Original Article

Effect of Coronavirus Vaccine on Depressive and Anxiety Symptoms of Health-care Professionals Developed through the Pandemic

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Abstract

Aim: COVID-19 pandemic response measures adversely affected the psychological effects of health-care professionals due to disruption of daily life, sense of uncertainty, fear of getting sick, and the perception of working in a dangerous environment. In this study, we assessed the level of depression and anxiety symptoms in health-care professionals who had interaction with COVID-19 patients both before and after vaccination. **Materials and Methods:** The participants in this prospective cohort study, which took place between July 24, 2020 and April 30, 2021, were 233 health-care workers who were employed in the hospital's COVID area. Participants were divided into two groups as pre-COVID-19 vaccine group (Group 1; n = 98) and postvaccine group (Group 2; n = 135), both groups received the Hospital Anxiety and Depression Scale. **Results:** The mean score of the Group 1 anxiety subscale was 15.64 ± 2.112, and the mean score of the depression subscale was 15.19 ± 1.762. The same scores were 9.65 ± 5.535 and 9.13 ± 4.984, respectively, in Group 2. There was a statistically significant difference between the groups (P = 0.001). **Conclusion:** In our research, we have seen that the application of the vaccine has positive effects on the psychological state of health workers who are directly exposed to COVID-19 patients. We think that the therapies or preventive measures that are developed during the pandemic phase will lessen the possibility of sadness and anxiety in health-care personnel and boost the effectiveness of the effort to combat the disease.

Keywords: *Anxiety, COVID-19, depression, health-care professionals, vaccination*

Introduction

The novel coronavirus (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]), which first surfaced in Wuhan, China, in December 2019, is believed to be the cause of the coronavirus 2019 (COVID-19), which has the potential to proceed clinically with viral pneumonia.[1] On February 11, 2020, the World Health Organization (WHO) designated this new coronavirus as COVID-19. Its origin is unknown, despite the fact that it shares traits with prior coronavirus outbreaks (SARS, Middle East Respiratory Syndrome).[2] The WHO classified the illness a pandemic on March 11, 2020.[3]

Comments such as the disruption of routine life, the feeling of uncertainty, the fear of getting sick, the feeling of living, or working in an unsafe area after the measures taken with the declaration of the pandemic have shown that the pandemic has psychological effects as well as physiological effects.[4] As they work in the same environment as those who are infected or are likely to be carriers, health-care professionals are at a higher risk than the general population of contracting COVID-19 and experiencing stress. When the COVID-19 outbreak was at its worst, 1716 health-care professionals were reported to be infected with the virus in China.[5]

Elements like the rise in the quantity of cases and death rates in daily tests, inadequacy in medical equipment and devices, active and intense work tempo, and stress can cause a feeling of burnout in health-care professionals. Accompanying the feeling of burnout with depression and as a result of professional dissatisfaction can

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negatively affect the health workers. At a poll of more than 1200 health-care professionals in 34 hospitals in Wuhan, the city where the coronavirus pandemic first surfaced, almost 14% of doctors and 16% of nurses showed signs of mild-to-serious sadness.[6] Mak *et al*. in a study that aimed to evaluate long-term psychiatric morbidities in SARS survivors, health-care workers who survived the SARS epidemic showed depression, high rates of anxiety, and somatization symptoms during or after the epidemic.[7] In a study that compared the secondary traumatization, anxiety, and depression scores of health care and nonhealth workers who were directly exposed to and not exposed to patients with a diagnosis of COVID-19, the health workers who directly encountered COVID-19 obtained the highest score from the scales, whereas the nonhealth workers group received the lowest score.[8]

The coronavirus vaccine was administered for the first time in England, at Coventry University Hospital, on Tuesday, December 8, 2020, at 6.45 am. In Turkey, giving a priority to health-care professionals, it started to be implemented on January 13, 2021. Anxiety is a complex experience with psychological, behavioral, and cognitive symptoms. Anxiety, which is a universal part of the human condition, is considered abnormal if its severity and duration are inappropriate or occur without a specific threat. Anxiety disorders describe deviations from normal. Depression is an important public health problem because it is a common disease that can affect all the layers of society, has a high risk of chronicity and morbidity, and has a lethal potential, and is a treatable disease.[9,10] In this study, we assessed the intensity of depressive and phobic symptoms in health-care professionals who had close contact with COVID-19 patients during the pandemic before and after vaccination.

Materials and Methods

The Research Protocol Was Approved by The Gazi Yasargil Research and Training Hospital, Health Sciences University Clinical Research Ethics Committee (Date and Number: July 24, 2020 535).

