVID-19) pandemic for a while, which has brought adverse effects like psychological effects such as fear and anxiety. Healthcare workers are at the highest risk of exposure to the disease and anxiety, such as heart-focused anxiety (HFA). In this study, we aimed to investigate the cardiac anxiety states of nurses working in our hospital during the COVID-19 pandemic and the differences in their anxiety levels due to their workplaces.

Methods: This survey study was conducted in May 2020, when there were no proven COVID-19 vaccines yet, globally. An 18-item scale “Cardiac Anxiety Questionnaire” comprising fear, avoidance, and heart-related avoidance subscales, was applied to nurses who work in the isolation-service, intensivecare, and pandemic polyclinic units, where more than half of their total working time is allocated to attending patients diagnosed with COVID-19, and were examined as one group (isolation units group). The others were examined as another group (other units group).

Results: There are no significant differences due to age ($p=0.198$) and cardiac anxiety scoring between the groups ($p>0.05$). Moreover, there was not any difference regarding nurses’ stress scores ($p=0.278$) and the change in this situation before and after the COVID-19 pandemic ($p=0.260$). Working place and time coexistence did not significantly differ ($p=0.458$).

Discussion and Conclusion: Our study is the first to evaluate cardiac risk using the “CAQ scale” on healthcare workers during the COVID-19 pandemic. Multicenter studies with more healthcare professionals are needed. Our study can serve as a guide for future studies.

Keywords: Cardiac anxiety; Cardiac anxiety questionnaire; COVID-19 infection; Pandemic

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One factor that increases anxiety-related responses in cardiorespiratory distress is heart-focused anxiety (HFA).^[1,2] HFA is a state of fear of cardiac-related stimuli and sensations based on negative consequences.^[3] HFA can be classified as a subset of anxiety sensitivity rather than general body symptoms related to cardiac-related events, feelings, and outcomes.^[4] HFA may be associated with several clinical and medical syndromes, including chest pain, palpitations, and other possible physiological distress in people with cardiac, noncardiac chest pain, and panic disorders.^[3] The increase in "HFA" regardless of the special conditions of a person, causes people to be sadder and more anxious about cardiac-related conditions such as chest pain and palpitations, causing them to follow-up their cardiac symptoms and pulses anxiously, tend to stay away from activities to prevent the occurrence of symptoms, and to perform unnecessary and repetitive health checks.^[1,5] Whether or not there is cardiac disease, in cardiology clinics and emergency services, cardiac-focused anxiety may not be seen as a primary problem and part of a patient's medical condition.^[6,7] In view of this information and findings, the idea of developing a scale in terms of understanding cardiac-focused anxiety and revealing its negative consequences has emerged.^[8] Because of studies conducted to reveal cardiac-focused anxiety, an 18-item scale scoring named as Cardiac Anxiety Questionnaire (CAQ), which comprises three subscales showing fear, avoidance, and heart-related attention states and has a five-score response (ranging from 0 (never) to 4 (always)) for each item in the scales, has been developed (There is also a different application method comprising 15 items.).^[8,9] According to the publications in the literature, detection of cardiac-focused anxiety helps to minimize the functional limitations and rehabilitation of patients with coronary artery disease and those without also helps to break the cycle of cardiac-focused anxiety, increased attention and anxiety, unnecessary and recurrent health checks, and renewed anxiety.^[2,8,10-13]

In this cross-validation study, the CAQ was evaluated with the Agoraphobic Cognitions Questionnaire, Mobility Inventory, and Beck Depression Inventory. The study stated that the CAQ is a valid and reliable scale in assessing cardiac anxiety in patients who have applied with acute coronary syndrome.^[14-17] In 2015, Rosman et al.^[18] reported that awareness of cardiac anxiety symptoms would facilitate patients' future physiological evaluation and improve their quality of life. Additionally, patients diagnosed with coronary artery disease have a considerable frequency of general anxiety disorder and panic disorder.^[19] In a study that investigated the relationship between physical activ-

ity level and 6 month physical disability in individuals with noncardiac chest pain, cardiac anxiety questionnaire was excluded from the study's final design, since the presence of cardiovascular diseases (including cardiac anxiety) may affect the results.^[20]

