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Investigation of Self-Care Agency and Exercise Efficacy of Individuals Diagnosed with COPD during the COVID-19 Pandemic Process

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ABSTRACT:
Purpose: This study was conducted as a descriptive study to "Investigation of Self-Care Agency and Exercise Efficacy of Individuals Diagnosed with COPD during the COVID-19 Pandemic".
Material and Methods: The study population consisted of individuals diagnosed with COPD in a city in the south of Turkey. The study sample consisted of individuals who voluntarily participated and met the inclusion criteria. No random sampling was used in the study. One hundred seven individuals who agreed to participate and met the study criteria constituted the study sample.
The 'Sociodemographic Information Form,' the 'COPD Exercise Self-Regulatory Efficacy Scale (Ex-SRES), and Self-Care Agency Scale' was used for data collection. Number, percentage, mean, and descriptive statistics t-tests were used to analyze the data.
Results: In the study results, it was found that there was a positive and significant relationship between self-care power and exercise efficacy in COPD patients. ($p < 0.05$). A significant difference was found between individuals diagnosed with COVID-19 and those who were not in terms of self-care agency and exercise efficacy ($p < 0.05$). It was found that individuals with chronic disease had lower self-care agency and exercise efficacy than those without the disease. It was determined that the self-care agency and exercise efficacy of individuals diagnosed with COPD for more than ten years decreased.
Conclusion: It was found that it is essential to monitor the self-care agency and exercise efficacy of COPD patients during COVID-19, and the self-care agency and exercise efficacy of patients decreased during this period.
Keywords: *COPD, Exercise Self-Regulatory Efficacy, Self-Care Agency, COVID-19*

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INTRODUCTION

After the COVID-19 infection first appeared in the world, it spread rapidly in a short time. As infection with a severe course with findings leading to airway obstruction, it has significantly affected the quality of life of COPD patients.

The exacerbations during the disease lead to disease progression, decreased self-care agency and exercise efficacy, and mortality. Given all this information, it can be predicted that COPD patients will be more affected during the coronavirus pandemic for many reasons (COVID-19). COPD patients are older than the average healthy population, and age- and disease-related cognitive impairment may affect patient adherence to infection prevention measures. It may take time for older people to understand the changing situation and change their attitude or behavior accordingly. This change and development can only occur with a self-care agency. Because of the COVID-19 grip on the world, some COPD patients have become more susceptible to the intense symptoms and disturbances of mental illness such as dyspnea, anxiety, fear, and depression. Even under normal conditions, about 40% of COPD patients experience clinically relevant depressive symptoms (e.g., extreme fatigue, loss of interest in pleasurable

activities), and 36% exhibit anxiety symptoms (e.g., irritability, fear, and panic) that may require medical attention. (McMurray et al., 2020). In addition, COPD patients may exhibit fear of self-isolation, extreme anxiety, loss of social support, and physical distance (Holmes et al., 2020). The pre-existing limitation of movement in people with COPD has further increased due to the COVID-19 pandemic. This situation causes patients to experience hopelessness, a decrease in self-care skills, and a decrease in quality of life. Due to social isolation and curfews, COPD patients may also observe negative social behaviors.

Self-care agency is crucial in people with COPD because it can improve health-related quality of life, reduce hospitalizations, and decrease dyspnea. According to the theory of self-care agency in chronic disease proposed by Riegel et al., self-care in COPD consists of three distinct but interrelated dimensions: Maintaining self-care, monitoring self-care, and managing self-care (Riegel et al., 2012). It comprises behaviors that people with COPD perform to maintain physical and emotional stability, including self-care maintenance, medication adherence, smoking cessation, physical activity, and breathing exercises. Self-care monitoring includes behaviors aimed at monitoring the signs and symptoms of the disease (e.g., changes in color and quantity of sputum…). Self-care management includes behaviors performed to manage symptoms of the disease or side effects of treatments when they occur, including shortness of breath, insomnia, and panic attacks (Zwerink et al., 2014; Riegel et al., 2012). This study was planned to determine how the COVID-19 epidemic affects the lives of patients with COPD and to determine their self-care agency and exercise efficacy.

MATERIAL and METHODS

Purpose and Type of the Study

This study was planned to investigate the exercise efficacy and self-care agency of individuals with COPD during the COVID-19 pandemic.

