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Research Article

EFFECT OF COVID-19 ON EXERCISE HEALTH BELIEF, EMOTIONAL INTELLIGENCE AND STRESS LEVELS IN EMERGENCY UNIT NURSES

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Abstract: *This study was conducted to examine the effect of COVID-19 on exercise health belief, emotional intelligence, and stress levels in emergency unit nurses. The research was carried out on 1-30.01.2021 with 210 nurses who are working in emergency units located in five hospitals in the Eastern Anatolia region of Turkey. A significant relationship was found between the nurses' status of contracting COVID-19 and exercise belief, emotional intelligence, and perceived stress levels. While it was found that the exercise health belief and stress levels of nurses who had COVID-19 were higher than those who did not have COVID-19, it was found that the emotional intelligence levels of nurses who had COVID-19 were lower than those who did not.*

Keywords: *COVID-19, emotional intelligence, nurse, stress, health belief*

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1. Introduction

Coronavirus infection causes numerous health problems, from the common cold to fatal pneumonia. COVID-19 can be transmitted directly by close contact and respiration with infected people, or indirectly by touching surfaces or objects exposed to their droplets [1]. Nurses constitute the vital and largest workforce in combating this pandemic, as they take a role both in the care of the patient and they take on the main pioneering role in the community 24 hours a day, seven days a week. They are most in contact with suspected or confirmed COVID-19 patients during diagnosis, hospitalization, or follow-up after the patient is discharged [2]. The multidimensional roles and functions of nurses in combating this health crisis have vital importance in providing health services [2,3].

Health belief refers to people's thoughts and behaviours about their health or illness. As a result of the health beliefs of individuals, their health behaviours are reinforced, so whether the individual's health is affected positively or negatively depends on health beliefs [4]. Staying at home was prioritized as a security measure to prevent human-to-human transmission of the virus. This global health crisis has led to increased levels of inactivity, and studies have shown that physical inactivity negatively affects health [5-9]. There was no study investigating the effect of COVID-19 on exercise health belief status in nurses. In the study of Elgzar et al., (2020) on nursing students, there is a study showing that COVID-19 is effective on health belief status [10]. On the other hand, there are studies on the behavior patterns of health belief status in individuals against health. In the study conducted by Gözüm et al., it is stated that individuals' attitudes towards health and the importance given to health are affected by individuals' beliefs about illness and its consequences. In addition to this, it is stated that exercise should be done in order to protect from diseases and that the exercise behavior of individuals changes as well as the perception of the disease that occurs if exercise is not done [11]. Besides, it is necessary to exercise in

order to prevent diseases, and in the absence of exercise, the exercise behavior of individuals changes at the level at which the disease is perceived [12].

Emotional intelligence is defined as the ability to recognize and understand our own emotions and the emotions of others, to motivate ourselves, and to manage our emotions correctly in our own selves and relationships [13,14]. Nurses 'ability to manage their own emotions and interpret others' emotions helps them to cope with stress, which positively contributes to both their own health and the health of the patient [15]. In addition, it is emphasized that the quality of nursing care can be increased by using emotional intelligence skills such as positive coping methods during emotional crisis periods [16,17]. In the study conducted by Soto et al. on nurses during the COVID-19 pandemic, they stated that emotional intelligence had a protective effect against the negative effects of psychosocial risks [18].

Stress is defined as "an individual's indistinct reaction to various environmental stressors"[19]. While stress creates physiological and psychological destruction in occupational groups that work intensively, it negatively affects the health and organizational success of individuals [20,21]. The rapidly spreading COVID-19 pandemic has changed people's lifestyles; created a significant burden and stressful environment for all healthcare professionals, especially nurses, who provide health services inside and outside the hospital [3]. It has been shown that a large proportion of healthcare professionals are at greater risk of developing post-traumatic stress symptoms and stress disorder during the coronavirus process [22,23]. Nurses are exposed to psychosocial risks through the stress that can affect both psychological and physical health [18].

