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Research Article

Pain, Sleep Disturbance, and Smoking Among Patients with Coronavirus Disease Admit to The Emergency Department

Vesile Eskici İlgin[1] , Ayşegül Yayla[1] , Zeynep Karaman Özlü[1] , İbrahim Özlü[2] , Rümeysa Lale Toraman[1] , Muazzez Merve Toraman[3]

[1]Department of Surgical Nursing, Atatürk University, Faculty of Nursing, Erzurum, Turkey
[2]Department of Emergency, Atatürk University, Faculty of Medicine, Erzurum, Turkey
[3]Department of Nursing, Bayburt University, Faculty of Health Sciences, Bayburt, Turkey

ORCID IDs of the authors: V.E.İ. 0000-0003-4885-8682, A.Y. 0000-0001-5382-4896, Z.K.Ö. 0000-0001-8896-5461, İ.Ö. 0000-0002-0821-7592, R.L.T. 0000-0002-2270-3175, M.M.T. 0000-0001-6089-0971.

Abstract

AIM: The study aimed to determine the pain, sleep disturbance, and smoking among patients with coronavirus disease 2019 who were presented to emergency departments.

METHOD: This descriptive research was conducted between November 2020 and December 2021. The study population comprised 400 patients with coronavirus disease 2019 who were presented to emergency departments at Ataturk University Research Hospital and Erzurum City Hospital and who agreed to participate in the study. The data were collected by the researcher via face-to-face interviews. Personal Information Form, Fagerström Test for Nicotine Dependence, Insomnia Severity Index, and McGill Pain Scale Short Form were used to collect the data. Descriptive statistics were presented as number, percentage, mean, and standard deviation. Parametric and nonparametric methods (*t*-test, Kruskal–Wallis Variance, Mann–Whitney U test, and analysis of variance were used to compare variables between the groups. Ethical approval was obtained from the relevant authority prior to data collection and oral consent was obtained from all patients.

RESULTS: It was determined that 52.5% of the patients were smokers; 24% of the smokers reported a decrease in smoking after being diagnosed with coronavirus disease 2019. Nicotine addiction was found to be higher in men, tradesmen, and patients aged 55–64 years. McGill pain scale emotional sub-dimension scores were higher in women, whereas the sensory sub-dimension scores were higher in married patients. McGill pain scale total scores were higher in women, unemployed patients, and those with chronic diseases. The Insomnia Severity Index was higher in women, smokers, and patients in the age group of 65–75 years.

CONCLUSION: According to the results of the present study, pain, smoking, and sleep disorders in patients diagnosed with coronavirus disease 2019 were affected by sociodemographic characteristics.

Keywords: COVID-19, emergency department, pain, sleep disturbance, smoking

Introduction

Coronavirus disease 2019 (COVID-19) emerged in Wuhan, China, in December 2019. The disease spread all over the world in a short period and was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (Aslan, 2020). The widespread use of tobacco products by individuals worldwide and in Turkey has raised concerns regarding the predisposition of these individuals to COVID-19 and the effect of smoking on disease severity.

According to the Ministry of Health's (2017) Annual Report on Health Statistics, 29.2% of the population over the age of 15 years in Turkey regularly consumes tobacco products on a daily basis. Approximately 100,000 premature deaths are reported in Turkey every year due to the harmful effects of

tobacco use, which is approximately 12 people per hour and 300 per day. According to the WHO report published in 2018, there are approximately 1.1 billion smokers worldwide and ~7 million people die every year due to smoking-related causes. This is due to the already known negative effects of tobacco use on respiratory defense mechanisms; thus, tobacco use acts as an important risk factor for respiratory tract infections (Feldman & Anderson, 2013). A meta-analysis of five studies in China reported that smoking was associated with the incidence and severity of the disease (Vardavas & Nikitara, 2020). Another study in China found that 44.8% of men were smokers, and the higher prevalence of COVID-19 infection in men and the worse clinical course of the disease were associated with higher rates of smoking (Cai, 2020). Furthermore, it was found that the ratio of smokers was higher among severe patients, and the mechanical ventilation, intensive care, and mortality rates

Corresponding Author: Vesile Eskici İlgin
E-mail: vesile_eskici_86@hotmail.com

were found to be higher among smokers. Smoking increases the COVID-19 risk by 14 times; WHO (2018) has also emphasized that other tobacco products, such as electronic cigarettes, hookahs, and heated tobacco products, have similar negative effects. Smoking, which is one of the most significant causes of mortality and morbidity, is a leading cause of preventable death worldwide.