Our world has been struggling with the coronavirus disease 2019 (COVID-19) pandemic for a long time, which has brought many adverse effects on health with possible negative effects continuing to be discovered. These uncertainties also cause to general public damaging psychological effects such as fear, anxiety, and future anxiety.^[21] Healthcare workers are at the forefront of this struggle and have the highest risk of exposure to the disease. Studies have shown that COVID-19 infection and deaths among healthcare workers constitute 0.5% of all deaths related to COVID-19.^[22] It is known that they are exposed to much higher viral loads when infected, and their clinical outcomes may be worse to this extent.^[23] The first deaths during the pandemic, proliferation of news about this issue, and increase in confirmed cases have created community anxiety. Many healthcare workers worked in isolation services in this process and struggled with collective quarantine situations. They did not have the opportunity to receive training on mental healthcare during these struggling situations.^[24] Moreover, healthcare professionals have to deal with psychological outcomes. As far as it is known from previous pandemics, healthcare workers face posttraumatic stress disorder, depression, anxiety, and insomnia.^[25] Our study aims to reveal how the pandemic affects our healthcare workers who are struggling at the forefront in this process, to be prepared for similar events that may occur in the future in line with the results, and to provide the most suitable working environment for healthcare professionals in similar situations. To ensure standardization in our study, nurses who perform the vital follow-up and treatment of patients were selected among healthcare workers, since their education levels may affect the results of the study (among nurses and other assistant health personnel). The findings of this study design may pave the way for future studies in which doctors, nurses, and other assistant health personnel can be examined in subgroups.

Our study planned to investigate the cardiac anxiety states of nurses working in our hospital during the COVID-19 pandemic.

Materials and Methods

Our study was implemented as an observational analytical cross-sectional survey study in May 2020, when there was

Table 1. Age distribution of the study groups

| | Isolation units | | | Other units | | | p |
|-----|-----------------|------------------|-----------|-------------|------------------|-----------|-------|
| | n | Medyan (Q1–Q3) | Min–Max | n | Medyan (Q1–Q3) | Min–Max | |
| Age | 32 | 27.5 (26.0–38.5) | 20.0–48.0 | 22 | 25.5 (23.0–38.0) | 20.0–48.0 | 0.198 |

Q1: 1st quartile; Q3: 3rd quartile; Min: Minimum; Max: Maximum. Isolation units: Isolation service and intensive care, pandemic polyclinic units.

no proven COVID-19 vaccine application yet anywhere in the world. In our study, an 18-item scale scoring, the CAQ, which comprises three subscales, including fear, avoidance, and heart-related avoidance, was applied to nurses working in our hospital during the pandemic. This choice was made because there may be different results in sub-professional groups of healthcare workers, to eliminate differences related to education levels, and because there are more nurses than other healthcare workers. The study questionnaires were made in a cross-sectional manner on a determined day without the knowledge of the nurses before the study. Approximately 65–70 nurses work in our hospital per day, and in accordance with the exclusion criteria, 54 nurses were included in the study. All questionnaires were translated into Turkish with professional academic translation. Additionally, all surveys were conducted by the responsible (in terms of task assignment) author alone to ensure standardization.

Additionally, participating nurses were asked to rate the state of having palpitations before and during the pandemic, separately. Each item has a five-item answer, i.e., 0 (never) and 4 (always).^[8,9] Nurses working with ages between 18 and 50 years and who were not diagnosed with any known health problems, chronic disease problems, or psychological disorders were included in our study. In the study, nurses working in the isolation service and intensive care and pandemic polyclinic units, where more than half of their total working time is attended by patients diagnosed with COVID-19, were examined as one group (isolation units group). Nurses who spent more than half of their total working time in other polyclinics and units unrelated to COVID-19 were examined as the other (other units group). Then, these two groups were compared in terms of parameters in the anxiety scale.

