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KRONİK OBSTRÜKTİF AKCİĞER HASTALARINDA FİZİKSEL AKTİVİTE DÜZEYİ İLE DİSPNE VE UYKU KALİTESİ ARASINDAKİ İLİŞKİ

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Öz

Araştırma, Kronik Obstrüktif Akciğer Hastalığı olan hastalarda fiziksel aktivite düzeyi ile dispne ve uyku kalitesi arasındaki ilişkinin belirlenmesi amacıyla yapılmıştır. Araştırma, Temmuz 2022-Aralık 2022 tarihleri arasında bir üniversite eğitim ve araştırma hastanesi göğüs hastalıkları polikliniğine başvuran, araştırmaya dâhil edilme kriterlerine uygun olan 128 hasta ile tanımlayıcı olarak yapılmıştır. Araştırmanın verileri; "Kişisel Bilgi Formu", "Uluslararası Fiziksel Aktivite Ölçeği," "Borg Dispne Skalası" ve "Kronik Obstrüktif Akciğer Hastalığı ve Uyku Ölçeği" ile toplanmıştır. Verilerin istatistiksel analizinde sayı, yüzde, ortalama, Mann Whitney U, Kruskall Wallis ve Spearman Korelasyon testleri kullanılmıştır. Mann Whitney U testi ile ikili post hoc testler uygulanmıştır. Hastaların yaş ile fiziksel aktivite puanı, ek bir kronik hastalığın olması durumunu ile fiziksel aktivite ve uyku ölçek puanı, medeni durum ile dispne skala puanı ile arasında istatistiksel olarak anlamlı fark olduğu görüldü ($p<0.05$). Ayrıca fiziksel aktivite kategori ortalama puanları ile dispne ve uyku puanlarının arasında istatistiksel anlamlı fark bulundu ($p<0.05$).Yapılan korelasyon analizinde fiziksel aktivite düzeyi arttıkça dispne ve uyku ölçek puanının azaldığı, dispne skala puanı arttıkça uyku ölçek puanının arttığı bulundu ($p<0,01$).Hemşirelerin Kronik Obstrüktif Akciğer Hastalığı olan hastaların dispnelerini azaltmak ve uyku kalitelerini arttırmak için, hemşirelik bakım planlarına programlı fiziksel aktivite eğitim planını dâhil etmesi, hastaları cesaretlendirmesi ve uygulama konusunda özen göstermesi önerilmektedir.

Anahtar Kelimeler: Kronik Obstrüktif Akciğer Hastalığı, Fizikel Aktivite, Dispne, Uyku Kalitesi, Hemşirelik

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY LEVEL, DYSPNEA AND SLEEP QUALITY IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS

Abstract

The study was conducted to determine the relationship between physical activity level and dyspnea and sleep quality in patients with Chronic Obstructive Pulmonary Disease.The research was conducted in the form of a descriptive study with 128 patients who applied to the chest diseases polyclinic of an university training and research hospital between July 2022 and December 2022 and met the inclusion criteria of the study. The data of the study were collected with "Personal Information Form", "International Physical Activity Questionnaire", "Modified Borg Scale", and "Chronic Obstructive Pulmonary Disease and Asthma Sleep Impact Scale". Number, percentage, mean, Mann Whitney U, Kruskall Wallis, and Spearman correlation tests were used in the statistical analysis of the data. The Mann-Whitney U and dual post hoc tests were applied.There was a statistically significant difference between age and physical activity score, presence of an additional chronic disease and physical activity and sleep scale scores, marital status and dyspnea scale scores ($p<0.05$). In addition, a statistically significant difference was found between physical activity category mean scores and dyspnea and sleep scores ($p<0.05$). In the correlation analysis, it was found that as the physical activity level increased, dyspnea and sleep scale scores decreased, and as the dyspnea scale score increased, the sleep scale score increased ($p<0.01$).In order to reduce dyspnea and improve sleep quality of patients with Chronic Obstructive Pulmonary Disease, it is recommended that nurses include a programmed physical activity training plan in their nursing care plans, encourage patients and take care in implementing it.