Sampling and participant

The study population consisted of individuals diagnosed with COPD for at least one year, are over 18 years of age, have no mental disabilities, and do not have any medical condition that may prevent the patient from exercising. The study sample consisted of individuals willing to participate and meet the inclusion criteria. The study was planned as a descriptive study using the online questionnaire method in individuals diagnosed with COPD in an urban center. No sample selection was made in the study, but the aim was to reach the entire population. However, 107 COPD patients were included in the study, and they completed the questionnaires by giving their consent to participate in the invitations sent online.

Research Questions:

What is the exercise efficacy of individuals with COPD during the pandemic COVID-19?

What is the self-care agency of individuals with COPD during the pandemic COVID-19?

Data Collection Tools

Sociodemographic Form

Following other studies and the literature, 10-question form was created a form was created with questions that included demographic information (age, gender, education....) under the purpose of the study.

COPD Exercise Self-Regulatory Efficacy Scale (Ex-SRES): This scale was developed by Davis et al. in 2007 to self-assess the exercise capacity of individuals diagnosed with COPD. The scale consists of 16 items. The scale asks patients to indicate the extent to which they are "confident" or "confident" that they can continue to exercise "regularly" (for 20 minutes, three times per week). Each question is scored on a three-point Likert scale. Here, a score of 1 is rated as "I have no confidence in myself," a score of 2 is rated as "moderately confident in myself," and a score of 3 is rated as "very confident in myself." The Cronbach α-value is 0.917 (Davis et al., 2007) Ünal Aslan and Çetinkaya conducted Turkish validity and reliability in 2020. (Ünal Aslan and Çetinkaya, 2020). In the Turkish validity and reliability study of the scale, a reliability coefficient of 0.96 according to Cronbach Alpha was obtained. The increase in the mean of the scale indicates that the person's self-

efficacy concerning self-exercise increases.

Self-Care Agency Scale

The scale was developed by Kearney and Fleischer in 1979 with 43 items to determine individuals' level of self-care or self-care strength. (Kearney and Fleischer, 1979). The validity and reliability study in Turkish society was conducted by Nahcivan in 1993 and consisted of 35 items (Nahcıvan, 2004). The scale is a 5-point Likert scale, where each statement is rated from 0 to 4: (does not describe me at all-0, does not describe me very well-1, I have no idea-2, describes me a little-3, describes me very much-4). Eight items of the scale (3, 6, 9, 13, 19, 22, 26, and 31) are rated as negative, and scoring is done by inversion —a maximum of 140 points on the scale. A high score means that the individuals have high self-care agency. In the Turkish validity and reliability study of the scale, a reliability coefficient of 0.92 was obtained according to Cronbach Alpha. In this study, the Cronbach Alpha reliability coefficient of the scale was reported to be 0.90.

Statistical Analysis

The data were analyzed with IBM SPSS 21.0 software package. Continuous variables were given as mean ± standard deviation, median and categorical variables as numbers and percentages. The normal distribution of the data was analyzed using the "Shapiro-Wilk Test". In all analyzes, p≤0,05 was considered statistically significant.

Ethical Approval

Before starting the research, the official approval dated 26.05.2021 with the number 2021/3/1 was obtained from the Ethics Committee for Science, Scientific Research, and Publications of Osmaniye Korkut Ata University **.** The purpose of the study was explained to the subjects suffering from COPD who were enrolled in the study. The principle of "informed consent," the principle of "confidentiality and protection of confidentiality" by declaring that the information obtained will be kept confidential, and the principle of "respect for autonomy" with the voluntary participation of all students was fulfilled.

Data analysis: The SPSS (Statistical Package for the Social Sciences) program was used in the computer environment for data analysis. Percentages, ANOVA, and t-tests were used to analyze the data.

Difficulties and Limitations of the Research:

The research was conducted using an online survey method only with individuals diagnosed with COPD in social media and WhatsApp groups. Therefore, the study results are limited to the individuals in this sample group and cannot be generalized to society. The study was conducted with individuals diagnosed with COPD who were part of a social media group that may have introduced bias in participants' responses to the questions. Since the data obtained from the study is analyzed based on the statements of the participants, the analyzes are limited to the statements of the individuals.

