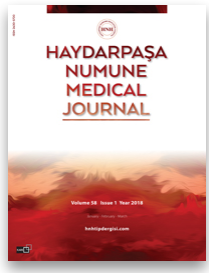
HAYDARPAŞA NUMUNE MEDICAL JOURNAL

DOI: 10.14744/hnhj.2024.13334
Haydarpasa Numune Med J 2024;64(4):443–449



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ORIGINAL ARTICLE

The Effect of Mental State and Physical Activity Levels on Quality of Life During the COVID-19 Pandemic Period

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Abstract

Introduction: The precautions taken during the COVID-19 pandemic altered people's lifestyles. The present study aimed to evaluate the mental states and physical activity levels of individuals during the pandemic and to uncover the effects of these conditions on quality of life.

Methods: The study was conducted with 175 people who applied to the Family Medicine outpatient clinics of a Training and Research Hospital after receiving ethics committee approval and agreeing to participate in the study. Participant Information Collection Form, Short Form-36 Quality of Life Scale (SF-36), Beck Depression Scale (BDS), Beck Anxiety Scale (BAS), and International Physical Activity Questionnaire (short form) (IPAQ) were applied to the individuals via face-to-face survey method. The statistical significance level was accepted as $p<0.05$.

Results: A total of 48.6% of the 175 participants were female, 40.0% were married, and the mean age was 39.21±13.66. 44.6% of the individuals had chronic diseases, 42.9% were receiving regular medication, and 43.4% of the participants said that they had a COVID-19 infection. The average BAS and BDS scores of those who had COVID-19 were higher, and the SF-36 subscale scores were lower than those who did not ($p<0.05$). The BAS and BDS scores of those with chronic diseases who were receiving regular medication were higher ($p<0.001$). A negative relationship was detected between the BAS and BDS scores of the individuals and the SF-36 scores ($p<0.05$). A weak and negative relationship was detected between the BDS score and the "Total Physical Activity" score ($p=0.003$).

Discussion and Conclusion: In the present study, the mental state and quality of life of individuals who had COVID-19 were affected negatively compared to those who did not. Individuals must be informed about lifestyle changes and healthy living behaviors appropriate for the changing conditions during the pandemic.

Keywords: COVID-19 pandemic; mental status; physical activity; quality of life.

After the first cases in our country, flight bans were imposed on many countries during the COVID-19 pandemic, and social distancing and medical mask requirements were introduced. Flexible working and work-from-home conditions were implemented, and administrative leave was given to individuals with special conditions working in the public sector for certain periods. Curfew and travel bans were used for people under the age of 18 and over the age of 65 or for the entire society during certain periods. Distance education models were

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Submitted Date: 12.12.2023 **Revised Date:** 17.01.2024 **Accepted Date:** 19.02.2024
Haydarpaşa Numune Medical Journal

introduced in education and training, artistic activities, concerts, and conferences were canceled, and shopping malls and some venues were temporarily closed[1].

After these precautions, the time spent at home increased, and a sedentary lifestyle was introduced. An increase in anxiety and depressive symptoms, anxiety-related findings, and deterioration in sleep quality were reported in individuals whose social lives were negatively affected[2-4].

Lifestyle changes that resulted from various precautions taken because of the COVID-19 pandemic, hospitalization due to the virus, fear of losing loved ones and death, ongoing uncertainty because of the pandemic, and economic difficulties significantly affected people's quality of life[5].

The study aimed to evaluate the mental state and physical activity levels of individuals in our country during the pandemic and to uncover the effects of these conditions on their quality of life.

Materials and Methods

The study had a prospective, descriptive, and cross-sectional design and was approved by the decision of the Clinical Research Ethics Committee of Haydarpaşa Numune Training and Research Hospital (Registration No: 2021/187). It also complied with the principles of the Declaration of Helsinki and Good Clinical Practice. A total of 1,526 patients applied to the Family Medicine Outpatient Clinics of a Training and Research Hospital in the last two months. When a power analysis was made to calculate the sample size to create the study universe, the minimum number of patients needed to reach a 95% confidence level and a 5% confidence interval was calculated as 175. The study was conducted between September and November 2021 with 175 people who met the inclusion criteria and gave written consent. Participants were administered the Information Collection Form, Quality of Life Scale Short Form-36 (SF-36), Beck Depression Scale (BDS), Beck Anxiety Scale (BAS), and International Physical Activity Questionnaire (short form) (IPAQ) using the face-to-face survey method.