Keywords: Chronic obstructive pulmonary disease, Physical Activity, Dyspnea, Sleep Quality, Nursing

1. INTRODUCTION

Chronic obstructive pulmonary disease (COPD), which is a lifelong airflow restriction caused by degeneration of the airways and/or alveoli, is often brought on by prolonged exposure to hazardous particles or gases. It is a common, curable condition that may be prevented by having respiratory issues (1). Smoking is the primary contributing factor to its pathogenesis (2). When the FEV1/FVC ratio is less than 70% in the post-bronchodilator spirometric assessment conducted in individuals with chronic respiratory symptoms, COPD is diagnosed (3). The third most prevalent cause of mortality worldwide is COPD, one of the most significant chronic non-communicable illnesses in both industrialized and developing nations. It directly affects approximately 300 million people all over the world and causes 3.2 million deaths each year (4).

Physical activity is body movements produced by skeletal muscles as opposed to maintaining a sitting or reclining posture (5). Advanced technology and modern lifestyle cause people to become more sedentary and lack physical activity. This situation, as a result of many physiological events that occur due to the disuse of muscles, constitutes an important risk factor for many chronic diseases such as coronary artery disease, diabetes, hypertension, stroke and respiratory diseases (6). The most common symptoms in COPD are dyspnea, cough and sputum (1). When patients become symptomatic, the symptom they complain about most is dyspnea, which is defined as the experience of an unpleasant or uncomfortable breathing sensation (7). As a result of this unpleasant experience, the time patients spend at home increases, they become dependent on someone else, and they are forced to isolate themselves from family, friends, and the social environment (8,6). In addition, this situation causes a decrease in REM sleep and total sleep time, a decrease in REM sleep and total sleep time, and a decrease in sleep time in patients with high rates of COPD. It also causes difficulty in falling asleep and maintaining sleep, and a decrease in sleep quality (9). In studies conducted in the literature, physical activity is among the important modifiable risk factors that cause acute exacerbation of COPD, rehospitalization of patients, increased mortality rate and even impose a financial burden on healthcare services (5,6,7). In addition, studies emphasize that physical activity not only reduces mortality and the frequency of acute COPD exacerbations, but also has positive effects on dyspnea, sleep quality and emotional state (5,8).

Research on this subject to contribute to the field of nursing is limited. The research is important in that it can contribute to the determination and management of the frequency and severity of dyspnea and insomnia symptoms that occur largely due to dyspnea experienced by patients with COPD who engage in physical activity, as well as to guide nurses in evaluating the relationship between them and standardizing the nursing interventions to be planned. For this reason, the study was conducted to examine the relationship between physical activity level and dyspnea and sleep quality in COPD patients. Therefore, the study aimed to answer the following questions:

1. Has physical activity level an effect on dyspnea in chronic obstructive pulmonary patients?

2. Has physical activity level has an effect on sleep quality in chronic obstructive pulmonary patients?

2. MATERIAL AND METHOD

2.1. Type of research

It was made as a descriptive design to examine the relationship between physical activity level and dyspnea and sleep quality in COPD patients.

2.2. Participants

The minimum number of participants needed in this descriptive study was established as 55 (α=0.05; 1-β=0.80) in order for the expectation of the CASIS mean score at d=0.36 effect size of

COPD patients to be statistically significant (10). Gpower 3.9.1 software was used to do the power analysis. 128 patients who applied to the Chest Diseases Polyclinic at an university training and research hospital between July 2022 and December 2022 made up the study's population.

2.3.İnclusion Criteria

Inclusion criteria for the study comprised patients without cognitive impairment, open to dialogue, older than 18, clinically stable, diagnosed with COPD for at least a year, and willing to take part (6, 7). To prevent bias in recruitment and selection, consecutive patients are recruited. The data was collected by face to face survey technique in the polyclinic, it took approximately 20-25 minutes to collect the data**.**

2.4. Data Collection Tools

The "Personal Information Form," "International Physical Activity Questionnaire (IPAQ)," "Modified Borg Scale (MBS)," and "COPD and Asthma Sleep Impact Scale" were used to gather the study's data.

Personal Information Form:

The 17 questions on this form, which the researchers developed after reviewing the literature, include the fundamental traits of COPD patients as well as traits that may impact levels of physical activity, dyspnea, and sleep quality (11,12).

International Physical Activity Questionnaire (IPAQ):

Saglam (2010) carried out the questionnaire's validity and reliability research in Turkey. In this study, the IPAQ short form was used together with the long form for equivalent validity analysis. The seven-item questionnaire asks about the amount of time spent walking, engaging in moderate exercise, and engaging in severe exercise. The amount of time spent sitting is treated as a separate question. The questionnaire's assessment takes into account the total of minutes and days spent engaging in walking, moderate physical activity, and strenuous exercise. These computations result in a score expressed as "MET-min". A sitting question is not included in physical activity score (13). In this study, Cronbach Alpha value of IPAQ total score was determined as 0,70.

