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The effect of home-based exercise on anxiety and mental well-being levels of teachers and pre-service teachers in COVID-19 pandemic

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ABSTRACT

This study aims to examine the anxiety and mental well-being of teachers and pre-service teachers who engage in and do not engage in home-based exercise in the COVID-19 pandemic in terms of gender, marital status, age, and frequency of weekly exercise. The research sample consisted of 663 participants (X_{age}=37.05±9.87), including 460 wome (X_{age}=37.39±9.57) and 203 men (X_{age}=36.28±10.49). The data were collected using the "Status Anxiety inventory (STAI-I)" and the "Mental Well-Being Scale". As a result of the study, a significant difference was observed between the anxiety and well-being scores of the participants who exercised and did not exercise in the COVID 19 pandemic, respectively. The anxiety scores of male participants who did exercise were found to be higher than female participants. There was no significant difference between the anxiety and well-being scores in terms of frequency of weekly exercise of the participants who did exercise. In terms of marital status variable, no significant difference was found between anxiety and well-being scores. In the study, the anxiety and well-being scores of the participants who did not exercise were examined in terms of gender, and a significant difference was found between the anxiety and well-being scores. As a result, the anxiety and well-being of the participants who regularly did exercise during the COVID-19 pandemic were better than those who did not exercise, the anxiety levels of female participants who did exercise were higher than the male participants, the anxiety levels of female participants who did not exercise were higher than men, and the well-being levels also turned out to be lower.

Keywords: COVID-19, teacher, pre-service teacher, home-based exercise, anxiety, mental well-being.

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INTRODUCTION

The new corona virus disease 2019 (2019-nCoV), known as COVID-19, was first heard in the world with a warning message from an ophthalmologist in Wuhan Province, China, to his colleagues about the presence of a new disease with symptoms similar to acute respiratory syndrome (SARS) (Landry et al., 2020). This epidemic has spread throughout the world, particularly China, in a very short time due to its high infectious nature (Liu et al., 2020) and has become a threat to people's lives (Everett et al., 2020). In fact, 20% of the current cases of sufferes from the disease experience severe health problems, such as severe respiratory tract infection, kidney failure, pneumonia, and heart attack, while 5% resulted in death (Yalçın et al., 2020). The World Health Organization (WHO) has also stated that it is an internationally concerned public health emergency (PHEIC), as the characteristics of this new epidemic are unknown and have a far-reaching impact on people (Liu, Liu, and Zhong, 2020), and declared it to be a pandemic (WHO, 2020a). This decision has caused concern in many countries, including Turkey.

The first covid-19 case in Turkey was identified on 10 March, 2020 (Turkish Ministry of Health, 2020). The Turkish government has also taken a number of measures such as social distancing, quarantine, curfew, forced isolation to protect its citizens from the outbreak, taking into account the course of the outbreak in the world. In order to prevent the spread of the epidemic,

schools, worship centers, theatres, cinemas, cultural centres, cafes, restaurants, children's playgrounds and sports centres have ceased their activities until further notice (Turkish Ministry of Interior, 2020). Intercities travel was restricted.

Additionally, COVID-19 guides, booklets, posters and brochures have been prepared by both state and local governments and non-governmental organizations to inform the community. Despite all these measures, the number of cases and deaths has increased rapidly in Turkey. When unpredictability of the outbreak and uncertainty of when to control (Bao et al., 2020; Zandifar and Badrfam, 2020) were added to this adverse situation, great pressure was exerted on the majority of the society (Pan et al., 2020; Wang et al., 2020), and this created various psychological problems in individuals such as anxiety, depression, stress, and fear (Mak et al., 2010; Perrin et al., 2009; Brooks et al., 2020; Liu et al., 2020; Qiu et al., 2020). Again, within the framework of the measures taken during the COVID-19 outbreak, a physically inactive lifestyle was introduced into the society (Caner et al., 2020). This lifestyle is thought to be a condition that threatens human life with an increase in the risk of heart failure, respiratory system diseases, cancer, hypertension, as well as serious ailments.