The Quality of Life Scale Short Form-36 (SF-36) consisted of a total of 36 questions and 8 sub-parameters. Health is evaluated with the sub-scales from 0 to 100, with 0 indicating poor health status and 100 indicating good health status. The validity and reliability study of the Turkish version of the SF-36 was conducted by Koçyiğit et al.[6], and Demiral et al.[7] standardized it to Turkish society.

IPAQ is a 7-question scale used to determine the level of physical activity, in which minutes, days, and MET (Metabolic Equivalent of Task-Physical Activity Energy Value) are multiplied to calculate a score as "MET-Minutes/Week." The validity and reliability study of the scale, developed by Craig et al.[8], was conducted by Öztürk et al.[9]

The BAS was used to determine the anxiety risk experienced by individuals, and BDS was used to determine the depression risk. Both scales consist of 21 questions, and as the score increases, the risk for the relevant situation increases. Validity and reliability studies of the scales were conducted by Ulusoy et al.[10] for BAS and Hisli et al.[11] for BDS.

In the items that questioned sociodemographic information, chronic disease, regular medication use, and smoking status, number (n) and percentage (%) values were used to show the distribution of individuals in the answers given to the questions, and Median (QWD-Interquartile Range) and Mean±Standard Deviation values were used to show descriptive statistics. Cross tables were created to compare categorical variables according to the status of COVID-19 infection, and numbers (n), percentages (%), and Chi-Square (x^2) test statistics were given. The Mann-Whitney U-test and Kruskal-Wallis tests were used where appropriate to compare the measurement data that did not show normal distribution. Spearman's non-parametric relationship coefficient was given in the relationship analysis between scale scores. The statistical significance level was accepted as $p<0.05$.

Results

48.6% (n=85) of the participants were female, and 40% (n=70) were married. The main sociodemographic characteristics, chronic disease, continuous medication, and smoking status of the participants are summarized in Table 1.

The distribution of the responses to the questions evaluating individuals' perceptions about their "Mental Health" (MH), "Physical Activity Level" (PAL), and "Quality of Life" (QOL) during the COVID-19 period is shown in Figure 1. A total of 8.6% (n=15) of individuals answered yes to the question "Have you received a new psychiatric diagnosis during the COVID-19 period?" Most of these diagnoses were anxiety disorder and depression.

Among the participants, 43.4% (n=76) and 59.0% (n=46) of those with chronic diseases said that they had a COVID-19 infection. The most common diagnoses in individuals with chronic diseases were diabetes mellitus, hypertension, and heart disease. The rates of having a chronic disease, using regular medication, and receiving a new psychiatric diagnosis during the COVID-19 period were significantly higher in those who had a COVID-19 infection compared to

Table 1. Sociodemographic Characteristics of the Participants

	n (%)
Sex	
Female	85 (48.6)
Male	90 (51.4)
Marital status	
Married	70 (40.0)
Single	56 (32.0)
Other	49 (28.0)
Educational Status	
Not literate	11 (6.3)
Primary school graduate	51 (29.1)
High school graduate	70 (40.0)
Undergraduate and Postgraduate	43 (24.6)
Occupational status	
Not working	51 (29.1)
Housewife	26 (14.9)
Student	22 (12.6)
Public Sector	21 (12.0)
Private Sector	55 (31.4)
Income Status	
2825 TL or less	77 (44.0)
Between 2826 TL - 5650 TL	58 (33.2)
Between 5651 TL - 8475 TL	28 (16.0)
Between 8476 TL - 11300 TL	10 (5.7)
11301 TL and above	2 (1.1)
Chronic Disease Status	
Yes	78 (44.6)
No	97 (55.4)
Regular Medication Use Status	
Yes	75 (42.9)
No	100 (57.1)
Smoking Status	
Yes, I drink	100 (57.1)
No, I don't drink.	75 (42.9)

* Individuals who quit smoking were included in the "No, I do not smoke" response.