In the literature, there is no study examining the exercise health belief status, emotional intelligence, and stress of nurses who had Covid-19. Therefore, the purpose of this study is to investigate the exercise health belief status, emotional intelligence, and stress levels of nurses who contracted Covid-19 and to compare them with nurses who did not contract Covid-19.

2. Methods

2.1. Type of the Study

The research was conducted in a cross-sectional research design.

2.2. The Location and Date of the Study

The research was carried out on 1-30.01.2021 with nurses who are working in emergency units located in five hospitals in the Eastern Anatolia region of Turkey. The 3.1.9.4 version of the G*Power program (Heinrich-Heine-Universität Düsseldorf, Germany) was used to determine the sample size of the study. A total of 210 nurses were included in the study, with a power ratio of $\beta = 80\%$ and $\alpha=0.05$ of the sample calculated based on similar articles. [24].

2.3. Data Collection Tools

2.3.1 Personal Information Form

The personal information form prepared by the researcher consists of 6 questions (age, gender, duration of employment, marital status, education, and income status) in total.

2.3.2 Emotional Intelligence Scale (TEQue-SF)

The emotional Intelligence Scale (TEQue-SF) was developed by Petrides and Furnham (2001). The validity and reliability of the Turkish form were made by Deniz, Özer, and Işık (2013). The scale is a 7-point Likert-type scale with 20 items. This form, which aims to determine the perception level of individuals about their "emotional competence", can be applied individually or as a group. High scores obtained in the total of the scale; indicate that their emotional competence is perceived as high, and the low scores obtained; indicate that their emotional competence is perceived as low. The scale consists of a four-factor structure (well-being, self-discipline, emotionality, and sociability) including 20 items [25,26]. In the present study, the Cronbach's Alpha internal consistency coefficient of TEQue-SF was found to be 0.82.

2.3.3 Perceived Stress Scale (ASO)

Perceived Stress Scale (ASO) was developed by Cohen, Kamarck, and Mermelstein (1983) [27]. The validity and reliability of the Turkish form were made by Eskin et al., (2013). In the last month, the extent of a person's life cannot be predicted. The scale is in the 5-point Likert type (1 = never, 2 = almost never, 3 = sometimes, 4 = often 5 = very often), and its four items are reversed (4th, 5th, 7th, 8th items), six of its items are plainly worded (1., 2., 3., 6., 9., 10.). The evaluation of the scale is made on the total score. A total of 0-40 points are obtained from the scale. A higher score indicates a higher level of perceived stress [28]. In the present study, the Cronbach's Alpha internal consistency coefficient of ASO was found to be 0.84.

2.3.4 Exercise Health Belief Model Scale (EHBMS)

Exercise Health Belief Model Scale was developed by Esparza-Del Villar, O. A et al. (Esparza-Del Villar et al., 2017) [29]. The validity and reliability of the Turkish form were made by Çiftci and Kadıoğlu (2020). The scale is a 5-point Likert type consisting of 32 items. From the 1st to the 26th questions, they were scaled as None (1), A little (2), Neither a little nor more (3), Quite (4), A lot (5). From questions 27 to 32, they were scaled as I never think (1), I don't think (2), I think (3), I mostly think (4), I always think (5). The scale consists of 5 sub-dimensions (general health, seriousness perception, benefit perception, motivation, and sensitivity perception) and there is no reverse item. The maximum score that can be obtained from the scale is 160, and the minimum score is 32. The higher the score in the evaluation of the scale, the higher the exercise belief level is [30]. In the present study, the Cronbach's Alpha internal consistency coefficient of EHBMS was found to be 0.89.

2.3.5 Collection of Data

After the nurses were verbally informed about the study, the link address of the study was sent via e-mail to the individuals who accepted to participate. A survey was developed with google forms. The individuals who would participate in the research were informed about the purpose and method of the research, the time they would spare for the research, that participation in the research would not do any harm to them, and that it was completely voluntary and their verbal consents were obtained. "Questions on Socio-Demographic Characteristics of Nurses", "Exercise Health Belief Model Scale", "Emotional Intelligence Scale" and "Perceived Stress Scale" were used to collect data.