The WHO also reported that physical inactivity is the fourth risk factor for mortality in the world (WHO, 2020b), and about 3.2 million people die each year from physical inactivity-related illnesses (WHO, 2020c). In this challenging process, mild exercise was recommended in the home environment to reduce the impact of psychological problems and to overcome inactivity (WHO, 2020d). Indeed, Rodríguez et al. (2020) found that exercise is an effective tool to prevent diseases by having a positive impact on both mental and physical health. Researches have shown that regular exercise regulates blood pressure in hypertension (Pescatello et al., 2004); reduces the risk of heart attack (Sherwood et al., 2016); organizes type 2 diabetes (Coelho et al., 2018); lowers cancer risk (Friedenreich et al., 2016); reduces anxiety (McHugh et al., 2019; Winroth et al., 2019), stress (Landers and Arent, 2007), depression (Leith, 2010) and anger (Washburn et al., 2007); improves sleep quality (Vardar et al., 2005); improves the psychological well-being (McAuley et al., 2000) and the quality of life (Yeltepe et al., 2016). Moreover, it helps to strengthen the immune system by increasing immune cells (Nieman and Wentz, 2019).

Teachers and pre-service teachers, who do not have the habit of exercising even in non-epidemic times, become unable to perform their routine activities because they do not go to school and stay at home, rendering them very inactive. Inactivity and long stay at home are also threats to human psychology. For this reason, it has become increasingly necessary to provide home-based exercising for both teachers and pre-service teachers, to organize an effective exercise program and for them to do exercising regularly.

In light of these explanations, it is thought that the COVID-19 pandemic has a negative impact on the psychology of society and that it may be possible to overcome this unwanted situation through regular exercise. However, when the literature is analyzed, most of the early researches carried out focused on detecting the genomic features of the virus (Lu, 2020; Cascella et al., 2020), the epidemic's epidemiology, clinical features (Huang, 2020; Chen et al., 2020), and psychological effects (Huang and Zhao, 2020; Rubin and Wessely, 2020). Yet, there has been no research on exercise that reduces the likelihood of unwanted psychological conditions occurring in uninfected individuals during this process. Besides, it is important to determine the effect of exercise on the psychological states of the individuals who are in education in this process.

Therefore, the aim of this study was to examine the anxiety and mental well-being levels of teachers and pre-servive teachers who engaged in home-basedexercise and who did not during the COVID-19 pandemic in terms of gender, marital status, age, and weekly exercise frequency variables.

METHODOLOGY

Research model

This is a relational screening study model, that examines the effect of exercise on anxiety and well-being levels of teachers and pre-service teachers in the social isolation process of the COVID-19 pandemic. This model is a research model conducted with the aim of determining the existence and/or degree of covariation between at least two variables in an existing situation (Fraenkel and Wallen, 2009; Karasar, 2015).

Universe and sample of the research

A total of 663 ($\bar{x}_{age}$ = 37.05 ± 9.87) adults, comprising 460 women ($\bar{x}_{age}$ = 37.39 ± 9.57), and 203 men ($\bar{x}_{age}$ = 36.28 ± 10.49), participated in the study voluntarily. 585 of the participants are teachers and 78 are pre-service teachers. The ages of the participants varied between 18 and 60. Participants were determined using the”appropriate sampling" method. The participants voluntarily participated in the research. However, data from participants who were diagnosed with COVID-19, either by themselves or by one of their family members, was not used in the study. Social isolation measures were taken by the Turkish government in Turkey during the COVID-19 process.

Additionally, the participants were reached on the internet, especially because of the curfews on weekends and the fearsexperienced by the participants. Prior to the

research, “Ethics Committee approval” was obtained by the decision of Artvin Çoruh University dated 28.04.2020 and numbered 2020/06. Later, the online form link prepared was sent to the participants on the internet between April, 28 and May, 08, 2020, and they were provided to fill it out. The first part of this contained instructions, the second part contained descriptive questions, while the third part contained scales. In the instruction section, it was explained to the participants that participation in the study was optional and it was stated that participation in the study was voluntary according to Helsinki criteria.