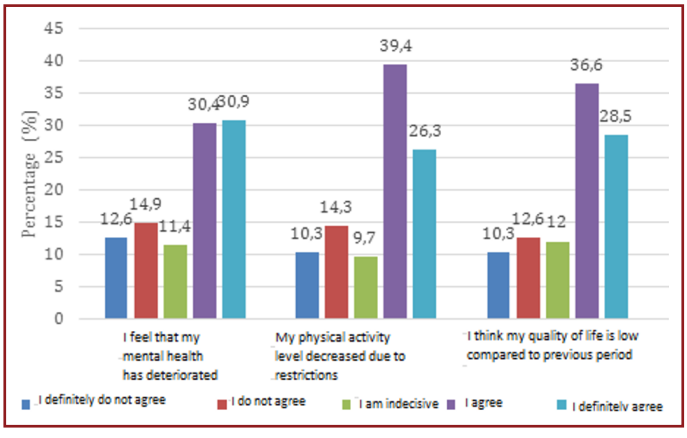

Figure 1. The distribution of participants' responses to MH, PA, and QOL questions during the COVID-19 pandemic.

MH: Mental Health; PA: Physical Activity; QOL: Quality of Life.

those who did not (p<0.001, p<0.001, p=0.001). The median BAS and BDS scores of individuals who had COVID-19 were significantly higher than those who did not have COVID-19 (p=0.031, p<0.001, respectively). The mean scores of the subscales in the SF-36 "Physical Function," "Vitality," "Mental Health," "Social Functioning," "Pain," and "General Health Perception" were lower than those who did not have this condition, and this was statistically significant (p<0.05) (Table 2).

The scores of the participants based on their responses to the IPAQ, BAS, BDS, and SF-36 scales are shown in Table 3.

"Vigorous Physical Activity" scores of non-smoking participants were higher than smokers. Participants' IPAQ "Walking" score averages and IPAQ "Sitting Times" were similar among all variable groups (p>0.05).

According to the BAS classification, anxiety symptoms were found in 147 (84%) individuals who participated in the study. Of them, 24.0% were at a mild level, 38.9% were at a moderate level, and 21.1% were at a severe level. BAS scores were higher in individuals with chronic diseases and regular medication use (Mean±SD=21.79±10.50, 21.81±10.71, respectively, p<0.001). It was also found that the mean BAS scores decreased as the level of education of the individuals increased (p=0.008). BDS scores were also lower in individuals with high school, undergraduate, and postgraduate education when compared to primary school graduates. According to the BDS scores, 15.3% of the 175 individuals who participated in the study showed minimal, 18.9% mild, 38.9% moderate, and 26.9% severe depression symptoms. BDS scores were higher in individuals with chronic diseases and regular medication use (p<0.001). When we look at the income status, those with an income between 5,651 TL and 8,475 TL had lower BAS and BDS scores than those with an income of 2,825 TL or less.

The SF-36 "Physical Function" scores were lower in married individuals, those with chronic diseases, and those who used regular medication (Mean±SD 57.23±25.04, 52.24±27.14, 51.67±27.42, p=0.02, p=0.002, p=0.001, respectively). The SF-36 "Physical Role Difficulty" scores in all variable groups were similar (p>0.05). SF-36 "General Health Perception" scores were lower in married individuals, those with chronic diseases, and those using regular medication (p=0.004, p=0.033, p=0.043, respectively). As in other sub-parameters of SF-36, "Pain" scores in those with chronic diseases, and "Emotional Role Difficulty" and "Social Functioning" scores were found to be lower than in those without (p=0.005, p=0.045, p=0.003, respectively). SF-36 "Vitality" and "Social Functioning" scores were found

Table 2. The comparison of SF-36, BAS, and BDS Scale scores according to participants' COVID-19 status

