

Determination of the effect of COVID-19 pandemic on the anxiety levels and life quality of healthcare workers

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ABSTRACT

Objective: This study was conducted to determine the effects of the interventions made to prevent the COVID-19 pandemic on the anxiety level and life quality of healthcare workers.

Materials and Methods: The study is a descriptive one, and the data were collected online using the Google Forms application. The Information Form including 15 questions, the Beck Anxiety Scale, and Short Form-36 (SF-36) Life Quality Scale were used to collect data. Five hundred and eight healthcare workers participated in the study. Statistical significance was set as $p < 0.05$. The findings showing statistically significant differences were evaluated using the Games-Howel Post-hoc test.

Results: The study revealed that 81.3% of the healthcare workers are worried about their own health during the COVID-19 pandemic. It has been found that 38% of the healthcare workers have been experiencing a shortage of protective equipment in the hospital where they work. As far as worrying about one's own health during the pandemic is concerned, it was found that there was a statistically significant difference between the Beck Anxiety Scale mean scores and the SF-36 Life Quality Scale mean scores.

Conclusion: Our study revealed that the anxiety levels of healthcare workers were low during the pandemic and their quality of life was high. It should be foreseen that pandemics such as COVID-19 may also occur in the future, and the psychological effects on healthcare workers should be monitored during pandemics.

Keywords: COVID-19, Healthcare worker, Anxiety, Life quality

1. INTRODUCTION

The World Health Organization (WHO) reported on 30 January 2020 that the new corona virus was a public health problem of international concern with more than one million cases [1]. This health problem was named as corona virus disease 2019 (COVID-19) by the WHO [1,2]. COVID-19, or SARS-CoV-2, infection emerged in China [3]. Since this new virus is of very small size, it is spread mainly by respiratory droplets and close contact [4-6]. In addition, the disease is spread when the surfaces and items that patients touch are touched by others and when individuals touch their face and eyes or handshake etc. with their infected hands. Spread occurs in contacts [6]. As the disease progresses, a series of complications and multiple organ failures are observed. The transmission and spreading rate of infection is faster than in other viral infections [7]. The COVID-19 pandemic affects all health systems around the

world. No specific treatment method has been established for COVID-19 yet; only supportive treatment is provided. The number of people affected by COVID-19 has increased day by day and countries have started to report new cases, and this disease has aroused concern in people [7,8]. The first case was seen in our country in March 2020 and the importance of health services has increased. The healthcare workers risk their own health while providing care to patients with COVID-19, as in other epidemics such as measles, HIV/AIDS, and Ebola virus disease [9]. Healthcare workers are exposed to the infected cases for a long time. Therefore, they are expected to be at high risk of infection [10].

Epidemics and pandemics may have psychological and behavioral effects [8]. They may lead to a variety of psychological problems in individuals such as insomnia, anxiety, fear, concern, anger,

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and depression, and these psychological effects may persist even after the threat is lifted [2,11]. Epidemics and pandemics have caused people to change their life routines. They also lead to concerns in healthcare workers regarding constant exposure to the infectious agent, becoming infected and spreading the infection to their environment. Healthcare workers who treat infected patients and meet their needs fear spreading the infection and feel guilty about the health of their relatives [8]. Even when healthcare workers manage to avoid infection, psychological distress associated with the pandemic and the fear of passing the virus to their families continue to raise serious concerns [9]. The most basic step in managing the psychological distress of healthcare workers is giving them training and providing them with adequate personal protective equipment before they interact with infected or suspicious patients [9-13]. This study was conducted to determine the impact of the COVID-19 pandemic on healthcare workers' anxiety level and quality of life.

2. MATERIALS and METHOD

Research type, setting and time

The study is a descriptive study seeking relationships. No setting or location was determined for the study since it was carried out online. The aim was to reach as many people as possible working in the field of health in Turkey. The literature review of the study started in April 2020, and the data collection process took 14 days.