RESULTS

According to the results obtained from Table 1, it was found that the mean age of the subjects was 70.36±5.58 (years), and 37 (34.6%) were in the age group 70-74. 73 subjects (68.2%) were male, 66 (61.7%) were married, 57 (53.3%) had secondary education, 81 (75.8%) had COPD for 5-9 years. It was found that 70 (65.4%) of them had other chronic diseases, 68 of them (63.6%) lived with their children, and 33 (30.8%) had the diagnosis with COVID-19 (Table 1).

When Table 2 was examined**,** a statistically significant difference was found in terms of exercise scale scores by age group (χ^2=14,130; p=0,003). As a result of the Bonferroni-corrected pairwise comparisons performed to determine which group caused the significant difference, a significant difference was found between subjects aged < 65 years and subjects aged 65-69, 70-74, and ≥75 years. The exercise scale scores were significantly higher in individuals aged < 65 years than in individuals aged 65-69, 70-74, and ≥75 years.

A statistically significant difference was found in self-care agency scale scores by age group (F=4.491; p=0.005). As a result of the Bonferroni-corrected pairwise comparisons performed to determine which group the significant difference came from, a significant difference was found between the < 65 and 65-69-year-olds and the 70-74-year-olds. The self-care scale scores of the 70-74-year-olds were

significantly lower than those of the 65-69-year-olds (Table 2).

When Table 3 was examined, a statistically significant difference was found in the exercise scale scores according to COPD duration (χ^2=9,849; p=0,000). A statistically significant difference was found between the self-care agency scale scores depending on COPD duration (F=5.249; p=0.007). A statistically significant difference was found between the exercise scale scores and the presence of other chronic diseases (Z=-3.784; p=0.000). The exercise scale scores of those without other chronic diseases were significantly higher than those with other chronic diseases.

A statistically significant difference was found in the self-care agency scale scores on other chronic diseases (Z=-2.002; p=0.045). Self-care agency scale scores were significantly higher in individuals who did not have other chronic diseases than in individuals who had other chronic diseases. A statistically significant difference was found in the scores of the exercise scale depending on the status of the diagnosis of COVID-19 (Z=-3.301; p=0.001). The exercise scale scores of those not diagnosed with COVID-19 were significantly higher than those diagnosed with COVID-19.

A statistically significant difference was found in the self-care agency scale scores depending on the diagnosis of COVID-19 (Z=-2.371; p=0.018). The self-care agency scale scores of those not diagnosed with COVID-19 were significantly higher than those diagnosed with COVID-19 (Table 3).

When Table 4 was examined, a positive, fragile, and statistically significant relationship was found between the self-care scale and the exercise scale (r=0.204; p=0.003). It was found that as the scores on the self-care agency scale increased, the scores on the exercise scale also increased.

Table 1. Comparison of Socio-Demographic Characteristics

Variable (N=107)	n	%
Age groups [$\overline{X} \pm$ S.S.→70,36±5,58 (year)]		
<65	12	11,2
65-69	33	30,8
70-74	37	34,6
≥75	25	23,4
Gender		
Female	34	31,8
Male	73	68,2
Marital status		
Married	66	61,7
Single	41	38,3
Level of Education		
Primary	28	26,2
Secondary	57	53,3
High school	22	20,5
Duration of COPD [$\overline{X} \pm$ S.S.→6,77±2,39 (year)]		
<5 year	13	12,1
5-9 year	81	75,8
≥10 year	13	12,1
Another chronic disease		
Yes	70	65,4
No	37	34,6
Diagnosed with COVID-19		
Yes	33	30,8
No	74	69,2