Demographic features of the participants are given in Table 1. Table 1 shows the gender, marital status of the participants, the status of exercising during the pandemic process, and the weekly exercise frequency of those exercising. Accordingly, 69.4% (n = 460) of the participants were female, 30.6% (n = 203) were male, 60.3% were married (n = 400), 39.7% were single (n = 263), with 61.2% exercising regularly (n = 406) while 38.8% did not exercise (n = 257). It was also found that 16% of participants engaged in home-based exercised, 1-2 days a week (n = 65), 44.1% engaged in home-based exercised, 3-4 days a week (n=203), and 33.9% engaged in home-based exercised, 5 - 7 days a week (n = 138).

Table 1. Demographic features of the participants.

Variables	Factor	*n*	*%*
Gender	Woman	460	69.4
	Man	203	30.6
Marital status	Single	263	39.7
	Married	400	60.3
Home-based exercise status of the participants	Yes	406	61.2
	No	257	38.8
Weekly exercise frequency of participants	1-2 days	65	16.0
	3-4 days	203	44.1
	5-7 days	138	33.9

Data collection tools

State anxiety inventory

To determine the anxiety levels of the participants in the study, the “Status Anxiety form" (STAI FORM TX-I) of the status–continuous anxiety inventory (STAI) developed by Spielberger et al. (1970) and adapted for Turkish society by Öner and Le Compte (1983) was used. The inventory consists of 20 items in a 4-point Likert form. The lowest score that can be obtained from the inventory is 20 and the highest score is 80. The cronbach alpha internal consistency coefficient of the inventory is 0.83. The cronbach alpha internal consistency coefficient of the scale for this study was found to be 0.94.

Warwick-Edinburgh mental well-being scale

The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) was developed by Tennant et al. (2007), and adapted for Turkish society by Keldal (2015). The scale consists of 14 one-dimensional items. Scale items are scored between 1 (never agree) and 5 (totally agree). The lowest score that can be obtained from the scale is 14, while the highest score is 70. The Cronbach alpha internal consistency coefficient of the scale is 0.92. The Cronbach alpha internal consistency coefficient of the scale was found to be 0.93 for this study.

Data analysis

In the analysis of the data in the study, descriptive statistics (frequency distributions, arithmetic means, standard deviations) were first examined. Kolmogorov Smirnow testwas used to decide subsequent analysis, whether the scores of each group were normally distributed or not. The fact that the normality test results were significant indicates that the data was normally distributed. For this reason, in the study, the t-test from parametric tests in binary comparisons, one-way ANOVA analysis in multiple comparisons, and the Pearson correlation test in relation analysis, were used. In the study, 0.05 was used in statistical processes as the level of significance.

RESULTS

The study first looked at whether there was a statistically

significant difference in anxiety and mental well-being mean scores of participants who did and did not exercise. The mean and standard deviation values for the outcomes of the study are shown in Table 2. When Table 2 was examined, it was found that the anxiety mean scores of the participants who exercised were lower than those who did not exercise (t = -4.848; p = 0.000). In addition, the mean scores of mental well-being of those who exercised were significantly higher than those who did not exercise (t = 3.917; p = 0000).

In this study, we conducted separate analyses of the participants who exercised and did not exercise because there was a statistical difference between the mean scores of anxiety and mental well-being of the participants who exercised and who did not exercise. In the study, we examined whether there was a difference between the mean scores of anxiety and mental well-being in terms of the gender, marital status and weekly exercise frequency of the participants who exercised. The mean and standard deviation values for the results are given in Table 3.