Population, sample and research group

The healthcare workers in Turkey constitute the research population. Since, it is impossible to reach the whole population, the lowest number of people to be included in the study and the ideal sample size were calculated by taking the p and q values in Çelebi and Sunal's study titled "Quality of Life of Nurses Working in Surgical Services and Determination of the Effective Variables" as a reference [12]. When population is unknown, $n = \frac{t^2 pq}{d^2}$ is used to calculate the sample. The confidence level was accepted as 95% and the deviation was taken as $d = 0.05$ in the formula. The sample size of the study was found to be 200 [14]. The sample of our study consisted of 508 healthcare workers.

Data Collection Tools

Information Form: The form was developed by the researcher in line with the literature (Çelebi and Sunal, 2016; Yıldırım and Hacıhasanoğlu, 2012; Zengin and Gümüş, 2018). It includes 15 questions aimed at obtaining information about the socio-demographic and occupational characteristics of the participants [12,13,15].

Beck Anxiety Scale (BAS): The scale was developed by Beck et al., The Cronbach's alpha of the scale was determined as 0.86 [16]. The Turkish validity and reliability study of the scale was conducted by Ulusoy et al. and the Cronbach's alpha was found to be 0.80. The scale consists of 21 items, which are ranked from

0 to 3 according to the severity of depression. The main purpose of the scale is to evaluate the degree of depression symptoms objectively and quantitatively. Higher scores obtained from the scale indicate higher levels of anxiety. A score between 0-9 points to minimal depressive symptoms, while scores between 10-16, 17-29, and 30-63 refer to mild, moderate, and severe depressive symptoms, respectively [17]. In our study, the Cronbach's alpha was found to be .93.

Short Form 36 (SF-36) Life Quality Scale: It is an individual assessment scale developed by Ware et al., in 1987 to examine the general population in the monitoring of health policies in clinical practices and research [18]. The Turkish validity study of the scale was conducted in 2018 by Bilir and İçağasıoğlu [19]. The scale consists of eight sub-scales which are physical functioning, physical role limitations, emotional role limitations, vitality (life energy), social functioning, bodily pain, mental health and general perception of health. Each scale is scored separately. The SF-36 evaluates the positive as well as the negative aspects of the state of health. The scale gives separate total points for each subscale. Sub-scale scores range from 0-100. Increasing scores indicate good quality of life [19]. In our study, the Cronbach's alpha value was found to be .81.

This study was approved by the Lokman Hekim University Non-Interventional Clinical Research Ethics Committee (approval number: 2020/029). For this study, permission was obtained from the Republic of Turkey, Ministry of Health, Scientific Research Studies on COVID-19. The study was conducted in accordance with the Helsinki Declaration. The Informed Consent Form was read and approved by the healthcare professionals who participated in the study.

Statistical Analysis

The statistical analysis of the data was conducted using the SPSS Statistics 25.0 package program, number, percentage, mean, standard deviation and significance analyses were performed. The Kolmogorov-Smirnov test was used to determine the normal distribution of the data. T-test and ANOVA tests were performed according to the distribution of the variables. The level of significance in relationships between independent variables and scale scores was accepted as $p < 0.05$. The findings showing statistically significant differences were evaluated according to the Games-Howel Post-hoc test.

3. RESULTS

A total of 508 healthcare workers participated in the study. Seventy-two percent of the participants are women and 70.1% are university graduates. The majority live in Konya province. Sixty-six point one percent of them are nurses or midwives. Forty-nine point one percent of them work in a state hospital. Eighty-one point three of the healthcare workers in our study reported that they are concerned about their own health during the COVID-19 pandemic. It was revealed that 38% of the healthcare workers had a shortage of protective equipment in the hospital they work in (Table I).