Table 2. Comparison of Ex-SRES Scale and Self-care Agency scores

Variable (N=107)	n	Exercise Self-Regulatory Efficacy Scale (Ex-SRES)		Self Care Agency Scale	
		$\bar{X} \pm S.S.$	Median [IQR]	$\bar{X} \pm S.S.$	Median [IQR]
Age groups					
<65 (1)	12	37,01±6,20	37,6 [9,4]	47,08±9,39	53,0 [14,3]
65-69 (2)	33	34,84±3,38	35,0 [4,7]	49,03±6,13	53,0 [9,5]
70-74 (3)	37	34,73±4,01	35,0 [4,4]	53,59±6,32	49,0 [10,0]
≥75 (4)	25	34,48±3,79	35,0 [5,0]	51,92±5,90	48,0 [9,0]
Statistical analysis*		χ^2=14,130		F=4,491	
Probability		**p=0,003**		**p=0,005**	
Difference		**[1-2,3,4]**		**[1,2-3] [1,2-4]**	
Gender					
Female	34	34,67±4,57	34,3 [5,2]	51,00±7,45	52,0 [11,0]
Male	73	35,56±3,83	36,1 [4,7]	51,09±6,67	52,0 [8,5]
Statistical analysis*		Z=-2,573		Z=-0,181	
Probability		**p=0,010**		p=0,856	
Marital status					
Married	66	34,38±4,35	34,9 [5,2]	51,36±7,01	53,0 [10,0]
Single	41	36,11±3,65	36,6 [4,1]	50,58±6,74	51,0 [11,0]
Statistical analysis*		t=2,337		Z=-0,802	
Probability		**p=0,022**		p=0,423	
Level of Education					
Primary(1)	28	34,19±4,72	34,2 [5,3]	51,46±7,63	51,5 [8,0]
Secondary(2)	57	35,04±3,75	34,9 [4,7]	51,51±6,39	52,0 [9,0]
High school(3)	22	36,67±3,79	36,3 [7,1]	53,40±7,14	53,0 [9,5]
Statistical analysis*		χ^2=8,450		χ^2=8,108	
Probability		**p=0,038**		**p=0,044**	
Difference		**[1,2-3]**		**[1-3]**	

*"Independent Sample-t" test (t-table value) for comparison of measurement values of two independent groups in data with normal distribution; "ANOVA" test (F-table value) statistics were used to compare three or more independent groups. In the non-normally distributed data, "Mann-Whitney U" test (Z-table value) statistics were used for comparison of two independent groups with measurement values, and "Kruskall-Wallis H" test (χ2-table value) statistics were used for comparison of three or more independent groups.

[1,2,3] For variables with significant differences for three or more groups, expressions such as "[1-2,3] are used in pairwise comparisons. [1-2, 3] This expression means that there is a significant difference between 1 and 2 and between 1 and 3.

Table 3. Comparison of Ex-SRES Scale and Self-care Agency scores According to the Findings

Variable (N=107)	n	Exercise Self-Regulatory Efficacy Scale (Ex-SRES)		Self Care Agency Scale	
		$\bar{X} \pm S.S.$	Median [IQR]	$\bar{X} \pm S.S.$	Median [IQR]
Duration of COPD <5 yıl (1)	13	36,03±6,18	36,9 [10,3]	52,69±7,94	52,0 [10,0]
5-9 yıl (2)	81	34,43±3,60	34,6 [3,8]	50,04±6,25	49,0 [8,5]
≥10 yıl (3)	13	33,53±3,98	33,6 [6,6]	47,31±7,57	47,0 [14,0]
Statistical analysis*		χ^2=9,849		F=5,249	
Probability		**p=0,000**		**p=0,007**	
Difference		**[1-3]**		**[1-3]**	
Another chronic disease					
Yes	70	34,89±4,17	34,6 [5,2]	50,98±7,17	50,0 [9,3]
No	37	36,01±3,86	36,3 [5,0]	52,21±6,42	52,5 [9,0]
Statistical analysis*		Z=-3,784		Z=-2,002	
Probability		**p=0,000**		**p=0,045**	
Diagnosed with COVID-19					
Yes	33	34,38±5,21	34,6 [7,5]	50,45±8,95	51,0 [12,0]
No	74	36,67±3,43	36,6 [4,4]	53,34±5,79	53,0 [9,0]
Statistical analysis*		Z=-3,301		Z=-2,371	
Probability		**p=0,001**		**p=0,018**	

Table 4. Examining the relationship between Ex-SRES Scale and Self-care Agency Scales

Correlation* (N=107)		Self Care Agency Scale
Exercise		
Self-Regulatory Efficacy Scale	*r*	0,204
(Ex-SRES)	*p*	**0,003**

DISCUSSION

This study examined the self-care agency and exercise efficacy of individuals diagnosed with COPD. It was found that there was a positive relationship between self-care agency and exercise efficacy of COPD patients participating in the study. It was found that the patients' self-care agency and exercise efficacy were relatively low during COVID-19.