Modified Borg Scale (MBS):

Borg (1970) created the scale to quantify the amount of effort used during physical activity (14). It is a scale that is widely employed to assess both the severity of dyspnea at rest and the severity of exertional dyspnea. It comprises 10 elements that categorize the degrees of dyspnea severity. The MBS is a scale from 0 to 10, where each number is ordered in increasing order of dyspnea intensity to gauge exercise difficulty (1).

COPD and Asthma Sleep Impact Scale (CASIS):

Ayhan and Kiyak carried out the validity and reliability analysis of the CASIS created by Pokrzywinski et al. in Turkey. There are a total of 7 questions on the scale. The responses to Likert-type questions are never, rarely, sometimes, frequently, and always. While the sixth and seventh things are scored in reverse, the first five items are scored straight. The sum of all item scores is used to get the final score (9,16). As the scale score increases, it means that the sleep problem increases (9,17). The Cronbach Alfa value of CASIS was found to be 87,15. In this study, Cronbach Alpha value of CASIS was determined as 0,81.

2.5. Ethics

The institution where the research was carried out and an university's non-interventional clinical research ethics committee provided written approval (E-13389845-799; Number: 6-15; Date:

06/21/2022). The researchers explained the study to the participants, explained that their participation was based on the concept of voluntariness, and received their verbal and written consents.

2.6. Data Analysis

The research's data were evaluated utilizing number, percentage, and mean after being transferred to the SPSS 25.0 package application. The Mann-Whitney U test and the Kruskall Wallis test analysis are the results of the normality test. Spears' Rule of Correlation To examine group differences with a statistical difference as a result of the Kruskall-Wallis test, paired comparisons using the Mann-Whitney U test were performed as a post hoc test. What was assumed to be significant in the study was a $p<0.05$ value.

3. RESULTS

Considering the PA category of the patients, it was seen that 67,2% were inactive, 25,8% were minimally active, and 7% were sufficiently active. Considering the mean scores of the patients' International Physical Activity levels, it was seen that the IPAQ total mean score was 1125,02±2395,48 MET-min/week. Considering the PA levels of the patients, it was observed that the mean of the patients in the inactive category was 257,52±498,60 MET-min/week, the mean of the patients in the minimally active category was 1437,78±804,10 MET-min/week, and the mean of the patients in the sufficiently active category was 8267,55±4470,14 MET-min/week (Table 1).

Table 1. Physical Activity Categories and the IPAQ Mean Scores of COPD Patients.

Physical Activity Categories	n	%	International Physical Activity Questionnaire (IPAQ) Mean±SD
Inactive	86	67,2	257,52±498,60
Minimally Active	33	25,8	1437,78±804,10
Sufficiently Active	9	7,0	8267,55±4470,14
Total Score	**128**	**100**	**1125,02±2395,48**

Considering the mean scores of the International Physical Activity Questionnaire (IPAQ) of the patients, the IPAQ total mean score was 1125,02±2395,48 MET-min/week, the vigorous IPAQ mean score was 298,75±1271,05 MET-min/week, the moderate IPAQ mean score was 195,64±859,73 MET-min/week, the walking IPAQ mean score was 641,26±881,71 MET-min/week. Although the sitting IPAQ mean score did not affect the total score calculation, it was observed that the sitting time was 343,90±193,15 min/week **(Table 2)**.

Table 2. The IPAQ Mean Scores of COPD Patients.

International Physical Activity Questionnaire (IPAQ)	Mean±SD	Min-Max
Vigorous PA score (MET-min/week)	298,75±1271,05	0-10080
Moderate PA score (MET-min/week)	195,64±859,73	0-6720
Walking score (MET-min/week)	641,26±881,71	0-4158
Total PA score (MET-min/week)	**1125,02±2395,48**	**0-18090**
*Sitting time (min/week)	343,90 ±193,15	0-840

* It is not included in physical activity score.

The mean age of the COPD patients participating in this study was 64,60±13,45 years, 53,1% of them were 65 years or older, 57,8% of them were male, 43,8% of them were illiterate, 96,9% of them were married, 43% of them were retired, 52,3% of them had a medium level of income, 26,6% of them were still smoking, 39,8% of them had never smoked, 33,6% of them quit smoking, 64,8% of them were exposed to cigarette smoke, 54,7% of them were exposed to stove smoke, 75,8% of them had a chronic disease in addition to COPD, and 83,6% of them went to regular check-ups due to COPD. The mean oxygen saturation (SpO_2) of the patients was 94,94±4,57%, and the mean body mass index (BMI) was 27,44 ± 6,14 (Table 3).