Local ethics committee approval was obtained in May 2020 with the decision number 2020/20-21, and a voluntary consent form was obtained from all participants. Nevertheless, in the questionnaires used in the study, the name and surname information of the nurses and the information of the people who can identify them are not included. Thus, they were collected and evaluated after completing the

questionnaires without knowing which questionnaire belonged to whom.

Statistics

Statistical analyzes were performed using IBM SPSS ver 23.0 and JASP ver 0.12 statistical packages. Descriptive statistics for all analyzed parameters are represented as mean±standard deviation when parametric conditions are met and median (first quartile to third quartile, minimum, and maximum if parametric conditions are not met. Using the Shapiro–Wilk test, whether the data showed a regular distribution fit was examined. Besides these tests, conformity to the normal distribution was evaluated according to the statistics of “skewness coefficient/standard error of the skewness coefficient” and “kurtosis coefficient/standard error of the kurtosis coefficient” Levene’s test examined the homogeneity of variances. In cases where the assumption of normality and homogeneity of variances was satisfied, comparisons of two independent groups were made with independent groups’ t-test. In cases where parametric conditions were not met, comparisons of two independent groups were made using the Mann–Whitney U test. Finally, a two-way repeated-measures analysis of variance test was used to compare the groups and their pre-COVID and post-COVID states of having palpitations. The statistical significance level was taken as $p < 0.05$.

Results

No statistically significant difference was found between the two groups in terms of age distribution and cardiac anxiety scoring parameters. Additionally, there is no difference in terms of “fear”, “avoidance” and “heart-focused attention” subscales (Table 1, 2).

No significant difference was found between the nurses who mainly worked in the self-defined stress scoring ($p=0.278$). There was no difference in their stress scoring before and after the pandemic and the different levels (delta values) ($p=0.260$ and $p=0.802$, subsequently). The effect of working place and time together was not statistically significant ($p=0.458$) (Table 3).

Table 2. Cardiac Anxiety Questionnaire parameters and differences

| | Isolation units (n=32) Median (Q1–Q3) | Other units (n=22) Median (Q1–Q3) | p |
|--|--|--------------------------------------|-------|
| Subscale 1: Fear (mean±SD) | 1.64±0.67 | 1.70±0.67 | 0.761 |
| Q10. If tests come out normal, I still worry about my heart | 2.0 (2.0–3.0) | 2.0 (1.0–3.0) | 0.785 |
| Q11. I feel safe being around a hospital, physician, or other medical facilities | 2.0 (1.0–2.0) | 1.0 (0.0–2.0) | 0.223 |
| Q13. I worry that doctors do not believe my chest pain/discomfort is real | 0.0 (0.0–1.0) | 0.0 (0.0–1.0) | 1.000 |
| When I have chest discomfort, or when my heart is beating fast | | | |
| Q14. I worry that I may have a heart attack | 0.0 (0.0–1.0) | 0.0 (0.0–2.0) | 0.862 |
| Q15. I have difficulty concentrating on anything else | 1.0 (0.0–2.0) | 1.0 (0.0–2.0) | 0.679 |
| Q16. I get frightened | 2.0 (1.5–3.0) | 2.0 (1.0–3.0) | 0.540 |
| Q17. I like to be checked out by a doctor | 1.0 (0.0–2.0) | 1.0 (0.0–2.0) | 0.860 |
| Q18. I tell my family or friends | 1.0 (1.0–2.0) | 1.0 (0.0–2.0) | 0.582 |
| Subscale 2: Avoidance (mean±SD) | 1.23±0.71 | 1.19±0.71 | 0.863 |
| Q2. I avoid physical exertion | 1.0 (0.5–2.0) | 1.0 (0.0–2.0) | 0.854 |
| Q5. I take it easy as much as possible | 0.0 (0.0–1.0) | 0.0 (0.0–2.0) | 0.399 |
| Q7. I avoid exercise or other physical work | 3.0 (2.0–4.0) | 3.0 (1.0–4.0) | 0.771 |
| Q9. I avoid activities that make my heart beat faster | 1.0 (0.5–2.0) | 1.0 (0.0–2.0) | 0.766 |
| Q12. I avoid activities that make me sweat | 1.0 (0.0–2.0) | 0.0 (0.0–1.0) | 0.086 |
| Subscale 3: Heart-focused attention (mean±SD) | 1.43±0.71 | 1.37±0.73 | 0.794 |
| Q1. I pay attention to my heartbeat | 1.5 (0.0–3.0) | 2.0 (1.0–3.0) | 0.577 |
| Q3. My racing heart wakes me up at night | 2.0 (1.0–2.5) | 1.5 (1.0–2.0) | 0.629 |
| Q4. Chest pain/discomfort wakes me up at night | 2.0 (1.0–3.0) | 2.0 (1.0–2.0) | 0.588 |
| Q6. I check my pulse | 1.5 (0.5–2.5) | 1.5 (1.0–4.0) | 0.256 |
| Q8. I can feel my heart in my chest | 2.0 (0.5–3.0) | 2.0 (1.0–3.0) | 0.349 |