2.3.6 Evaluation of Data

Statistical analyses were performed using "IBM® SPSS © 24 software". The suitability of variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov). Descriptive statistics of numerical variables were expressed as mean and standard deviation. Descriptive statistics of categorical variables were given using numbers and percentage values. While the T-test is used in independent groups to compare two independent groups showing normal distribution; the Chi-square test was used to compare two categorically independent groups. Statistical significance level was taken as $p<0.05$.

2.3.7 Ethical Aspect of the Research

For the study, approval of Muş Alparslan University Scientific Research and Publication Ethics Committee was obtained (Number: E-10879717-050.01.04-15704).

2.3.8 Limitations of the research

The inability to reach nurses working in other hospitals in the Eastern Anatolia region is a limitation of the study.

3. Results

The characteristics of the descriptive data of the nurses who had Covid-19 and the control group included in the study are given in Table 1.

According to this table, when the descriptive characteristics of the nurses who had Covid-19 and the control group were compared, there was no statistically significant difference between the groups ($p > 0.05$). Thus, it is observed that the descriptive data of the Covid-19 group and the control group are similar (Table 1).

Table 1. Characteristics of the nurses who had and hadn't COVID-19

		Having COVID-19 Status			Test
		Yes (n=86) X̄±SD	No (n = 124) X̄±SD	Total (n = 210) X̄±SD	p
Age (year) [a]		27.70 ± 4.82	28.55 ± 6.05	28 ± 6	t=-1,086 p=0.279
Working year[a]		5.23 ± 5.38	5.76 ± 7.05	6-6.	t=-.583 p=0.560
		n (%)	n (%)	n (%)	Test p
Gender[b]	Male	36 (41.9)	59 (47.6)	95 (45.2)	χ^2 =0.671 p=0.413
	Female	50 (58.1)	65 (52.4)	115 (54.8)	
Marital status[b]	Married	35 (40.7)	55 (44.4)	90 (42.9)	χ^2 =0.277 p=0.598
	Single	51 (59.3)	69 (55.6)	120 (57.1)	
Educational status[b]	Associate Degree	13 (15.1)	23 (18.5)	36 (17.1)	χ^2 =0.509 p=0.775
	Bachelor's Degree	64 (74.4)	87 (70.2)	151 (71.9)	
	Master's Degree	9 (10.5)	14 (11.3)	23 (11)	
Level of income[b]	Income more than expenditures	(17.4)	17 (13.7%)	32 (15.2)	χ^2 =5.510, p=0.064
	Income equal to expenditures	27 (31.4)	59 (47.6)	86 (41)	
	Income less than expenditures	44 (51.2)	48 (38.7)	92 (43.8)	

[a] t test in Independent Groups, [b]Chi-square test,

When the exercise health belief status of nurses who had and had not COVID-19 was compared with the control group, there was a statistically significant difference in terms of "total", "benefit" and "motivation" levels in favour of nurses who had COVID-19 ($p = 0.009$, $p = 0.004$ and $p = 0.031$); there was no difference in other sub-parameters. It was observed that the exercise health belief levels of the nurses who had COVID-19 were higher than the control group (Table 2).

When the emotional intelligence of the nurses who had COVID-19 was compared with the control group, there was a statistically significant difference in terms of "total" and "well-being" levels in favour of the control group ($p = 0.038$ and $p = 0.014$); there was no difference in other sub-parameters. When the groups were compared in terms of emotional intelligence, it was determined that the control group had higher emotional intelligence levels than the nurses who had COVID-19 (Table 2).