Study participants

Between July 24, 2020 and April 30, 2021, this prospective cohort research was carried out, at hospital with the participation of health-care professionals working in the COVID area. Informed consent of the participants was obtained. Interviews were conducted face to face. In accordance with the Declaration of Helsinki, the research protocol received approval from the Hospital Clinical Research Ethics Committee (date and number: July 24, 2020-535).

Initial information was gathered between July 24, 2020 and November 30, 2020. Afterward, the study was suspended until a possible treatment or vaccine is developed. Two weeks after the first vaccination of the health-care professionals, the final data were collected by using the same questionnaire.

Data collection and psychometric measurements

A sociodemographic questionnaire and the Hospital Anxiety and Depression Scale (HADS) were used to gather the research data. The volunteers were questioned regarding their past history of mental illness, alcohol usage, and other drug use. After participants were made aware of the study, both verbal and written agreement was obtained.

The HADS was created by Zigmond and Snaith to screen for clinically significant anxiety and depression in outpatient medical settings. In addition, it can track the changes in those symptoms.[11] Aydemir *et al*. conducted a study on the validity and reliability of the tool, and it was found to be a suitable instrument.[12] The scale consists of a total of 14 questions, where depression and anxiety are measured by even and odd questions, respectively. It includes the HADS-A (7-question) and HADS-D (7-question) subscales for anxiety and depression, respectively. The maximum score for each sub-scale on the 4-point Likert scale for each item is 21. In the Turkish study, the cutoff values for the subscales measuring depression and anxiety were 7/8 and 10/11, respectively. As a result, people with higher scores are more likely to have mental illness.

Exclusion criteria

Those with a history of any psychiatric disorder or alcohol/substance abuse and those with COVID-19 disease were being left out of the study.

Statistics

The SPSS (Statistical Package for the Social Sciences, SPSS Inc., Chicago, IL, USA) programme was used to analyze the data. Descriptive statistics were used to assess the information on the anxiety and depression states (mean standard deviation). A significant outcome was considered to be one with a $P < 0.05$ after variables were assessed with a 95% confidence level.

Results

A total of 233 health-care professionals working in areas designated as COVID areas in the hospital between July 24, 2020 and April 30, 2021 were included in the study. The subjects joined to our survey before vaccination were grouped as Group 1 ($n = 98$) and after vaccination as Group 2 ($n = 135$). After recruitment, HADS has been implemented. The reliability coefficients for the Turkish population were evaluated as 0.85 for depression subscale and 0.78' for anxiety subscale. Cronbach's alpha values for our study were found to be 0.866 and 0.817, respectively.

Group 1 anxiety subscale mean score was calculated as 15.64 ± 2.112 and depression subscale mean score as 15.19 ± 1.762. On the other hand, Group 2 scores were calculated as 9.65 ± 5.535 and 9.13 ± 4.984, respectively.

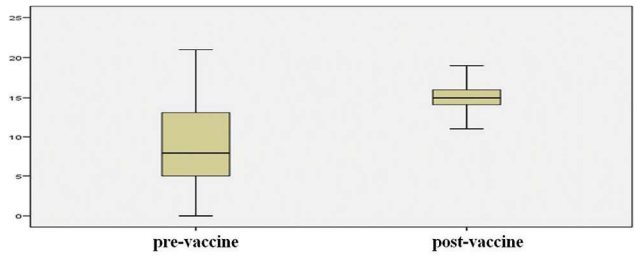

Figure 1: Depression symptom levels of study participants before and after the administration of COVID-19 vaccine. pre-vaccine post-vaccine

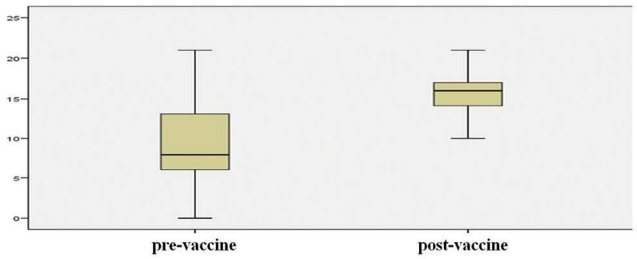

Figure 2: Anxiety symptom levels of study participants before and after the administration of COVID-19 vaccine. pre-vaccine post-vaccine

There was a difference between the groups, according to the statistics [P = 0.001; Table 1 and Figures 1 and 2].