Table I. Socio-demographic characteristics of healthcare workers and their emotional states during COVID-19 (n=508).

| Characteristics | n | % |
|---------------------------------|-----|------|
| Gender | | |
| Female | 366 | 72.0 |
| Male | 142 | 28.0 |
| Age | | |
| 18-25 | 145 | 28.5 |
| 26-33 | 203 | 40.0 |
| 34-41 | 109 | 21.5 |
| 42-49 | 47 | 9.3 |
| 50 and over | 4 | 0.8 |
| Marital Status | | |
| Married | 247 | 48.6 |
| Single | 261 | 51.4 |
| Education | | |
| High School | 73 | 14.4 |
| University | 356 | 70.1 |
| Masters | 54 | 10.6 |
| PhD | 25 | 4.9 |
| Number of children | | |
| 0 | 284 | 55.9 |
| 1 | 85 | 16.7 |
| 2 | 103 | 20.3 |
| 3 and more | 36 | 7.1 |
| City of residence | | |
| Ankara | 47 | 9.3 |
| Istanbul | 40 | 7.9 |
| Konya | 268 | 52.8 |
| Izmir | 33 | 6.5 |
| Antalya | 8 | 1.6 |
| Other | 112 | 22.0 |
| Occupation | | |
| Nurse-Midwife | 336 | 66.1 |
| Doctor-Dentist | 45 | 8.9 |
| Paramedic-Emergency Technician | 21 | 4.2 |
| Medical | 106 | 20.8 |
| Other (Patient Care Staff etc.) | | |
| The Institution/Hospital | | |
| State | 251 | 49.4 |
| Private | 55 | 10.8 |
| University | 202 | 39.8 |

Who do you live with?

| | | |
|--------------------------|-----|------|
| Alone | 105 | 20.7 |
| With friends | 45 | 8.9 |
| With wife/husband | 49 | 9.6 |
| With spouse and children | 179 | 35.2 |
| With extended family | 130 | 25.6 |

Are you worried about your health during the COVID-19 pandemic?

| | | |
|-----|-----|------|
| Yes | 95 | 18.7 |
| No | 413 | 81.3 |

Is there a shortage of protective equipment in the hospital you work at?

| | | |
|-----|-----|------|
| Yes | 315 | 62.0 |
| No | 193 | 38.0 |

The total BAS mean score of the individuals participating in the study was found to be 12.26 and the standard deviation was 11.26. The mean of the SF-36 total score of the participants was found to be 90.53 ± 11.23 (Table II).

Table II. Beck Anxiety Scale and SF-36 Life Quality Scale Mean Scores

| | N | Mean | SD | Min | Max |
|-------|-----|-------|--------|-----|-----|
| BAS | 508 | 12.26 | 11.258 | 0 | 60 |
| SF-36 | 508 | 90.53 | 11.226 | 39 | 115 |

The BAS scale mean scores of the female and male participants were found to be 14.17±11.594 and 7.35±8.602, respectively. The SF-36 scale mean scores of the female and male participants were found to be 90.98±9.927 and 89.39±14.007, respectively. It is seen that there is a statistically significant difference between the BAS scale mean scores according to gender (p=0.000), while there is no statistically significant difference between the SF-36 scale mean scores according to gender (p=0.217).

The BAS scale mean score of the participants who are worried about their health during the pandemic is 13.38 ± 11.275 and the BAS scale mean score of the participants who are not anxious about their health is 7.41 ± 9.855. The SF-36 scale mean score of the participants who are worried about their health during the pandemic was found to be 89.80 ± 11.031, while the SF-36 scale mean score of the participants who were not anxious was found to be 93.73 ± 11.562. It was seen that there is a statistically significant difference between the BAS scale mean scores according to the state of being worried about one's own health during the pandemic (p=0.000). It was also seen that there is a statistically significant difference between the SF-36 scale mean scores according to the state of being worried about one's own health during the pandemic (p=0.002).

It was further revealed that there is a statistically significant difference between the BAS scale mean scores in terms of shortage

of equipment in the hospital participants work at ($p=0.002$). It was observed that there is no statistically significant difference between the SF-36 scale mean scores in terms of shortage of equipment in the hospital participants work at ($p=0.732$). It is seen that there is a statistically significant difference between the BAS scale mean scores according to the hospital participants work at ($p=0.004$). It has been observed that there is no statistically significant difference between the SF-36 scale mean scores according to the hospital participants work in ($p=0.806$). The BAS, which showed a statistically significant difference, was evaluated according to the Games-Howel post-hoc test. It was observed that the mean scale scores of the participants working in private hospitals and those working in state and university hospitals differ ($p=0.035$, $p=0.025$) (Table III).