There was a significant difference between the age groups of the patients and the IPAQ mean score ($p<0.05$). In the post hoc test, it was found that the mean score of the 36-49 age group was different from the other age groups. It was observed that there was a significant difference between patients' status of having an additional chronic disease other than COPD and their IPAQ mean score ($p<0.05$). It was observed that the IPAQ mean score of the patients with an additional chronic disease other than COPD was lower than the IPAQ mean score of the patients without any additional diseases (Table 3). There was a statistically significant difference between the MBS mean score and marital status ($p<0.05$). The MBS mean score of married patients was found to be higher than that of single patients (Table 3).A significant difference was found between the CASIS mean score and education ($p<0.05$). In the post hoc test, it was seen that the difference was between the illiterate and high school groups. The CASIS mean score of the illiterate group was found to be higher than all groups, and; therefore, higher than the high school group. A significant difference was found between the CASIS mean score and the presence of an additional chronic disease other than COPD ($p<0.05$). It was observed that the CASIS mean score of patients with an additional chronic disease other than COPD was higher than the CASIS mean score of patients without an additional disease. There was no statistically significant difference between other data ($p> 0.05$) (Table 3).

A statistically significant difference was found between the IPAQ category mean scores of the patients and the CASIS mean score ($p<0.05$). A statistically significant difference was found between the IPAQ category mean scores of the patients and the MBS mean score ($p<0.05$). In the post hoc analysis, it was found that the inactive PA group was different from the other groups. The MBS mean score of the inactive group was lower than the other groups. A statistically significant difference was found between the IPAQ category mean scores of the patients and the MBS mean score ($p<0.05$). In the post hoc analysis, it was found that the inactive PA group was different from the other groups. The MBS mean score of the inactive group was higher than the other groups. A statistically significant difference was found between the IPAQ category mean scores of the patients and the CASIS mean score ($p<0.05$).In the post hoc analysis, it was found that the inactive PA group was different from the other groups. It was observed that the CASIS mean score of the inactive group was higher than the other groups (Table 3).

Table 3. Comparison of the Sociodemographic and Disease-Related Characteristics of Patients and Mean Scores of the IPAQ, CASIS, and MBS (n=128)

Variables		N	%	International Physical Activity Questionnaire (IPAQ) Mean±SD	Modified Borg Scale (MBS) Mean±SD	COPD and Asthma Sleep Impact Scale (CASIS) Mean±SD
Age Groups	18-35	3	2,5	396,00±4467,47	8,00±1,73	46,42±6,18
Mean Age (Years): 64,60±13,45	36-49	14	10,9	1349,50±2865,86	7,71±1,13	47,70±11,77
	50-65	43	33,5	1042,11±2852,99	8,60±1,29	54,07±12,73
	65 or older	68	53,1	757,69±1651,80	8,38±1,56	52,68±11,40
Test/p				**KW :13,45/**p:0,004***	KW : 5,87/p:0,11	KW : 4,18/p:0,24