In this study, 34.6% of patients diagnosed with COPD were aged between 70 and 74 years. In the literature, the prevalence of COPD in the 65 years and older age group is reported to be 14.2%, while in the 40 years and older age group, it is 9.9%. It has been noted that in geriatric patients, complications such as comorbidity, multiple medications, cognitive dysfunction, and age-related problems and demands, as well as complications such as decreased self-care skills and exercise efficacy and worsening quality of life associated with COPD, require a multidisciplinary holistic approach (Halbert and Natoli 2006). In a study by Turan et al. (2021), it was found that 79.2% of COPD patients were male, and 62.3% of them had chronic diseases other than COPD. (Turan et al., 2021) According to the results of our study, it was found that 68.2% of COPD patients were male, and 65.4% had another chronic disease. In their study, Kar and Zengin (2019) found that males had worse COPD severity and health status than females(Kar and Zengin, 2019).In the study by Kant et al., (2020), it was determined that the male sex ratio was high in patients with COPD, and hypertension and coronary artery disease were among the comorbidities in the COPD patient group. (Kant et al., 2020).

Individuals diagnosed with COPD are more common in males are thought to be since smoking habits are more common in males. In a study by Ebrahimi Belil et al., 2018, it was found that the high prevalence of chronic diseases in individuals reduces the capacity for self-care. The concepts of self-care literacy and self-efficacy were found to be interrelated in individuals' performance of self-care activities and activities of daily living. (Ebrahimi Belil et al., 2018).

The research of Hu et al. on chronic diseases and the research of Erol and Enc on diabetes show that life satisfaction and self-efficacy decrease with age (Erol and Enc 2011; Hu et al., 2016). This result can be attributed to the adverse effects of later life, such as the increase of chronic diseases and the decrease in strength and motivation to overcome these diseases. In a study by Shirvani, N. J., 2020 et al., it is shown that due to the advanced age of patients and their increased need for care, maintaining and improving self-care behaviors increases the patient's dependence on the caregiver and decreases the self-care agency (Shirvani et al., 2020). For this reason, individuals diagnosed with COPD may experience a decrease in self-care agency due to their advanced age. Savaş and Tanrıverdi (2010) found that advanced age and having more than one chronic disease in COPD patients' decreased self-efficacy and self-care competence.

Pandemic processes have adverse and demoralizing effects on individuals and society (Savas and Tanriverdi, 2010). Since the end of 2019, the epidemic of COVID-19 has severely affected people's physical and mental health. Patients with chronic diseases, especially COPD patients, tend to be more complicated than their peers, and their treatment adherence is very low.

The current study found that individuals diagnosed with COVID-19 had deficient self-care agency and exercise efficacy levels compared to those not diagnosed. It is well known that the pandemic process imposes significant limitations on patients, and the decrease in exercise efficacy of COPD patients could be due to the inconvenience of being

in social and crowded environments. Moreover, the scales that allow measuring and evaluating their exercise capacity at home have greatly relieved COPD patients during this period. (Ünal Aslan and Çetinkaya, 2020). An important feature to improve the quality of treatment is patient participation in the treatment and self-care process (Hassani M. et al., 2010). In the studies, it was determined that the pandemic process adversely affected mainly the patients with COPD. (Elbeddini and Tayefehchamani 2021; Tsutsui et al., 2021)

Since the beginning of the pandemic COVID-19, it has been found to threaten susceptible individuals, especially those with chronic respiratory diseases, which naturally reduces the ability to self-care and exercise and the quality of life of these individuals. (Lacwik P, et al., 2021). The literature states that endurance and exercise efficacy are impaired in patients with COPD (Selzler et al., 2020; Andrianopoulos et al., 2021). Many factors can affect exercise efficacy, such as impaired breathing and decreased oxygen uptake in the lungs. Dyspnea, which is common in patients with COPD, is one of the complaints caused by a sedentary lifestyle (Ünal et al., 2018). In the study by Pitta F 2005, it was found that COPD patients were impaired in performing activities of daily living due to both respiratory and non-respiratory clinical conditions related to the disease (Pitta et al., 2005). It is established that exercise efficacy and daily activity are closely related to the quality of life and self-care (Waschki et al., 2011)

Therefore, improving physical activity is very important to address pulmonary and systemic manifestations of the disease (Di Marco et al., 2015) Interventions such as exercise efficacy, rehabilitative measures, and non-invasive respiratory support can improve COPD. According to the available information we have obtained, the exercise efficacy of the affected person decreases when the self-care agency decreases. The main symptom of chronic obstructive pulmonary disease (COPD) is shortness of breath, leading to inadequate self-care skills in sufferers (Aytac et al., 2020). In addition, in a study by Selzler et al., (2020) it was found that as the self-care agency of the person decreases, the level of self-efficacy also decreases as it affects the level of self-confidence and quality of life. (Selzler et al. 2020). The breathing difficulties associated with COPD cause patients to distrust their ability to perform certain activities, and this low self-efficacy leads to activity limitation (Ünal et al., 2018).