	Having COVID-19 Mean±SD Median (CAG)	No COVID-19 Infection Mean±SD Median (CAG)	Test Statistics z	p
SF-36 Physical Function	53.37±27.94 56.2 (48.4)	64.77±27.09 62.5 (43.7)	2,637	**0.008**
SF-36 Physical Role Difficulty	38.49±31.21 25.0 (75.0)	47.73±34.36 50.0 (50.0)	1,749	0.080
SF-36 Emotional Role Difficulty	36.40±33.63 33.3 (66.7)	46.80±34.31 33.3 (33.3)	1,949	0.051
SF-36 Vitality	44.80±12.97 45.0 (20.0)	49.89±15.63 50.0 (15.0)	2,009	**0.045**
SF-36 Mental Health	43.58±10.72 44.0 (16.0)	48.69±11.97 48.0 (16.0)	2,711	**0.007**
SF-36 Social Functioning	33.22±20.87 37.5 (37.5)	43.31±25.02 50.0 (37.5)	2,738	**0.006**
SF-36 Pain	55.79±20.98 55.0 (22.5)	66.29±22.16 67.5 (25.0)	3,444	**0.001**
SF-36 General Health Perception	42.76±12.23 42.5 (15.0)	52.27±13.42 55.0 (15.0)	4,423	**<0.001**
HEAD	20.89±11.68 19.0 (14.2)	16.59±9.33 17.0 (14.0)	2,161	**0.031**
BDS	24.96±10.38 25.0 (14.7)	19.05±10.86 19.0 (15.0)	3,496	**<0.001**

z: Mann Whitney U-Test Statistics; BAS: Beck Anxiety Scale; BDS: Beck Depression Scale; Mean±Standard Deviation; Median (CAG=IQR-Interquartile Range).

Table 3. The IPAQ, BAS, BDS, and SF-36 Scale Scores According to Participants' Responses

	Mean±SD	Median (CAG)	Min-Max
Total Physical Activity (MET-min/Week)	832.46±675.47	686.5 (727.9)	66.0; 4212.0
Vigorous Physical Activity (MET-min/Week)	522.61±355.42	480.0 (280.0)	120.0; 1920.0
Moderate Physical Activity (MET-min/Week)	293.89±193.02	240.0 (360.0)	40.0; 720.0
Walking (MET-min/Week)	571.71±430.74	462.0 (433.1)	66.0; 2772.0
Sitting Time (min)	465.30±176.35	450.0 (270.0)	90.0; 900.0
BAS Score	18.46±10.60	18.0 (12.0)	0.0; 58.0
BDS Score	21.62±11.02	21.0 (17.0)	0.0; 46.0
SF-36 Physical Function	59.82±27.96	62.5 (43.7)	0.0; 100.0
SF-36 Physical Role Difficulty	43.71±33.31	50.0 (50.0)	0.0; 100.0
SF-36 Emotional Role Difficulty	42.28±34.31	33.3 (66.7)	0.0; 100.0
SF-36 Vitality	47.69±14.72	45.0 (20.0)	15.0; 95.0
SF-36 Mental Health	46.47±11.69	44.0 (16.0)	24.0; 92.0
SF-36 Social Functioning	38.93±23.78	37.5 (25.0)	0.0; 100.0
SF-36 Pain	61.73±22.22	57.5 (32.5)	10.0; 100.0
SF-36 General Health Perception	48.14±13.72	50.0 (15.0)	15.0; 100.0

Mean±Standard Deviation; Median (CAG=IQR-Interquartile Range).

to be better in those with an income of 5,651 TL-8,475 TL when compared to those with an income of 2,825 TL or less (p=0.033, p=0.009, respectively).

A negative relationship was detected between the BAS score and SF-36 scores (p<0.05). A weak and negative relationship was detected between the BAS score and the SF-36 "Physical Function," "Pain," "General Health Perception," "Vitality," "Social Functioning," and "Mental

Table 4. The relationship between individuals' BAS and BDS scores and IPAQ and SF-36 scale scores