Tablo 1. Devamı

Gender	Female	54	42,2	818,93±1451,24	8,42±1,25	54,23±12,47
	Male	74	7,8	1348,37±2886,89	8,33±1,58	51,16±11,35
Test/p				***U:1839,00/p:0,43	U:1919,00/p:0,93	U:1634,00/p:0,10
Education	Illiterate	56	43,8	626,57±1079,92	8,75±1,19	56,13±11,99
	Literate	21	16,4	1513,50±3227,50	8,33±1,52	52,54±9,91
	Primary School	39	30,5	1461,60±3109,07	7,89±1,58	48,25±11,17
	High School	12	9,4	1977,37±1079,92	8,25±1,60	48,80±12,49
Test/p				KW: :9,35/p:0,053	KW :8,11/p:0,08	KW:14,19/**p:0,001***
Marital Status	Married	124	96,9	1042,80±2333,37	8,43±1,43	52,73±11,97
	Single	4	3,1	2568,00±2056,83	7,00±0,00	45,23±7,43
Test/p				U: 46,00/p:0,20	U:60,00/p:0,01	U:104,00/p: 0,36
Occupation	Worker	2	1,6	4709,50±4700,13	6,50±0,70	41,06±2,52
	Retiree	55	43,0	1253,83±2992,28	8,50±1,35	51,82±12,20
	Self-employment	15	11,7	1896,20±2886,93	8,13±2,13	50,23±8,89
	Housewife	53	41,4	593,50±880,94	8,47±1,23	54,72±12,25
	Unemployed	3	2,3	1908,00±2626,33	6,66±1,57	42,85±6,18
Test/p				KW : 7,05/ p:0,13	KW:7,70/p:0,10	KW:8,61/p:0,07
Income Level	Low	60	46,9	1468,72±3157,44	8,56±1,22	51,25±11,18
	Moderate	68	53,1	821,75±1378,01	8,35±1,39	54,20±12,15
Test/p				U: 2008,00p:0,87	U:1895,50/p:0,47	U: 1735,50/p:0,14
Smoking The Mean of Smoking Duration: 8,39±16,04(years) Number of cigarettes: 4,42±10,33 (daily)	Present	34	26,6	1778,11±3491,88	8,08±1,21	48,63±10,10
	Never used	51	39,8	893,93±1547,90	8,52±1,28	54,98±12,85
	Quit	43	33,6	882,69±2109,16	8,65±1,39	53,56±10,99
Test/p				KW:3,18/p:0,20	KW:5,26/p:0,07	KW :5,95/p:0,51
Exposure to Smoking Smoke	Present	83	64,8	1196,48±2491,48	8,24±1,53	52,02±12,21
	Absent	45	35,2	993,20±2228,67	8,62±1,24	53,26±11,35
Test/p				U:1603,50/p:0,18	U:1669,00/p:0,20	U:1782,00/p:0,46
Exposure to Stove Smoke	Present	70	54,7	1065,86±1781,66	8,48±1,18	52,66±10,45
	Absent	58	45,3	1196,41±2988,86	8,24±9,00	52,21±13,51
Test/p				U:1842,50 /p:0,36	U: 1937,5/p:0,79	U: 2003,50 /p:0,97

Tablo 1. Devamı

The Status of Having an Additional Chronic Disease to COPD	Present	97	75,8	669,09±1288,16	8,50±1,39	54,49±12
Duration of COPD:9,67±7,73	Absent	31	24,2	2551,61±4025,81	7,96±1,55	46,08±9,03
Test/p				U: 917,00/**p:0,001***	U:1162,50 /p:0,08	U:832,00 /**p:0,001***
The Status of Having Controls for COPD	Present	107	83,6	1028,13±2437,72	8,50±1,30	53,63±11,62
	Absent	21	16,4	1618,66±215341	8,19±1,36	48,66±11,85
Test/p				U: 834,00/p:0,06	U : 972,00/p:0,31	U :839,00/p:0,06
PA Categories/ IPAQ Mean Scores (MET-min/week)	Inactive	86	67,2	257,52±498,60	8,72±1,25	54,86±11,17
	Minimally Active	33	25,8	1437,78±804,10	7,78±1,59	48,92±12,53
	Sufficiently Active	9	7,0	8267,55±4470,14	7,11±1,26	42,45±7,87
Test/p				KW:82,55/**p:0,001***	KW:18,18/**p:0,001***	KW:14,6/**p:0,001***
Total Score		**128**	**100**	**1125,02±2395,48**	**8,37±144**	**52,45±11,88**
****Other Variables**	Oxygen Saturation (SpO2)(%)			Body Mass Index (BMI)		
Mean±SD	94,94±4,57			27,44 ± 6,14		

*p<0.05

****KW:** Kruskall Wallis Test

*****U:** Mann Whitney U Test

In the study, a weak and negative correlation was found between the IPAQ mean score and the CASIS mean score (r=-387, p<0,001). It was determined that the CASIS mean score increased as the IPAQ mean score increased. It was observed that there was a weak and negative correlation (r=-312, p<0,001) between the IPAQ mean score and the CASIS mean score. As the IPAQ mean score increased, the CASIS mean score decreased. There is a moderate and positive correlation between the MBS mean score and the CASIS mean score (r=537, p= p<0,001). As the MBS mean score increased, the CASIS mean score increased (Table 4).