Analyzing Table 3, it was found that the anxiety scores of women who exercise regularly during COVID-19 were significantly higher than men (t = 3.05; p = 0.002), but there was no significant difference in mental well-being scores (t = -1.517; p = 0.130). There was no significant difference between the anxiety (t = 0.361; p = 0.719) and mental well-being scores (t = 1.336; p = 0.182) in terms of the participants being single and married. Again, in the study, the anxiety and mental well-being scores of the participants were examined whether a difference existed according to the frequency of weekly exercise, and there was no significant difference in both anxiety (F = 3.018; p = 0.050) and mental well-being scores (F = 2.629; p = .073).

The study also examined whether a difference existed between the mean scores of anxiety and mental well-being in terms of gender and marital status of participants who did not exercise, and the mean and standard deviation values for their results are given in Table 4.

The study examined whether there was a relationship between the participants ' ages and their mean scores on the anxiety and mental well-being scale. According to Table 5, a positive correlation was found to exist between the ages of the participants who exercised only and their mental well-being scores (r = 0.144; p = 0.004).

Table 2. Mean and standard deviation values regarding anxiety and mental well-being scale scores in terms of participants' exercise status.

Variable	Group	N	Anxiety			Mental well-being		
			$\bar{X}$	SS	p	$\bar{X}$	SS	p
Exercise status	Yes	406	40.5	11.0	.000**	52.54	9.48	.000**
	No	257	45.0	12.4		49.17	10.81	

** p < 0.01.

Table 3. Mean and standard deviation values regarding gender, marital status and weekly exercise frequency anxiety and mental well-being scale scores of exercise participants.

Variable	Group	N	Anxiety			Mental well-being		
			$\bar{X}$	SS	P	$\bar{X}$	SS	P
Gender	Woman	272	41.71	10.58	.002**	52.04	8.83	.130
	Man	134	38.19	11.56		53.56	10.66	
Marital status	Single	231	231	40.32	.719	51.82	10.04	.182
	Married	175	175	40.72		53.09	9.02	
Weekly exercise frequency of participants	1-2 days	65	41.83	11.38	050	50.51	9.98	.073
	3-4 days	203	41.39	11.10		52.39	9.36	
	5-6 days	138	38.70	10.57		53.73	9.31	

* p < 0.05, ** p < 0.01.

Table 4. Mean and standard deviation values of anxiety and mental well-being scale scores in terms of gender and marital status participants who did not exercise.

Variable	Group	N	Anxiety			Mental well-being		
			$\overline{X}$	SS	p	$\overline{X}$	SS	p
Gender	Woman	188	46.71	12.25	.000**	48.61	10.79	.049*
	Man	69	40.41	11.68		51.61	10.63	
Marital status	Single	88	42.84	13.09	.042*	51.74	9.47	.013*
	Married	169	46.15	11.91		48.21	11.28	

* p < 0.05, ** p < 0.01.

Table 5. Results of correlation analysis regarding ages and anxiety and well-being scale scores of participants who exercised and did not exercise.

Variable	Participants doing exercise		Participants not doing exercise	
	Anxiety	Mental well -being	Anxiety	Mental well-being
Age	-.023	0.144**	0.030	-0.024

** p < 0.01.

DISCUSSION

This study was conducted to examine the effect of exercise on anxiety and mental well-being levels during the COVID-19 pandemic in terms of gender, marital status, age, and frequency of exercise. According to the results of the research, it was found that the anxiety mean scores of the participants who exercised were lower than those who did not exercise. In addition, the mean scores of the mental well-being of those who exercise were found to be significantly higher than those who do not exercise.

According to the World Health Organization, 31% of individuals aged 15 and older are physically inactive, and about 3.2 million deaths a year are linked to this unhealthy lifestyle behavior (Hall et al., 2020). In particular, longer sitting time has been shown as an important predictor of adverse health outcomes (Young et al., 2016). It has been reported that being physically active also positively affects the psychological status of individuals (McAuley et al., 2000).