SD: Standard deviation; Q1: 1st quartile; Q3: 3rd quartile; Min: Minimum; Max: Maximum; Q: Question. Isolation units: isolation service and intensive care, pandemic polyclinic units.

Table 3. Stress situations before and after COVID-19 and delta values differences

| Group | Stress situations | Mean±SD | p | | | |
|-----------------|-------------------|-----------|-------|-------------------|------------|--------------|
| | | | Group | Time before-after | Group*Time | Delta values |
| Isolation units | Before Covid | 1.19±1.06 | 0.278 | 0.260 | 0.458 | 0.802 |
| | After Covid | 1.41±1.29 | | | | |
| Other units | Before Covid | 0.96±0.99 | 0.278 | 0.260 | 0.458 | 0.802 |
| | After Covid | 1.00±1.11 | | | | |

SD: Standard deviation. Isolation units: Isolation service and intensive care, pandemic polyclinic units.

Discussion

The current pandemic has caused psychological effects, including fear, anxiety, and concerns about the future on people and regarding COVID-19-related involvement and effects on people. Since healthcare professionals are at the forefront in the fight against the pandemic, this situation causes the risk of psychological effects, directly or indirectly, to be highest in this group.^[25,26]

In our study, we aimed to investigate the cardiac anxiety states of nurses working in our hospital during the

COVID-19 pandemic and the differences in their anxiety levels due to their workplaces. Unfortunately, different from the studies in the literature, we did not find any significant difference among the groups with low to high exposure risks.^[24–26]

The situation we have in our study may have differed from those in other countries given that all healthcare professionals included in this study were from the same country. Nonetheless, classification is made on the basis of the time spent in risky areas, and our hospital is located in a province with a small population.^[21,24–26]

Limitations

Our study was conducted during the COVID-19 pandemic and was evaluated under the inclusion criteria. Thus, a limited number of nurses were surveyed. Since the study was limited to nurses only, the results cannot be generalized to all health professionals and society.

Because the pandemic is a dynamic process and COVID-19 vaccine status, which is yet to be finalized in study period, may affect the results of the study, a validation study on healthy people, in the Turkish language, could not be conducted. Procedural circumstances associated with the validation study could have delayed the present study, which is considered to be one of the most important limitations of this study.

The situation we have in our study may have differed from those in other countries given that all healthcare professionals included in this study were from the same country. Nonetheless, classification is made on the basis of the time spent in risky areas, and our hospital is located in a province with a small population.

Conclusion

The COVID-19 pandemic had adverse effects on healthcare workers, just like other previous infectious processes, and even more so. In this study, cardiac anxiety was evaluated in our health personnel who took part in this process, but no significant difference was found. This may have been because the study was conducted in a province with a small population and optimization could only be made overdue to working hours in the separation between groups.

This study is the first to evaluate cardiac risk with a cardiac risk questionnaire scale on healthcare workers working during the COVID-19 pandemic. Multicenter studies involving more healthcare professionals are needed. We also recommend developing study designs that are different from ours, such as prevaccination and postvaccination cardiac risk assessments. Hence, our study can serve as a guide for future research in the literature.

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Conflict of Interest: None declared.

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