Table 4. The correlations between the mean scores of the IPAQ, MBS, and CASIS (n=128)

Variables	**International Physical Activity Questionnaire (IPAQ) Mean Score**	**Modified Borg Scale (MBS) Mean Score**	**COPD and Asthma Sleep Impact Scale (CASIS) Mean Score**
IPAQ Mean Score	_	-,387**	-,312**
MBS Mean Score	_	_	,537**
CASIS Mean Score	_	_	_

****p< 0,01; Spearman's Correlation Coefficient**

3.2.DISCUSSION

It was determined that 53,1% of the patients participating in the study were 65 years or older, 57,8% of them were male, 96,9% of them were married, and their mean age was 64.60±13.45 years. In many studies, it was reported that the majority of patients with COPD were aged 65 and over, male, and married (17-19). According to the GOLD (2017) Report, oxygen saturation (SpO2) is >95% at rest, but SpO_2 is around 89-93% at rest or with moderate exertion in hypoxic individuals (23). The mean SpO2 value of the patients in the current research was found to be 94, 94±4,57%. According to Moss et al.'s study, which compared elderly patients with COPD or asthma to elderly people in good health, the mean SpO2 value of elderly patients with COPD or asthma was 95,53±1,66%, while this rate was 96,23±1,85% in elderly people in good health. This difference between the two measurements was significant (24). The average SpO2 was 92,7%+4,0 in the research by Cil-Akinci and Pinar (2011) with patients who presented to the chest illnesses clinic and polyclinic with the diagnosis of COPD. 62,9% of the patients were 65 years of age or older (20). We found that the average SpO2 was somewhat higher among patients who applied to the outpatient clinic and that there were a lot of older people among COPD patients when we compared the studies with our own study.

COPD causes significant dyspnea in individuals (25,26) and dyspnea is the most common symptom that patients diagnosed with COPD feel most uncomfortable with or describe as a problem (17,27). It was determined that 3 of them experienced dyspnea (19, 21). The MBS mean score in our study was found to be 8, 37±1, 44. Patients whose data were gathered when they were at rest showed a significant prevalence of dyspnea severity. In the study by Gokcek et al. (2019), it was shown that the incidence of orthopnea and paroxysmal nocturnal dyspnea rose along with the severity of COPD in patients, which had a detrimental impact on their quality of life (9). Research indicated that virtually all patients (92,8%) had some degree of dyspnea, the majority of patients (72%) had a dyspnea score of 2 on the modified Medical Research Council Dyspnea Scale (mMRC), and 32,6% of patients had significant dyspnea (27). Similarly, in the study of Garcia-Aymerich et al. (2006), it was determined that 35,4% of the patients experienced dyspnea during exertion, 10,1% of them experienced dyspnea while walking, and 13,4% of them experienced dyspnea at rest (28). When the degree of dyspnea was assessed in the study by Helvaci et al. (2020), it was found that the patients' median total score in the mean scores of the Dyspnea-12 Questionnaire's physical and emotional subscales were 17,0, indicating that they had moderate dyspnea in both subscales (29). As a result, when compared to studies in the literature, it was determined that the patients in this study experienced similar significant levels of dyspnea symptoms. In the study, patients had a statistically significant low level of physical activity, as well as many factors related to COPD, such as high average age, presence of chronic diseases, obesity, low education level, smoking or exposure to cigarette smoke, and insufficient income level, although not at a statistically significant level. The risk factor may have affected the patients' experience of dyspnea symptoms.

It has been determined that COPD is seen more frequently in people diagnosed with obesity, there is a very complex and strong relationship between obesity and COPD, it is more difficult to treat, and the two diseases cause deterioration in lung functions, systemic inflammation, morbidity, and mortality rates (30). In the present study, the mean body mass index (BMI) value of the patients was 27,44 ± 6,14kg/m2 and the patients were found to be overweight. In the study of Ozdemir et al., the mean BMI value of the patients was 25,8±2,5kg/m2; in the study of Calik Kutukcu et al., it was 27,7±4,7 kg/m2; in the study of Spina et al. it was 26,3±5,4 kg/m2; in the study of Oktay-Arslan et al., it was was 27,2±4,6 kg/m2; in the study of Suerdem et al. (2020), 32.2% of the patients were overweight (6,21,22,31,32). As a result, the results obtained in the research are similar when compared to the studies in the literature. As seen in the research results, the high BMI of the patients may be affected by the high dyspnea severity in the inactive group, the significantly higher level of physical activity insufficiency in patients with comorbidities, and inadequate socio-economic status.

However, patients may feel tired due to high dyspnea level and low SpO2, and the lack of activity that develops due to this condition can pave the way for obesity.