Even when patients with COPD are physically able, they have difficulty performing activities of daily living due to their low self-efficacy. Wang et al. reported that a continuous self-care program could improve lung performance and physical activity and enhance the quality of life of COPD patients (Wang et al. 2018).

In particular, people with COPD may develop a low expectation of their self-efficacy to manage their breathing difficulties when performing certain activities. In this case, low self-efficacy leads to activity limitation in patients with COPD

CONCLUSION

Medical treatment of patients with COPD will not eliminate all symptoms. Therefore, it is essential to strengthen patients' self-care skills and improve environmental conditions. If symptoms are not controlled in COPD patients, the prognosis may worsen. This study found that individuals diagnosed with COPD had very low self-care agency and exercise efficacy in the COVID-19 period. Individuals' self-care empowerment plans will increase self-care agency and exercise efficacy. Therefore, it is recommended that self-care and a personalized home exercise program be included in the treatment plan of COPD patients, as it is an easy-to-use, low-cost, and effective intervention. It may also be recommended that patients use scales to self-measure their exercise efficacy to follow up at home.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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REFERENCES

Andrianopoulos, V., Gloeckl, R., Schneeberger, T., Jarosch, I., Vogiatzis, I., Hume, E., ... & Kenn, K. (2021). Benefits of pulmonary rehabilitation in COPD patients with mild cognitive impairment–A pilot study. Respiratory Medicine, 185, 106478.

Aytaç, S.O., Kiliç, S.P., Ovayolu, N. (2020). Effect of inhaler drug education on fatigue, dyspnea severity, and respiratory function tests in patients with COPD. Patient Educ Couns;103:709– 16.

Davis, A. H., Figueredo, A. J., Fahy, B. F., Rawiworrakul, T. (2007). Reliability and validity of the Exercise Self-Regulatory Efficacy Scale for individuals with chronic obstructive pulmonary disease. Heart & lung: the journal of critical care, 36(3), 205–216. https://doi.org/10.1016/j.hrtlng.2006.08.007

Di Marco, F., Santus, P., Sotgiu, G., Blasi, F., Centanni, S. (2015). Does improving exercise capacity and daily activity represent the holistic perspective of a new COPD approach? COPD. 12:575–81.

Ebrahimi Belil, F., Alhani, F., Ebadi, A., Kazemnejad, A. (2018). Self-efficacy of people with chronic conditions: A qualitative directed content analysis. Journal of clinical medicine, 7(11), 411.

Elbeddini, A., Tayefehchamani, Y. (2021). Amid COVID-19 pandemic: challenges with access to care for COPD patients. Research in Social and Administrative Pharmacy, 17(1), 1934-1937.

Erol, O., Enc, N. (2011) Hypoglycemia fear and self-efficacy of turkish patients receiving insulin therapy. Asian Nurs Res 5(4):222–228

Halbert, R.J., Natoli, J.L., (2006) Gano A, Badamgarav E, Buist AS, Mannino DM. Global burden of COPD: Systematic review and meta-analysis. Eur Respir J, 28: 523-32.

Hassani, M., Farahani, B., Zohour, A., Panahi, Azar, S. (2010). Self-care ability based on Orem's theory in individuals with coronary artery disease (Persian). Journal of Critical Care Nursing. 3(2):15-6. http://jccnursing.com/article-1-155-fa.html

Holmes, E.A., O'Connor, R., Perry, V.H., et al. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action and for mental health science. Lancet Psychiatry,7:547–560. Published online 15th April.

Hu, SX., Lei, W.L., Chao, K.K., Hall, B.J., Chung, S.F (2016) Common chronic health problems and life satisfaction among Macau elderly people. Intl J Nurs Sci 3(4):367–370

Kant, A., Çomoğlu, Ş., Öztürk, S., Aydın, E., Yılmaz, G. (2020). Kronik Obstrüktif Akciğer Hastalığı Covıd-19 Enfeksiyonunun Şiddetini Etkiliyor Mu? Kırıkkale Üniversitesi Tıp Fakültesi Dergisi, 22(3), 440-444.