Table 1: Anxiety and depression scores of both groups

	Group 1 (n=98)	Group 2 (n=135)	P (n=233)
Anxiety	15.64±2.112	9.65±5.535	0.000
Depression	15.19±1.762	9.13±4.984	0.000

Discussion

The COVID-19 epidemic has significantly altered everyone's lives, which has had an impact on their psychosocial well-being. The literature has shown that epidemics have profound psychosocial effects on both individuals and societies. When viewed at an individual level, it is observed that people experience fear of contamination, feelings of helplessness, or fear of death due to illness.[13] Rubin *et al*. conducted a study of swine flu (influenza A H1N1 v) between May 1, 2009 and January 10, 2010 in the UK, where they conducted an average of 36 weekly surveys at weekly intervals. The survey's findings indicated that 10% to 30% of people were extremely or extremely concerned about catching the virus.[14] Another study conducted between 2013 and 2016 found that when schools and workplaces were closed due to the Ebola virus epidemic in Guinea, Liberia, and Sierra Leone, where the illness was most commonly transmitted, people's negative feelings soared dramatically.[15] During an outbreak of an infectious disease, healthcare practitioners' psychological reactions might be challenging. Concerns about scarce resources, a sense of vulnerability or loss of control, worries about one's own health, the spread of a virus, worries about infecting family members, worries about the health of the patients they are caring for, adjustments at work, and a desire to withdraw are a few examples.[16]

Early COVID-19 studies showed that the public's psychological morbidity grew dramatically as a result of the epidemic. Twenty-nine percentage of respondents to an online survey of more than 1200 people in China between January and February 2020 reported having moderate-to-severe anxiety. In another study, moderate-to-severe depression was found to be present in 9%–17% of the population, while psychological distress (for example, depression, hopelessness, and irritability) was found in 8%–36% of adults.[17]

A March 2020 online survey of more than 1000 Americans revealed that 36% of respondents experienced a major negative impact on their mental health as a result of the new coronavirus epidemic.[18]

The impression of personal risk may be heightened by the knowledge that COVID-19 is contagious,[19,20] is linked to high morbidity, and has the potential to be lethal.[21] The pressure and concerns felt by health-care workers may also be increased by anticipated supply shortages and a rise in the suspected and confirmed COVID-19 cases.[22]

Previous research has demonstrated that health-care personnel are more susceptible to negative psychological effects when working in emergency departments, intensive care units, and infectious disease services.[23] Health-care professionals who treat patients with COVID-19 had a significant prevalence of mental health problems, according to a cross-sectional assessment of 1257 participants in China. Front-line work has been found to be a standalone risk factor for negative psychological consequences. Overall, 50.4% of all individuals displayed the signs of depression, compared to 71.5% who displayed signs of anxiety, 44.6% who displayed signs of distress, and 34% who displayed signs of insomnia.[24] Another Italian study discovered that during the COVID-19 pandemic, medical professionals had higher levels of anxiety and risk perception than the general public.[25] The data from the first stage of our investigation were comparable to all other studies in light of all these facts. In this study, we aimed to evaluate the depression and anxiety symptoms change of health-care workers after vaccination. Our data show that the vaccine significantly reduces the depression and anxiety levels of health-care workers. Since there is no similar study to our study, we believe that our study will be evaluated as a guide for future studies on health workers or normal population.

Conclusion

It should be highlighted that throughout the COVID-19 pandemic phase, health-care workers may also have mentally negative effects and may require psychiatric attention, similar to the general population. Health professionals felt more secure with the development of the

COVID-19 vaccination. Following immunization, health professionals' levels of depression and anxiety dropped. Healthcare personnel continued to work more selflessly and with improved energy efficiency when a safer working environment was made available. We believe that the preventive measures or treatments that can be found during the pandemic process will reduce the depression and anxiety that may occur in health-care professionals and will enable them to work more efficiently in the fight against the disease.

Limitations

Since our study is regional, the effect size may relatively be small. Thus, larger studies should be done. In addition, since this study was conducted on actively employed individuals, the data values may also be higher. Furthermore, our data may be insufficient about vaccine types and results, as the results of the vaccine were not waited. Finally, our study was conducted in an active pandemic hospital that has been resulted in a longer data collection and evaluation period than expected.

Patient informed consent

There is no need for patient informed consent

Ethics committee approval

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Conflicts of interest

There are no conflicts of interest to declare.

Author contribution subject and rate

- Öner Avınca (%25) and Mahmut Taş (%25): Create the research, gather the data, do the analyses, and write the entire manuscript.
- Abdullah Sen (%10), Mehmet Diyadin Güleken(%10), Remzi Çetinkaya(%10), Baran Arı(%10), Ahmet Yeşil(%10): Create the research, gather the data, do the analyses, and write the entire manuscript.

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