In this study, there was a significant difference between age groups in terms of average physical activity, and it was observed that young (aged 36–49) people with COPD scored higher in terms of physical activity than other age groups. The physical activities of daily living (PADL) score of the patients declined as their age grew, but not significantly, according to the study by Cil-Akinci and Pinar (2011) (20). Saglam et al. discovered a strong correlation between age and physical activity score in their research of asthma patients (33). The patients in our study group are young, male (57.8%), married (96.6%), and they spend more time on themselves because men have fewer responsibilities such as cooking, doing housework, and taking care of children than women. This may be due to their easier access to physical activity opportunities. Additionally, it was observed in these two studies (20,33) that the IPAQ mean score decreased as the patients' ages increased. In the current study, a high percentage of patients (53,1%) were 65 years of age and older, and their IPAQ mean scores were similarly low.

The MBS mean score and the patients' marital status were shown to be statistically different ($p<0.05$). It was noted that the married patients' MBS mean score was greater than the single patients' MBS mean score. Regression analysis revealed that the MBS mean score of single patients was higher than the score of married patients in the study by Sharma and Sharma (2019) with a large sample group (n=221). This difference was statistically significant (27). In another study, it was determined that single people experienced more dyspnea than married and older patients (34). The results of our research are not compatible with the studies in the literature. The difference may be due to the fact that culturally married individuals in our country lead a less active lifestyle.

Smoking is one of the main risk factors for developing COPD, and COPD incidence and mortality rates are greater in smokers than in non-smokers, according to the Global Strategy Group for Diagnostic Management and Prevention of COPD (GOLD) (23). It was discovered that 64.8% of the research participants had been exposed to cigarette smoke, 35.2% had given up smoking, and 24.2% had continued to smoke. Similar to the findings of the current investigation, it was shown in a controlled study that 26.7% of the control group still smoked, 56.7% of them quit smoking, 46.7% of them were exposed to passive cigarette smoke, and 6.7% of the experimental group were still smoking, 43.3% of them quit smoking, and 83.3% of them were exposed to cigarette smoke (12). In the study of Kutmec-Yilmaz et al. (2017), it was found that 14.3% of the patients smoked, 56.4% of them quit smoking and 32.9% of them were exposed to cigarette smoke in their environment (18). In the study of Suerdem et al. (2020), it was determined that 56.3% of the patients smoked and 38.1% of them quit smoking (32). In line with these results, it is vital to quit smoking completely and to avoid cigarette smoke in order to prevent the progression of COPD and to control its symptoms.

COPD is one of the chronic diseases that cause insufficiency in lung functions, decrease the exercise capacity of patients and their ability to perform daily physical activities, increase the risk of dyspnea (23,35), and increase morbidity and mortality rates on a global scale (25). In the present study, in the physical activity categories of individuals with COPD, 67,2% of them were found to be inactive, 7,0% of them were physically active enough to protect their health, and the average weekly energy consumption due to physical activity was 1125.02±2395.48 MET-min. In the study of Ozdemir et al. (2019), the physical activity levels of the patients with COPD were low, 54.4% were inactive, 13.8% were physically active at a sufficient level, and the average weekly energy consumption related to physical activity was found to be 1564.2±615 MET-min (6). In the cohort study of Garcia-Aymerich et al. (2006) conducted with a large sample group (n=2386), it was reported that regular physical activity performance reduced hospital readmissions and mortality rates in patients and that 30-40% of deaths occurred during this period were due to respiratory diseases (28).

Comorbidities are frequently seen at all stages of the disease, regardless of the degree of COPD airflow limitation (22, 36). In many studies, 52, 8% - 94% of individuals with COPD had at least one additional disease, and 46% - 75,9% of them had ≥3 comorbidities (32,37,38). It has been shown that there is a link between low levels of physical activity in COPD patients and concomitant conditions and that these illnesses severely restrict physical activity (28,39-42). The IPAQ mean score of patients with a chronic condition in addition to COPD was much lower in the current investigation, where it was discovered that 75,8% of the patients had a chronic disease. Physically inactive patients had an activity level of 1, 4, and COPD patients with two or more comorbidities (≥2) were identified as independent risk factors in a study by Van Remoortel et al. (2014) that evaluated various risk factors, including comorbidities and physical inactivity, in preclinical COPD patients (n=60) (43). As a result, it was observed that the comorbid disease status of the individuals participating in these studies in the literature was similar in terms of the comorbid disease status of the patients in the present study.

