# Investigation of Anxiety, Depression and Physical Activity Levels in University Students In The Process of the Covid-19 Pandemic**

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**ABSTRACT:**

**Purpose:** This study aims to assess the anxiety, depression, and physical activity levels of university students during the Covid 19 pandemic process and to examine the relationship between them.

**Material and Methods:** A total of 132 students between the ages of 18-25 studying at the Physiotherapy and Rehabilitation Departments were included in the study. Participants were evaluated with the Coronavirus Anxiety Scale Short Form, Beck Depression Scale, and International Physical Activity Questionnaire Short Form.

**Results:** According to the results we found, the mean age of the participants was $21.20\pm0.15$. 68.9 % (n=91) of the participants were female and 31.1 % (n=41) were male. The mean coronavirus anxiety scale scores of the participants was found as $8.19\pm0.866$. When the depression level of the participants was classified, 43.9 % had minimal depression, 21.2 % had mild depression, 25.8 % had moderate depression, 9.1 % of them were in the severe depression class. 32.6 % of the participants reported that they exercised regularly. Physical activity levels of the participants were classified as 63.6% inactive, 27.3 % of them minimally active and 9% of them very active. There was a moderate positive correlation between regular exercise and a decrease in coronavirus anxiety (r=0.460, p<0.01) and a poor correlation between increased physical activity level (r=0.182, p<0.05). A moderate positive correlation was found between the presence of chronic disease and the level of depression (r=0.317, p<0.01).

**Conclusion:** Although the Covid 19 pandemic has been going on for more than two years, it can be said that the effects of university students on anxiety, depression and physical activity levels still continue.

*Keywords: Covid 19, Anxiety, Depression, Physical Activity*

## INTRODUCTION

Covid 19 is a respiratory infectious disease caused by an unprecedented virus that first appeared in China in December 2019 (Ercan and Keklicek, 2020). On 11 February 2020, the virus was named as 'serious acute respiratory coronavirus-2' (SARS-CoV-2) and 'Covid 19 diseases' according to the WHO definition (Noreen et al., 2020). Responsibility of individuals to support the immune system during the Covid 19 pandemic; Suggestions include choosing a healthy lifestyle, exercising, sleeping enough, avoiding smoking and alcohol, and reducing stress levels (Gençalp, 2020). Some restrictions were also applied. The Council of Higher Education stated that universities would be more appropriate to continue education remotely at the beginning of the pandemic (Barğı et al., 2021). Many people fully followed the recommendations of the authorized institutions by providing isolation and staying at home. However, although these measures slow down the rate of transmission of the virus, they negatively affect people's physical activities, cause

an increase in the time spent in front of the screen, resulting in deterioration of physical health, nutrition, and sleep patterns, and a decrease in quality of life (Fazlıoğulları and Koca, 2021). It is also among the possible problems that the restrictions affect the students psychologically and mentally in a negative way (Islam et al. 2020). It is seen that regular physical activity (PA) reduces the problems that cause death and reduces the risk of problems that may arise as a result of having severe Covid 19 disease (Kaya Ciddi and Yazgan, 2020). Physical activity has an important role in prolonging physical well-being and lifespan, as well as preventing catching diseases (Kodama et al. 2013). Considering the health benefits; It has been observed that physical activity strengthens the immune system, has a beneficial effect on general physical abilities, causes psychological benefits (elimination of stress, depression, anxiety problems), and positive social effects (İlaslan et al. 2020). As a result of these studies, it was aimed to investigate the anxiety, depression, and physical activity levels of students during the pandemic process and to examine the relationship between these parameters.

## MATERIAL and METHODS

### Purpose and Type of the Study

This study was aimed to investigate the level of coronavirus anxiety, depression, and physical activity of the students in the process of coronavirus pandemic. This study was carried out by the Declaration of Helsinki Principles.

### Sampling and participant

152 students studying in the Physiotherapy and Rehabilitation Department participated in the study, 132 students were included. The sample size was determined by a 90% power analysis. Volunteers and university students between the ages of 18-25 were included in the study. Those who had a chronic disease and had a musculoskeletal injury in the last 1 year were not included in the study.

### Data Collection Tools

Students participated in the study online with the inquiry method prepared via Google Forms. The students were contacted and informed by telephone

beforehand. First, demographic data of individuals were collected. In demographic data; Questions such as age, height, weight, gender, whether they had any chronic diseases, and whether they had Covid 19 were asked.