Table III. Evaluation of Beck Anxiety Scale and SF-36 Life Quality Scale of the healthcare workers according to some variables ($n=508$).

| Characteristics | n | Beck Anxiety Scale | | SF-36 Life Quality Scale | |
|---|-----|--------------------|------------|--------------------------|------------|
| | | Mean±SD | Test Value | Mean±SD | Test Value |
| Gender | | | | | |
| Female | 366 | 14.17±11.594 | $t=16.111$ | 90.98±9.927 | $t=26.299$ |
| Male | 142 | 7.35±8.602 | $p=.000$ | 89.39±14.007 | $p=.217$ |
| Are you worried about your health during the COVID-19 pandemic? | | | | | |
| Yes | 413 | 13.38±11.275 | $t=7.743$ | 89.80±11.031 | $t=3.3731$ |
| No | 95 | 7.41±9.855 | $p=.000$ | 93.73±11.562 | $p=.002$ |
| Is there a shortage of protective equipment in the hospital you work at? | | | | | |
| Yes | 193 | 14.29±11.762 | $t=5.152$ | 90.75±10.857 | $t=4.570$ |
| No | 315 | 11.02±10.769 | $p=.0024$ | 90.40±11.460 | $p=.732$ |
| The Institution/Hospital | | | | | |
| State | 251 | 12.00±11.085 | | 90.36±10.563 | |
| Private | 55 | 16.95±14.703 | $F=5.649$ | 90.17±12.075 | $F=7.164$ |
| University | 202 | 11.32±10.089 | $p=.004$ | 90.53±11.226 | $p=.806$ |

SD: standard deviation $t=$ T-test $F=$ ANOVA tests

4. DISCUSSION

The total BAS mean score of the participants was found to be 12.26±11.26 and the SF-36 total mean score was found to be 90.53±11.23. The BAS mean scores of the female and male

participants were 14.17±11.594 and 7.35±8.602, respectively. Since the highest point that can be obtained from the scale is 60 points, it is seen that the BAS scores of the healthcare workers are low. The mild level of anxiety of healthcare workers may be due to the rapid spread of the COVID-19 pandemic and its fatal effects. The SF-36 scale mean scores were found to be 90.98±9.927 in female participants and 89.39±14.007 in male participants. As the highest score that can be obtained from the scale is 115, it is seen that the mean score of healthcare workers is at a high level [19]. This may be attributed to the fact that protective measures are taken in the hospital, trainings about the COVID-19 pandemic are given, and accommodation needs of healthcare workers are met free of charge in some provinces.

It was found that socio-demographic characteristics of healthcare workers such as age, marital status, educational status, number of children, place of residence, other people living with them, occupation and the institution they work at did not affect the BAS and SF-36 scores. Unlike our research findings, Huang et al., reported that the COVID-19 pandemic have led to more depressive symptoms in people under 35 years of age [20,21]. Anxiety symptoms are more likely to develop in people younger than 35 and those who spend a lot of time focusing on the pandemic. Su et al., conducted a study in Taiwan during the SARS pandemic and they reported high anxiety symptoms in the young [22]. In addition, it is seen that there is a statistically significant difference between the BAS mean scores of female and male participants ($p=0.000$). However, no statistically significant difference was observed between the SF-36 scale mean scores of female and male participants ($p=0.217$). In their study conducted with healthcare workers, Zhang et al., revealed no significant difference in the anxiety and depression levels of men and women during the COVID-19 pandemic [23]. Ekiz et al., concluded in their study that women's health anxiety levels were higher than men [24]. Another study reported that the prevalence of anxiety and depression has been higher in female healthcare workers and nurses during the COVID-19 pandemic [25]. Women's anxiety levels were also found to be high in the worldwide Swine Flu (H1N1) epidemic experienced earlier [26]. In their study conducted in Wuhan, Lai et al., reported that there was more psychological burden on female nurses [27]. In our study, anxiety levels of women were also found to be higher than men, and there are studies supporting this finding in the literature [27,28]. It is thought that this is because women are more sensitive and they are more prone to mental health problems. In addition, contrary to our findings, some studies conducted with nurses revealed that male nurses had higher anxiety levels compared to female nurses [29-31]. There are also studies in the literature arguing that gender does not affect anxiety levels [32,33].