	Beck Anxiety		Beck Depression	
	Spearman Correlation Coefficient	p	Spearman Correlation Coefficient	p
SF-36 Physical Function	-0.268	**<0.001**	-0.452	**<0.001**
SF-36 Physical Role Difficulty	-0.168	**0.026**	-0.304	**<0.001**
SF-36 Pain	-0.287	**<0.001**	-0.458	**<0.001**
SF-36 General Health Perception	-0.396	**<0.001**	-0.532	**<0.001**
SF-36 Vitality	-0.269	**<0.001**	-0.496	**<0.001**
SF-36 Social Functioning	-0.280	**<0.001**	-0.324	**<0.001**
SF-36 Emotional Role Difficulty	-0.164	**0.030**	-0.302	**<0.001**
SF-36 Mental Health	-0.203	**0.007**	-0.335	**<0.001**
Vigorous Physical Activity (MET-min/Week)	-0.112	0.457	0.060	0.694
Moderate Physical Activity (MET-min/Week)	0.001	0.992	0.151	0.253
Walking (MET-min/Week)	-0.062	0.512	-0.184	0.051
Sitting Time (min)	-0.062	0.541	-0.165	0.101
Total Physical Activity (MET-min/Week)	-0.114	0.199	-0.262	**0.003**

Spearman Non-Parametric Correlation.

Health" subscale scores. A very weak and negative relationship was detected between the BAS score and the SF-36 "Physical Role Difficulty" and "Emotional Role Difficulty" subscale scores ($p<0.05$) (Table 4).

A moderate, negative significant relationship was detected between the BDS score and the SF-36 "Physical Function," "Pain," "General Health Perception," and "Vitality" subscale scores. The Beck Depression Score and the SF-36 "Physical Role Difficulty," "Social Functioning," "Emotional Role Difficulty," and "Mental Health" had a weak and negative relationship ($p<0.001$). A weak and negative relationship was detected between the BDS score and the "Total Physical Activity" score ($p=0.003$) (Table 4).

A weak, positive, and statistically significant relationship was detected between the participants' IPAQ Total Physical Activity score and the SF-36 "Physical Function," "Physical Role Difficulty," "Pain," and "General Health Perception" subscale scores ($p<0.05$).

Discussion

A total of 59.0% of individuals with chronic diseases declared that they had a COVID-19 infection. A statistically significant relationship was detected between the presence of chronic disease and COVID-19 infection. In a meta-analysis study, similar to the present study, hypertension, obesity, and diabetes mellitus diagnoses were common comorbidities in COVID-19 patients[12].

A total of 8.6% (n=15) of the participants said that they received a new psychiatric diagnosis during the pandemic. In the study conducted by Çelikbaş et al.[13], the psychiatric diagnoses received for the first time during the pandemic were anxiety disorders (28.6%) and depression (23.8%), similar to the present study. Thirteen of the 15 (8.6%) participants who received a new psychiatric diagnosis during the pandemic also said that they had a COVID-19 infection. Based on these data, a significant relationship was detected between having a COVID-19 infection and receiving a new psychiatric diagnosis during the pandemic. There are studies in the literature showing that the incidence of various psychiatric diseases increases during pandemics[14].

The mean BAS and BDS scores of individuals who had a COVID-19 infection were significantly higher than those who did not have the disease in the present study. Similar to the present study, in a study conducted during the pandemic by Sensoy et al.[15], BAS and BDS scores increased in COVID-19 patients. It is considered that the anxiety and depression scores of those who had a COVID-19 infection increased because of uncertainties about the course and treatment of the disease, anxiety about losing loved ones and fear of death, restriction of social life due to home quarantine applied to patients, changing daily routines, and economic difficulties experienced as a result of the precautions taken.

Individuals with COVID-19 had lower mean scores on various subscales of SF-36 than those who did not. In a study conducted in China, SF-36 scale scores, except for the "Physical Function" subscale, were significantly lower in COVID-19 patients when compared to the general

population[16]. In another study examining quality of life, the SF-36 "Social Functioning" scale score was lower in COVID-19 patients compared to those who did not have the infection[17]. In another study conducted in Vietnam, quality of life scale scores were lower in participants with COVID-19 symptoms compared to those who did not[18]. It is found that quality of life is affected as a result of the restrictions during the pandemic and the deterioration of physical and mental health due to the disease.