The Coronavirus Anxiety Scale Short Form evaluated anxiety during the pandemic process. This scale is composed of 5-item questions based on fear and anxiety psychology literature. Each item is written to reveal specific forms of anxiety. Each item was graded out of 5 points to reflect symptom frequency ranging from 0 (never) to 4 (almost every day) during the previous two weeks (Lee, 2020a). A score of 5-20 is obtained from this assessment. Scores of 9 and above indicate that the level of anxiety is high.

The depression level of the participants was determined with the Beck Depression Scale. The test consists of 21 items in total and each item is scored between 0 and 3. Depression level in the questionnaire is between 0-9= Minimal, between 10-16= Mild, between 17-29= Moderate, between 30-63= Severe depression. The scale has been translated into Turkish as the Beck Depression Inventory (BDI), and its validity and reliability studies have been completed (As, 2015; Büker et al. 2010).

The physical activity levels of the participants were measured with the International Physical Activity Questionnaire. Öztürk made the Turkish validity and reliability of this questionnaire. This short-form consists of 7 questions and gives information about the time spent in sitting, walking, moderate and vigorous activities in the last week. The calculation of the total score of the questionnaire consists of the sum of the duration (minutes) and frequency (number of days) of low-intensity physical activity (walking), moderate-intensity physical activity, and vigorous physical activity (Öztürk, 2005).

### Statistical Analysis

Statistical analyzes were performed using IBM SPSS 22.0 (Inc.; Chicago, IL, USA) software. Continuous variables were given as mean ± standard deviation, minimum and maximum, and categorical variables as numbers and percentages. Spearman correlation analysis was used to examine the relationship between nonparametric variables. Statistical significance level was accepted as $p < 0.05$.

**Ethical Approval**

The study was evaluated by the Istanbul Rumeli University Ethics Committee and was approved with the number E-53938333-050.06-9251. Informed voluntary consent was obtained from all participants.

**RESULTS**

The mean age of 132 students between the ages of 18-25 who participated in the study was 21.20±0.15. 68.9% (n=91) of the participants were female and 31.1% (n=41) were male (Table 1).

27.3% (n=36) of the students participating in the study stated that they had covid 19 before, and 86.4% (n=114) stated that they had the covid 19 vaccine. 28.8% (n=38) of the participants stated that they used cigarettes and 20.5% (n=27) used alcohol.

While 16.7% (n=22) of the participants had a chronic disease, 15.9% (n=21) stated that they used medication (Table 1). The mean scores of the participants from the Coronavirus Anxiety Scale, Beck Depression Scale, International Physical Activity Questionnaire-Short Form are shown in Table 2.

When the depression level of the participants was classified according to BDI scores, 43.9% (n=58) had minimal depression, 21.2% (n=28) had mild depression, 25.8% (n=34) had moderate depression. , 9.1% (n=12) were in the severe depression class. While 32.6% (n=43) of the participants reported that they exercised regularly, their physical activity levels according to UFAA-SF scores were 63.6% (n=84) inactive, 27.3% (n=36) minimally active, 9,1% (n=12) were found to be very active (Table 3).

**Table 1.** Socio-demographic characteristics

| Descriptive Variables | n=132 | % |
|---|---|---|
| **Gender** | | |
| Female | 91 | 68,9 |
| Male | 41 | 31,1 |
| **The status of getting Covid 19** | | |
| Yes | 36 | 27,3 |
| No | 96 | 72,7 |
| **The status of the Covid 19 vaccine** | | |
| Vaccinated | 114 | 86,4 |
| Not Vaccinated | 18 | 13,6 |
| **Smoking** | | |
| Yes | 38 | 28,8 |
| No | 94 | 71,2 |
| **Alcohol use** | | |
| Yes | 27 | 20,5 |
| No | 105 | 79,5 |
| **Chronic illness** | | |
| Yes | 22 | 16,7 |
| No | 110 | 83,3 |
| **Medication** | | |
| Yes | 21 | 15,9 |
| No | 111 | 84,1 |
| | **Min-Max** | **X±SD** |
| Age (year) | 18-25 | 21,20±1,727 |
| Weight (kg) | 41-170 | 64,20±17,150 |
| Height (cm) | 150-200 | 169,58±9,017 |
| BMI (kg/m$^2$) | 15,79-42,5 | 22,115±4,3302 |

Min: minimum, Max: maximum, X: mean, SD: standard deviation

**Table 2.** Scores from the questionnaires applied to the participants

| Scores | n | Min-Max | X±SD |
|---|---|---|---|
| CAS-SF | 132 | 6-10 | 8,19±0,866 |
| BDI | 132 | 0-51 | 13,33±10,776 |
| IPAQ-SF | 132 | 288-2934 | 1142,33±594,726 |