Eighty-one point three percent of the participants in our study were found to be worried about their own health due to the COVID-19 pandemic. The BAS mean scores of these participants was found to be 13.38±11.275, while the BAS mean score of those who are not worried about their health was found as 7.41±9.855. The SF-36 scale mean score of the participants who are worried about their own health due to the pandemic

was found to be 89.80 ± 11.031 , while the SF-36 scale mean score of those who are not worried about their health was found as 93.73 ± 11.562 . It is seen that there is a statistically significant difference between the BAS mean scores of those who are worried and not worried about their own health during the pandemic ($p=0.000$). On the other hand, it was observed that there is a statistically significant difference between the SF-36 scale mean scores of those who are worried and not worried about their own health during the pandemic ($p=0.002$). In their study with administrative staff and healthcare professionals, Lu et al., found the anxiety levels of healthcare workers to be at a moderate level during the pandemic [34]. Lai et al., examined the anxiety levels of healthcare professionals at some hospitals in China. The study was conducted with 1257 healthcare workers and 44.6% of the participants stated that they have experienced anxiety during the pandemic. It has been further reported that psychological symptoms are more severe in doctors and nurses [27]. The majority of healthcare workers reported anxiety in Xiao et al.'s study [35]. It is seen that our findings coincide with the findings of some studies in the literature.

Thirty-eight percent of the healthcare professionals stated that they had a shortage of protective equipment in the hospital they work at. It is seen that there is a statistically significant difference between the BAS mean scores in terms of having equipment problems or not ($p=0.002$). It was observed that the presence or lack of equipment at the hospitals did not affect the SF-36 scale mean scores ($p=0.732$). Xiao et al., found that the majority of healthcare workers (60.8%) had insufficient access to protective materials (masks, bonnets, gowns, glasses and visors) [35]. They found a significant link between preventive measures and anxiety. Our study revealed that the lack of protective equipment affects the level of anxiety, but not the quality of life.

Limitations

One limitation of our study is that the study was conducted when COVID-19 pandemic first started. Another limitation is that the data was collected over the Internet.

Conclusion

Epidemics and pandemics which affect the whole world and cause deaths have social, economic, and emotional consequences and they specifically affect the psychology of healthcare professionals. In our study, the anxiety levels of healthcare workers were found to be low and their quality of life was found to be high during the pandemic. Although, it is seen in the literature that the anxiety levels are high and the quality of life is low under normal conditions, the findings in our study differed and positive results were obtained contrary to expectations. Pandemics such as COVID-19 may also occur in the future, and the psychological conditions of healthcare professionals should be monitored during this process. The coping skills of healthcare professionals should be developed, and approaches that protect and support their mental health should be routine practices. Various strategies can be developed and used during a pandemic. For example, it should be ensured that healthcare workers have easy access to protective

equipment support; psychological support groups should be established to increase their psychological resilience and to help reduce pressure; psychological training on coping skills, stress management, anxiety therapies etc. should be provided; and finally, promotions and financial incentives may be given to encourage healthcare workers during epidemics and pandemics.

Compliance with Ethical Standards

Ethical approval: This study was approved by the Lokman Hekim University Non-Interventional Clinical Research Ethics Committee (approval number: 2020/029). For this study, permission was obtained from the Republic of Turkey, Ministry of Health, Scientific Research Studies on COVID-19.

The study was conducted in accordance with the Helsinki Declaration. The Informed Consent Form was read and approved by the healthcare workers who participated in the study.

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