In a study examining the effect of regular exercise or not on mental health, it was reported that individuals who regularly participate in exercise had better mental health (Barut and Demir, 2020). Besides, it was reported that the previous outbreak in the world caused mental health problems (Brooks et al., 2020). The COVID-19 outbreak is reported to cause incresed psychological health stress in people (Kong et al., 2020).

Recent research reports that a distance of up to 4000 steps per day at any speed in the home setting during the COVID-19 pandemic is significantly beneficial on the long run (Saint-Maurice et al., 2020). A study conducted during the COVID-19 outbreak in Ireland shows that regular daily exercise contributes positively to a person's mood (Lades et al., 2020). It has also been reported that regular physical activity during the COVID-19 process, along with regular sleep, strengthens the immune system, and is important in reducing the harmful effects of stress on immunity. Therefore, it is emphasized that the level of physical activity should be increased with exercises to be performed in the home (Simpson and Katsanis, 2020). Our research also supports relevant research in the literature. In our study, it was found that individuals who exercised in the home environment during the COVID-19 pandemic had lower levels of anxiety and were mentally healthier than those who did not (Table 2).

Anxiety and mental well-being status of the participants who were doing sports according to another variable, gender, were examined. According to the results of the analysis, the anxiety scores of women who exercised regularly during the covid-19 pandemic were higher than those of men, and there was no significant difference in mental well-being scores. Thome and Espelage (2004) found that there was a positive association between the psychological robustness of young women and their physical activity levels.

Bernaards et al. (2006) reported that physical activity did not have a different effect on gender. Besides, Tessier et al. (2007) said that there was very little gender difference between individuals who exercised. In a study conducted on the students studying at the school of physical education and sports, it was determined that the psychological well-being of the participants did not differ statistically significantly according to whether or not they played sports as licensed (Eraslan, 2005). Bültmann et al. (2002) and Kim et al. (2008) found in their research

that regular physical activity was more effective in men. There was no statistically significant difference between gender variables in a study that investigated the psychological well-being levels of university students who do exercise as a leisure time activity (Özdemir et al., 2016). In a different study, it was observed that the life satisfaction of individuals doing sports did not differ significantly according to the gender variable (Hanbay et al., 2017). Within the scope of this current study, it was found that women who exercise were more anxious than men who exercised, but there was no difference between their mental well-being scores (Table 3). Previous researches showed that regular exercise produces different and inconsistent results on gender. It can be said in our study that this situation may have occurred due to the fact that women were more mentally affected during the COVID-19 pandemic process.

In this study, anxiety and mental well-being were examined according to the marital status variable of the participants doing sports, and there was no significant difference between the anxiety and mental well-being scores of the participants in terms of marital status variable. Hanbay et al. (2017) in a study on individuals doing sports, found that the life satisfaction of individuals who are married is higher than that of single individuals. However, in our study, it was found that there were no significant differences between the level of anxiety and mental well-being of single and married individuals who exercised according to the marital status variable (Table 3). It can be said that exercise during this period contributes positively to the anxiety and mental status of both married and single individuals. In a study conducted in China, no significant difference was found between married and single people in terms of depression scores during the COVID-19 period (Wang et al., 2020). This study also supports our research. It can be concluded that the COVID-19 process affects both single and married individuals in the same degree.

It was found that no difference occurred between anxiety and mental well-being according to the variable of the frequency of exercising individuals, which is another variable, weekly exercise. In this study, it was found that there was no difference between the anxiety levels and mental well-being of the individuals participating in the study as the frequency of weekly exercise increased. This study found that there was no difference between exercising every day of the week and doing fewer exercises. A research by Doğan (2006) with university students found that as the frequency of physical exercise increased, the "well-being" score levels of students increased. Öner (2019), in the research, also reported that as weekly training frequency increased, the level of psychological robustness also increased. These results contradict the research finding. It can be said that this situation is due to the psychological situation created by the COVID-19 pandemic process on individuals.