Insomnia/poor sleep or sleep problems (such as having difficulties in falling asleep and staying asleep, sleep fragmentation, increased daytime sleepiness, obstructive sleep apnea syndrome, insomnia, and nocturnal oxygen desaturation) (25,44-46) are important symptoms that negatively affect life activities and health outcomes of the patients with COPD, and these problems reduce the quality of life of them (21,47,48). The patients' CASIS mean score was calculated in the research to be 52, 45±11, 88. Similarly, it was shown in several research (22,49,50) that people with COPD had varying degrees of poor sleep quality. When the sleep quality of people with COPD was evaluated in two trials, it was shown that the patients' ratings were considerably higher, indicating that their sleep quality was poor (51,52). The average CASIS score of the patients in these two investigations is comparable to the high average CASIS score in this research. The symptom of insomnia appears as a common problem in COPD.

Sleep apnea syndrome (SAS), neuromuscular conditions like muscular dystrophies, cardiovascular conditions like congestive heart failure and atrial fibrillation, etc., are examples of comorbid diseases with COPD that exacerbate or trigger hypoventilation in patients while they sleep, leading to respiratory failure, significantly worsening sleep quality in patients, and lowering the quality of life through reduced sleep quality (53). A substantial difference between the patients' CASIS mean scores and the presence of any other chronic diseases except COPD was discovered in the current investigation. It was shown that individuals with extra chronic diseases had mean CASIS scores that were greater than those of patients without additional chronic diseases. When the groups with good and poor sleep quality were compared, a significant difference was found in terms of hypertension, excessive daytime sleepiness, and sleep efficiency (22). In the study, 38,7% of the patients had a Pittsburg Sleep Quality Index (PSQI) >5, which is bad, and 61,3% of them had a good level of PSQI ≤5. In another study on this subject, it was found that patients diagnosed with psychiatric diseases such as anxiety, depression, panic attacks, and fears of death had worse sleep quality (54). As a result, Comorbid diseases seen with COPD reduce the sleep quality of patients..

Patients with severe sleep disorders, airway restriction, and exertional dyspnea had greater levels of sleep disruption, according to a study with a large sample size (n=932) that looked at the variables linked to sleep disorders and the connection between nighttime sleep and physical activity; patients with better sleep quality (who did not wake up after falling asleep or whose sleep was not interrupted, sleep duration was minimum≥225/min, 91% of them were good sleepers, time spent awake after falling asleep was minimum<57/min) had significant, moderate, and effective physical activities during the daytime; and there was a relationship between sleep measurements and the level of physical activity they did during the day they were awake (21). As a consequence, similar to the findings of the current investigation, there was a strong correlation between the mean scores of the IPAQ and CASIS in this study. As the patients' IPAQ mean scores rose, their CASIS mean scores fell.

In the study of Spina et al. (2017), patients with severe airflow limitation and severe exertional dyspnea had significantly lower sleep duration, sleep efficiency, sleep strength, more sleep fragmentation, and time spent awake after starting sleep; therefore, it was determined that they experienced sleep problems more prominently, that it was an important factor that caused sleep disorder at night, and that doing regular physical activity every day increased their sleep quality at night (21). As a result, this study and the current investigation are comparable in that there was a correlation between a rise in dyspnea score and a substantial deterioration in sleep quality, and that the CASIS mean score of the patients in this study grew as the MBS mean score of the patients in this study did. Poor sleep quality was found to have a significant correlation with the MBS mean score of people with COPD in another investigation (55). Dyspnea, sputum production, sensations of chest discomfort, and sleep quality were found to be negatively correlated in the study by Nahla et al. (2019) in people with COPD (56). In these two studies, when the MBS mean score of the patients grew, the sleep quality score fell, which is consistent with the results of the current study.

4. CONCLUSION AND RECOMMENDATIONS

The COPD patients who applied to the outpatient clinic had high mean scores on the MBS and CASIS but low PA levels. It was discovered that the MBS and CASIS mean scores fell as the degree of physical activity increased, but the MBS mean score increased as the CASIS mean score rose. It is thought that planning, promoting, and encouraging regular and effective PA rehabilitation programs for these patients by nurses would slow down the progression of the disease, reduce or control the dyspnea of the patients, increase sleep quality and exercise capacity, and thus increase the health-related quality of life by increasing the functional capacity of the patients. However, it can be suggested that nurses, who have an important position in the healthcare team, should question the dyspnea and sleep quality of COPD patients and include a programmed PA training plan in their nursing care plans

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