Kar, S., Zengin, N. (2019) Examining the state of health in patients with COPD according to sociodemographic and disease-related characteristics J Pro Health Res; 1(1):1-7.

Kearney, B.Y., Fleischer, BJ. (1979). "Development of an instrument to measure exercise of self care", Nurs Health, 22, 25-34,

Lacwik, P., Szydłowska, D., Kupczyk, M., Pałczyński, C., Kuna, P. (2021). High levels of anxiety during the COVID-19 pandemic as a risk factor of clinical worsening in patients with severe asthma. J Allergy Clin Immunol Pract;9(3):1381-3.

McMurray, M., Sisson, M., Schiavon, S. (2020). Anxiety, depression, and using evidence-based techniques and strategies to support engagement and adherence. In Enhancing Patient Engagement in Pulmonary Healthcare (pp. 105-132). Humana, Cham.

Nahcıvan, N.O. (2004) "A Turkish Language Equivalence of the Exercise of Self CareAgencyScale", Western Journal of Nursing Research, 26(7), 813-824.

Kearney, B.Y., Fleischer, BJ. (1979). "Development of an instrument to measure exercise of self care", Nurs Health, 22, 25-34,

Pitta, F., Troosters, T., Spruit, M.A., Probst, V.S., (2005). Decramer M, Gosselink R. Characteristics of physical activities in daily life in chronic obstructive pulmonary disease. Am J Respir Crit Care Med;171:972–7.

Riegel B, Jaarsma T, Stromberg A. A middle-range theory of self-care of chronic illness. ANS Adv Nurs Sci. 2012;35(3):194–204. doi:10.1097/ANS.0b013e318261b1ba

Savaş, E., Tanriverdi, D. (2010). Knowledge, attitudes and anxiety towards influenza A/H1N1 vaccination of healthcare workers in Turkey. BMC Infect Dis;10:281.

Selzler, A. M., Rodgers, W. M., Berry, T. R., & Stickland, M. K. (2020). Coping versus mastery modeling intervention to enhance self-efficacy for exercise in patients with COPD. Behavioral Medicine, 46(1), 63-74.

Shirvani, N.J, Ghaffari, F., Fotokian, Z., Monadi, M. (2020). Association between perceived family social support and self-care behaviors in elders with chronic obstructive pulmonary disease (COPD): a medical center-based study from Iran. The Open Nursing Journal, 14(1).

Tsutsui, M., Gerayeli, F., Sin, D.D. (2021). Pulmonary rehabilitation in a post-COVID-19 world: telerehabilitation as a new standard in patients with COPD. International journal of chronic obstructive pulmonary disease, 16, 379.

Turan, O., Arpınar Yigitbas, B., Turan, P. A., Mirici, A. (2021). Clinical characteristics and outcomes of hospitalized COVID-19 patients with COPD. Expert review of respiratory medicine, 15(8), 1069-1076.

Ünal Aslan, K.S., Çetinkaya, F. (2020). Validity and reliability of the Turkish version of the COPD exercise self-regulatory efficacy scale. The Clinical Respiratory Journal, 14(3), 235-241.

Ünal, K.S., Tar, E., Kant, E., Çetinkaya, F. (2018). The effect of walking exercise on oxygen saturation, dyspnea and happiness in COPD patients. Journal of Current Researches on Health Sector, 8(1), 95-110.

Wang, L., Mårtensson, J., Zhao, Y., & Nygårdh, A. (2018). Experiences of a health coaching self-management program in patients with COPD: a qualitative content analysis. International Journal of Chronic Obstructive Pulmonary Disease, 13, 1527.

Waschki, B., Kirsten, A., Holz, O., Muller, K.C., Meyer, T., Watz, H., Magnussen, H. (2011). Physical activity is the strongest predictor of all-cause mortality in patients with COPD: a prospective cohort study. Chest;140:331–42.

Zwerink M, Brusse-Keizer M, van der Valk PD, Zielhuis GA, Monninkhof EM, van der Palen J, et al. Self management for patients with chronic obstructive pulmonary disease. Cochrane Database Syst Rev. 2014(3):CD002990.doi:10.1002/14651858.CD002990.pub3.