When the stress levels of the nurses who had COVID-19 were compared with the control group, a statistically significant difference was found in favour of the control group ($p = 0.023$) (Table 2). It was observed that the control group had lower stress levels than the nurses who had COVID-19 (Table 2).

Table 2: Comparison of exercise health belief status, emotional intelligence, and stress levels of nurses who had and hadn't COVID-19

		Having COVID-19 Status		Test
		Yes (n=86) $\bar{X}\pm SD$	**No (n = 124)** $\bar{X}\pm SD$	**p**
Exercise health belief status	Total	126.07 ± 13.06	120.77 ± 15.09	t=2.645 p=**0.009****
	General Health	14.79 ± 3.13	14.10 ± 3.47	t=1.467 p=0.144
	Seriousness	26.51 ± 2.85	26.38 ± 3.35	t=.299 p=0.765
	Benefit	42.22 ± 6.02	39.51 ± 7.06	t=2.906 p=**0.004****
	Motivation	25.45 ± 3.72	24.28 ± 3.91	t=2.174 p=**0.031***
	Sensitivity	17.09 ± 4.73	16.49 ± 4.50	t=.932 p=0.352
Emotional intelligence	Total	66.37 ± 7.43	68.65 ± 7.99	t=-2.087 p=**0.038***
	Sociability	13.55 ± 2.70	13.71 ± 2.87	t=-.415 p=0.678
	Sensuality	12.03 ± 2.25	12.50 ± 3.02	t=-1.213 p=0.227
	Self-Control	13.30 ± 2.03	13.49 ± 2.77	t=-.542 p=0,588
	Well-being	13.93 ± 2.97	15.02 ± 3.28	t=-2.468 p=**0.014***
	Perceived Stress	20.84 ± 6.26	19.06 ± 4.93	**t=2.291 p=0.023***

T-Test in Independent Groups, *p <0.05, ** p<0.01

4. Discussion

In the study where we investigated the effect of COVID-19 on exercise health belief status, emotional intelligence, and stress in nurses, it was found that the exercise health belief status and stress scores of nurses who had COVID-19 were higher than the control group; it was observed that they obtained lower scores in terms of emotional intelligence than the control group.

Although the fact that there is no study investigating the effect of COVID-19 on exercise health belief status in nurses is the strength of our study, it is quite difficult to compare our study with the literature. However, there are studies on health belief status behaviours towards health in individuals. Regarding the subject, Gözüm et al. stated that individuals' attitudes towards health are influenced by the importance given to health, beliefs about the disease, and its consequences [11]. However it is also stated that it is necessary to exercise in order to prevent diseases, and if the exercise is not done, the exercise behaviour of the individuals changes as much as the disease is perceived. In other words, the person who faces the risk of illness and adopts that the positive aspects of his/her exercise behaviour are more than the negative aspects can become ready to experience protective health behaviour, that is, to exercise [12].

In the study conducted by Elgzar et al. among nursing students, it was reported that COVID-19 was effective on health belief status [10]. In our study, it was observed that COVID-19 affects the exercise health belief status of nurses working in the emergency units (in terms of total, benefit, and motivation sub-parameters). According to this result, the reason that nurses who had COVID-19 had higher exercise health belief status compared to the control group may be due to their belief in the clinical, psychological and social benefits of exercise as well as its effect on preventive health behaviour [31].

Emotional intelligence is an indispensable strategy in dealing with life difficulties by reducing stress factors and emotional regulation in individuals, maintaining mental health, increasing endurance, and dealing with chronic problems [32]. It is stated that a high emotional intelligence level is associated with well-being, stress management, improved clinical performance, advanced leadership in nurses, and more careful patient safety [33,34].