In this study, the participants who did not exercise were examined for anxiety and mental well-being during COVID-19, and it was found that the anxiety levels of women who did not exercise were significantly higher than men, and the average scores of mental well-being were significantly lower. In addition, it was determined that the mean anxiety scores of single participants were significantly lower and the average mental well-being scores were higher. In a study on the sedentary population, it is stated that the prevalence of anxiety disorder in women is higher than men (Yonkers et al., 1998).

According to the American National Comorbidity Study data, lifetime frequency rates are 30.5% for women and 19.2% for men. The study of the differences between male and female sex among the types of anxiety disorders revealed the presence of more serious symptoms in women (Bal et al., 2013). According to behavioral and feminist theories, the mental state of women is more likely to be affected by events than men. It is stated that this situation is caused by the weaknesses of women in their position. Problems in their private lives, workload, and inequalities in the relationship between the two sexes play a role in women being more affected by depression (Zorba, 2008). Similarly, a new study conducted in China, a month after the COVID-19 outbreak, reported higher symptoms of post-traumatic stress in women (Liu et al., 2020). In the research conducted during the COVID-19 pandemic process, sedentary men were reported to be less likely to develop psychological symptoms in the face of a stressful event to a certain extent (Moccia et al., 2020).

In this study, participants who did not exercise during the COVID-19 pandemic had higher levels of anxiety among women and lower mental well-being, according to the gender variable. In this process, it was found that the mental well-being of the women who exercised was the same as that of the men who exercised, but the mental well-being of the women who did not exercise was worse than the men who did not exercise. Therefore, it can be said that exercising in this process has a positive effect on the psychological status of women.

In this study, anxiety and mental well-being were examined according to the age of the participants who exercised only regularly and it was found that there was a positive correlation between the age of the participants who exercised only and their mental well-being scores. Studies investigating the relationship between age and mental well-being differ from society to society. However, the general opinion showed that the best levels of mental well-being reported were at ages 45 to 49 (Wade and Cairney, 1997). In a study that examines the psychological well-being levels of physical education and sports school students according to their age, gender and sports, there was no statistically significant difference between their psychological well-being according to age groups (Yaş, 2015). This result is not similar to our research. In a study conducted on a group that is a

member of a private health center and plays regular sports, it was reported that those with a higher age group had higher life satisfaction than the young people (Hanbay et al., 2017).

Our research also showed that there was a positive relationship between the ages of the participants who exercised and their mental well-being scores. According to the research findings, the psychological well-being of individuals who exercise as they age seems to be better in this process. During the covid-19 pandemic, older individuals may be less mentally affected than younger people. This can be explained by higher COVID 19-related mortality rates in elderly individuals (Çobanoğlu, 2020).

As a result, it was found that the anxiety and psychological well-being of teachers and pre-service teachers exercising during the COVID 19 pandemic in Turkey were more positive than those who do not exercise; women who exercise were more anxious; there was no difference between participants' anxiety and psychological well-being scores in terms of marital status and frequency of weekly exercise. In addition, the anxiety levels of women who did not exercise were higher than men, mean scores of mental well-being were significantly lower; mean anxiety scores of single participants were significantly lower and the average mental well-being scores were higher, and there was a positive correlation between the ages of the participants who exercised and their mental well-being scores were obtained.

Limitations

This research was conducted online in April and May, 2020. The research was conducted with teachers and pre-service teachers who only engaged in home-based exercise in Turkish society. Also, the research is a quantitative study. In addition, the research did not include those under the age of 18 and those who tested positive for the corona virus.

RECOMMENDATİONS

According to the research results, we can offer the following recommendations in future studies:

- Maintaining regular physical activity during the outbreak process such as COVID-19 and exercising routinely in a safe home environment can be important for mental health.
- Studies can be conducted to reveal the effect of exercise and physical activity on students during the covid 19 pandemic process.
- Studies can be conducted to reveal the effects of different exercises and physical activities.
- Studies can be done on different professions.
- Studies in which qualitative or qualitative and quantitative research designs are used together can be done.
- Studies can be conducted for different psychological problems of individuals such as depression and fear.

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