The BDS scores of the participants with chronic diseases were high in the present study. Similarly, in a study conducted during the pandemic by Özdin et al.[19], the depression scores of individuals with chronic diseases were higher. In comparisons made according to the educational backgrounds of the participants, the BDS scores of the participants who graduated from primary school were higher than those who graduated from high school, undergraduate, and postgraduate levels. In a study examining the relationship between educational backgrounds and depression levels by Keskinoğlu et al.[20], the depression scores of illiterate individuals were higher than those who were literate and had a diploma. Similar to the BDS scores, BAS scores were also affected by the educational backgrounds of the individuals, and the average BAS score decreased as the level of education increased. According to the study conducted by Gao et al.[21], anxiety scale scores decreased as the level of education increased. It can be said that this situation is related to the positive relationship between the level of education and the level of knowledge.

Those with an income between 5,651 TL and 8,475 TL had lower BAS and BDS scores than those with an income of 2,825 TL or less in the present study. In a study conducted by Balcı et al.[22], depression scores were higher in individuals with low income. It can be said that the socio-economic devastation caused by COVID-19 affects this. A statistically significant relationship was detected between the educational status of the individuals and their BAS scores. The participants' "Total Physical Activity" and "Vigorous Physical Activity" average scores were low, according to a study conducted by Savcı et al.[23] before the pandemic, and similar to a study conducted by Özkul et al.[24] during the pandemic. The curfews implemented during the pandemic, as well as working from home and distance education models, increased the time individuals spent at home. In the present study, compared to the study conducted by Savcı et al.[23], the participants' "Moderate Physical Activity" had higher mean scores, while walking scores were lower. It is thought that this is due to increased encouragement and interest in home-based exercises because of social restrictions caused by the pandemic.

A weak, negative, and significant relationship was detected between the participants' BDS and BAS scores and the SF-36 and IPAQ subscales. In a study conducted during the pandemic by Özkul et al.[24], it was shown that anxiety and depression levels were associated with all subscales of SF-36. In a study conducted in China, high physical activity levels were associated with lower negative mood and higher positive mood scores[25]. In the present study, BAS and BDS were negatively correlated with many parameters of SF-36.

In the present study, 43.3% of the participants said that they had a COVID-19 infection, and this rate is higher than our national data. In this data based on self-reporting, individuals may have interpreted suspicious and household contact situations as COVID-19 infection.

The generalizability of the study results is limited because this study was conducted with those who applied to the family medicine polyclinic affiliated with our hospital. It is considered that those who could not apply to hospitals due to precautions could potentially affect the study results. Another limitation is that the study was conducted during a period when community immunization was not sufficient.

Conclusion

The mental state and quality of life of individuals who had COVID-19 were negatively affected in the present study compared to those who did not, and this effect was more pronounced in individuals with chronic diseases and those who used regular medication. Individuals must be evaluated for mental disorders, especially depression, and must be appropriately directed to those who need support. It was also seen in the present study that regular physical activity has positive benefits on mental state and quality of life. In the event of a possible quarantine and closure, individuals must be encouraged to participate in home exercise programs. Individuals must be informed about lifestyle changes and healthy living behaviors appropriate for the changing conditions during the pandemic, and thus the negative effects of the process must be minimized.

The article is derived from the thesis and presented as an oral presentation at the 20th National Family Physician Congress.

Ethics Committee Approval: The study was approved by Haydarpaşa Numune TRH Clinical Research Ethics Committee at its meeting dated 21/06/2021 with the decision numbered HNEAH-KAEK 2021/187. This study was presented as an oral presentation at the 20th National Family Medicine Congress and its abstract was included in the congress booklet.

Peer-review: Externally referees.

Use of AI for Writing Assistance: Not declared.

Authorship Contributions: Concept – F.Ş., M.T.E.; Design – F.Ş., M.T.E.; Supervision – F.Ş., M.T.E., Ö.B.D., E.Z.T.V.; Data collection &/or processing – F.Ş., M.T.E.; Analysis and/or interpretation – F.Ş., M.T.E., E.Z.T.V.; Literature search – F.Ş., M.T.E., Ö.B.D., E.Z.T.V.; Writing – F.Ş., M.T.E., Ö.B.D.; Critical review – M.T.E., Ö.B.D., E.Z.T.V.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: The authors declared that the present study did not receive any financial support.

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