In studies conducted on healthcare professionals, works are showing that emotional intelligence levels are affected by factors such as gender, age, educational status, marital status, and ethnicity [34-36]. However, the level of emotional intelligence in nurses who had COVID-19 and its comparison with respect to the control group is not available in the literature. Our current study is different from other studies in terms of revealing this gap. In the study conducted by Sun et al. on 170 nurses, they found that the emotional intelligence of nurses was between medium and high [36]. Karacas et al. [37] Also found similar results in their study on 177 nurses. In our study, it was observed that the emotional intelligence levels of the nurses were between medium-high (68.65 ± 7.99) in the control group, similar to the studies of Sun and Karakas [37]. This result shows that in the COVID-19 process, nurses are skilled in avoiding negative emotions and successfully handling problems as well as controlling their emotions [36]. However, interestingly, it was determined that the emotional intelligence levels of nurses who had COVID-19 were lower than the control group.

COVID-19 affected the emotional intelligence of nurses. It has been previously reported that the COVID-19 pandemic can cause serious consequences such as mental diseases (such as schizophrenia, depression, panic, suicide) by increasing the negative emotions of healthcare professionals [35,38,39]. It is even reported that it may aggravate these results [35]. Accordingly, in our study, it was observed that nurses who contracted COVID-19 infection had a worse level of emotional intelligence compared to the control group. Therefore, COVID-19 has reduced the positive effects of emotional intelligence mentioned above.

Emerging infectious diseases like COVID-19 cause negative emotions such as stress, fear of illness, anxiety, depression, and anger in people [38,40]. In the studies conducted, the rate of these negative emotions is higher in healthcare professionals (especially nurses) who have closer contact with patients and are exposed to a high risk of infection compared to the normal population [41-43]. In addition, according to studies conducted in a past epidemic/pandemic diseases, it is stated that high stress continues for a long time in healthcare professionals [44].

In our study, it was observed that the nurses working in the emergency unit were exposed to stress in parallel with the literature, but the stress levels of the nurses who had COVID-19 were higher than the control group. This may be due to the fact that nurses who have contracted COVID-19 experience the symptoms of the disease as patients and fear experiencing this situation again. In a study conducted by Ahn et al. on 1783 healthcare workers, they compared the stress levels of doctors, nurses, administrators, and other healthcare personnel and observed that the stress levels of nurses were higher than other healthcare professionals [43]. Similarly, Lai et al. Also found that the highest stress among healthcare workers was in nurses [42]. In both studies, they attributed this to the fact that the most contacted people regarding diagnosis, treatment, and patient care were nurses. Therefore, being in contact with the disease or having the disease affects the stress levels of the nurses. In addition, our study provides superiority compared to other studies in terms of the stress levels of nurses who had COVID-19 and comparison with the control group.

5. Conclusion

In conclusion, while nurses who had COVID-19 had higher exercise health belief status and stress levels than nurses who did not have COVID-19, it was observed that they achieved lower scores in terms of emotional intelligence. Considering the negative relationship between emotional intelligence and

stress in nurses [35,36]. It is thought that nurses who had COVID-19 infection should be supported more in terms of programs that increase their emotional intelligence and reduce their stress. Thus, healthcare professionals who are exposed to multifactorial pressures during the pandemic process can use emotional intelligence as support against negative emotions such as stress [36]. In addition, nurses who do not have COVID-19 (control group) can be supported with training to exercise under the name of preventive health measures [10].

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Ethical Consideration

For the study, approval of Muş Alparslan University Scientific Research and Publication Ethics Committee was obtained (Number: E-10879717-050.01.04-15704). The individuals who would participate in the research were informed about the purpose and method of the research, the time they would spare for the research, that participation in the research would not do any harm to them, and that it was voluntary and their verbal consents were obtained.

Conflict of interest

The authors do not have any conflict of interest to disclose.

The compliance to Research and Publication Ethics

This work was carried out by obeying research and ethics rules.

Authors' Contributions

M. D: Conceptualization, Methodology, Formal analysis, Writing - Original draft preparation (% 40)
H. A: Conceptualization, Methodology, Resources, Investigation (% 30)
N.Ç: Conceptualization, Methodology, Resources, Investigation (% 30)
All authors read and approved the final manuscript.

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