CAS-SF: Coronavirus Anxiety Scale, BDI: Beck Depression Inventory, IPAQ-SF: International Physical Activity Classification, Min: minimum, Max: maximum, X: mean, SD: standard deviation

**Table 3.** Classification of participants according to BDI and IPAQ-SF scores

|  |  | Descriptive variables | n | % |
|---|---|---|---|---|
| **BDI Classification** | **Minimal Depression** | Male | 23 | 56,1 |
|  |  | Female | 35 | 38,5 |
|  |  | Total | 58 | 43,9 |
|  | **Mild Depression** | Male | 4 | 9,8 |
|  |  | Female | 24 | 26,4 |
|  |  | Total | 28 | 21,2 |
|  | **Moderate Depresyon** | Male | 11 | 26,8 |
|  |  | Female | 23 | 25,3 |
|  |  | Total | 34 | 25,8 |
|  | **Severe Depression** | Male | 3 | 7,3 |
|  |  | Female | 9 | 9,9 |
|  |  | Total | 12 | 9,1 |
| **IPAQ-SF Classification** | **Inactive** | Male | 19 | 46,3 |
|  |  | Female | 65 | 71,4 |
|  |  | Total | 84 | 63,6 |
|  | **Minimal Active** | Male | 17 | 41,5 |
|  |  | Female | 19 | 20,9 |
|  |  | Total | 36 | 27,3 |
|  | **Very Active** | Male | 5 | 12,2 |
|  |  | Female | 7 | 7,7 |
|  |  | Total | 12 | 9,1 |

BDI: Beck Depression Inventory, IPAQ-SF: International Physical Activity Questionnaire Short Form

**Table 4.** Examination of the relationship between descriptive variables and scales

|  |  | Gender | Smoking | Alcohol | Exercising regularly | CAS | BDI | IPAQ-SF |
|---|---|---|---|---|---|---|---|---|
| **Gender** | r | 1 | -0,188* | -0,187* | -0,232** | -0,267** | -0,117 | 0,326** |
|  | p | - | 0,031 | 0,032 | 0,007 | 0,002 | 0,182 | 0,000 |
| **Smoke** | r | -0,188* | 1 | 0,549** | -0,121 | 0,687** | -0,081 | -0,031 |
|  | p | 0,031 | - | 0,000 | 0,168 | 0,000 | 0,357 | 0,728 |
| **Alcohol** | r | -0,187* | 0549** | 1 | -0,032 | 0,671** | -0,052 | -0,089 |
|  | p | 0,032 | 0,000 | - | 0,717 | 0,000 | 0,553 | 0,312 |
| **Exercising regularly** | r | -0,232** | -0,121 | -0,032 | 1 | 0,460** | 0,156 | -0,182* |
|  | p | 0,007 | 0,168 | 0,717 | - | 0,000 | 0,074 | 0,037 |
| **CAS-SF** | r | -0,267** | 0,687** | 0,671** | 0,460** | 1 | 0,011 | -0,151 |
|  | p | 0,002 | 0,000 | 0,000 | 0,000 | - | 0,897 | 0,083 |
| **BDI** | r | -0,117 | -0,081 | -0,052 | 0,156 | 0,011 | 1 | 0,070 |
|  | p | 0,182 | 0,357 | 0,553 | 0,074 | 0,897 | - | 0,427 |
| **IPAQ-SF** | r | 0,326** | -0,031 | -0,089 | -0,182* | -0,151 | 0,070 | 1 |
|  | p | 0,000 | 0,728 | 0,312 | 0,037 | 0,083 | 0,427 | - |

BMI: Body Mass Index, CAS: Coronavirus Anxiety Scale- short form, BDI: Beck Depression Inventory, IPAQ-SF: International Physical Activity Questionnaire Short Form **p<0.01, *p<0.05

A weak positive correlation was found between the age of the participants and body mass index (r=0.185, p<0.05) (Table 4). A weak positive correlation was found between body mass index and male gender (r=0.253, p<0.01). There was a weak correlation between male gender and smoking (r=-0.188, p<0.05), alcohol use (r=-0.187, p<0.05) and regular exercise (r=-0.232, p<0.01). Level of correlation, a positive moderate correlation (r=0.326, p<0.01) was found between male gender and physical activity level. A weak correlation was found between female gender and coronavirus anxiety (r=-0.267, p<0.01). A moderate positive correlation was found between the smoking and alcohol use of the participants (r=0.549, p<0.01). A moderate positive correlation (r=0.671, p<0.01) was found between smoking and reduction in coronavirus anxiety (r=0.687, p<0.01), and between alcohol use and reduction in coronavirus anxiety. There was a moderate positive correlation between regular exercise and a decrease in coronavirus anxiety (r=0.460, p<0.01), and a weak correlation

between increased physical activity level (r=0.182, p<0.05). A moderate positive correlation was found between the presence of chronic disease and the level of depression (r=0.317, p<0.01).

## DISCUSSION

In present study; was conducted to investigate anxiety and depression and physical activity levels in university students, which are among the general health behaviors during the Covid 19 pandemic process. Anxiety reflects a generalized expectation of a future threat. Anxiety developing especially due to social isolation and quarantine during the pandemic process was also named 'Coronaphobia' (Lee, 2020b). American College Health Association In 2008, depression and anxiety were reported together as the most common mental health disorder in university students (American College Health Association, 2009). In studies, coronavirus anxiety was high in students during the pandemic process (Hu et al. 2020; Li et al. 2020). In a systematic review, the prevalence of anxiety was reported as 35%, and the prevalence of depression as 20% (Lakhan, Agrawal, and Sharma 2020). In our study, it was observed that the coronavirus anxiety of the students was mild. It can be said that the reason for this is that approximately 2 years have passed since the onset of the pandemic and face-to-face education has decreased, so the anxiety levels of the students have decreased. In addition, the fact that the students were students of the faculty of health sciences may have affected the level of anxiety. Studies conducted have attributed that the level of anxiety in medical students did not increase in the Covid 19 pandemic, and the reason for this was their high level of knowledge and awareness about the subject (Lasheras et al. 2020). In a study by Hu et al. (2020) which supports our study, it was stated that the beneficial effect of exercise on depression is based on neurotransmitter, neurogenesis, neurotrophic factors, and cerebral blood flow regulation (Hu et al. 2020).

Mild and moderate depression was found in 53.1% of the students participating in our study. This rate is in parallel with the literature. In a meta-analysis study, it was found that Covid 19 affected students' anxiety (29%), depression (37%), and stress levels

(23%) (Wang et al. 2021). In another study, it was stated that covid 19 causes a decrease in social activity and therefore leads people to depression (Arenas et al. 2021). In addition, no relationship was found between coronavirus anxiety and depression levels (Rees-Punia et al. 2021). When we look at the literature, studies are showing a relationship between physical activity and depression in studies conducted on older people during the pandemic process (Wolf et al. 2021). The majority of the participants (63.6%) were physically inactive. The Covid 19 pandemic has been going on since March 2020. Although nearly 2 years have passed, the physical activity level of young people is still low. This situation may be a harbinger of different chronic diseases in the future. It was stated that students were physically inactive in studies conducted in Turkey before the pandemic to investigate the level of physical activity (Savci et al. 2006). Due to the ongoing pandemic and the concern of young people catching Covid 19, physical activity levels may decrease further. As a result of our study, physical inactivity may have increased due to the effect of the pandemic. In addition, in a study, it was found that as the education level increases, I have more effects on physical activity (Guo et al. 2021). Inadequate physical inactivity can lead to mental consequences such as high insulin and blood lipids (Piercy et al. 2018), obesity (Giroir and Wright, 2018), coronary heart disease, and cancers (Hallal et al., 2014) or depression (Korczak et al., 2017). Therefore, it is necessary to maintain physical activity in a safe environment for a healthy life, In our study, there was also no relationship between the anxiety, depression, and physical activity levels of young people who had Covid 19. In addition, the same parameters were not associated with the status of being vaccinated against Covid 19.

The strengths of the study are that a good number of participants and physical activity and depression in university students have been studied in the literature, but despite the time elapsed since the pandemic, depression findings and physical activity levels continue to be affected, including anxiety. We believe that our study will shed light on the literature on this subject. The weakness of our study is that the level of physical activity is evaluated by the student's

declaration. We think that methods that provide more objective measurement can be used instead.

## CONCLUSION

Although it has been a long time since the Covid 19 pandemic process, we can say that the negative effects of the pandemic continue. In addition, it was concluded that by increasing the physical activity levels of university students, besides the systemic positive effects, mental health levels such as anxiety and depression could be improved.

## Conflict of Interest

The authors declared no conflict of interest regarding this article.

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