During the COVID-19 pandemic, social life changed due to quarantine measures, closure of schools, and social isolation. Significant limitations in social life, uncertainty regarding the end of the pandemic, and the related economic effects led to increased levels of stress and anxiety in people. People in the risk groups especially experienced high levels of anxiety after witnessing the increasing number of cases and deaths in Turkey and in the world. Stress and anxiety disorders have in turn led to sleep disorders (Shanafelt et al., 2020).

The COVID-19 pandemic has shown high morbidity and mortality rates. In addition to its effects on the respiratory and cardiovascular system, headaches and various neurological involvements have been reported (Bobker & Robbins, 2020). Further, COVID-19 affects the nervous and muscular systems. The most common neurological symptoms are headache, muscle pain, sleep disturbance, impaired consciousness, odor and taste disorders, dizziness, and cerebrovascular diseases (Karadaş et al., 2020). People with COVID-19 may exhibit a wide range of symptoms, from asymptomatic cases to patients with severe respiratory distress syndrome. Nonspecific structural symptoms include fatigue, muscle pain, chills, and headaches (Kurçaloğlu et al., 2021).

There are no studies in Turkey that investigated the prevalence of pain, sleep disturbance, and smoking among patients with COVID-19 who were presented to the emergency department during the pandemic. The findings of this study can help in reducing the risk factors of COVID-19 and can add novel information to the literature. The study aimed to determine the pain, sleep disturbance, and smoking among patients with COVID-19 presenting to the emergency department.

Research Questions
1. How was the pain and sleep disturbance in COVID-19 patients who applied to the emergency department
2. What was the smoking status of COVID-19 patients who applied to the emergency department?

Method

Study Design
This study was designed as descriptive research.

Sample
The study population consisted of patients who tested positive for COVID-19 between November 2020 and December 2021 in the emergency department of the university hospital and city hospital in Erzurum city center. While the universe of the study consists of all the patients coming to the emergency service of a university hospital and city hospital in Erzurum city center, no sample selection method has been used and the whole universe has been taken to the sample of the study. A total of 423 patients who agreed to participate in the study constituted the study sample. The data of 23 patients who left the study voluntarily, had major hearing and vision problems, and had communication problems were not included in the study.

Data Collection Tools

Personal Information Form
The "Personal Information Form" was prepared by the researcher in line with the relevant literature. The form consists of 10 questions, including the sociodemographic characteristics of patients who tested positive for COVID-19, their smoking status, any changes in smoking habits after testing positive for COVID-19, the number of smoking cessation attempts, and their interest in smoking cessation programs.

Fagerström Test for Nicotine Dependence
The "Fagerström Test for Nicotine Dependence (FTND)" is the most commonly used test to evaluate smoking addiction. The Turkish validity and reliability study was conducted by Uysal et al. (2004) and Cronbach's alpha coefficient was found to be 56. The Turkish version was found to be moderately reliable and important questions were highlighted. Fagerström Test for Nicotine Dependence consists of 6 questions. Scores obtained from each question are added and the level of dependency is calculated. In a nutshell, this test evaluates the number of cigarettes smoked by the person and the amount of time they can stay without smoking. A score of 6 or above indicates a high degree of nicotine dependency. In this study, Cronbach's alpha value of the scale was found to be .56.

Insomnia Severity Index
Insomnia Severity Index (ISI) is a 5-point Likert-type scale and consists of seven items. Each item on the scale is scored between 0 and 4, and the total score that can be obtained from the scale varies between 0 and 28. The seven items in the scale evaluate the difficulties in transitioning to sleep, difficulties in maintaining sleep, waking up too early, satisfaction with the sleep pattern, deterioration in daily functionality, noticeable deterioration in sleep-induced impairments, and the level of stress caused by sleep problems. A score of 0–7 indicates "insignificant insomnia," a score of 8–14 indicates "lower limit clinical insomnia," a score of 15–21 indicates "moderate insomnia," and a score of 22–28 indicates "severe insomnia." The Turkish validity and reliability study of the scale was conducted by Boysan et al. (2010). Cronbach's alpha value of the scale was found to be .79.

McGill Pain Scale Short Form
For the "McGill Pain Questionnaire Short Form (SFMPQ)," the Turkish validity and reliability study was conducted by Yakut et al. (2007). The SFMPQ consists of three sections. The first section contains 15 word groups defining pain. Of these, 11 evaluate the sensory dimension of pain and 4 evaluate the perceptual dimension. These are rated on a severity scale between 0 and 3 (0=none, 1=mild, 2=moderate, 3=severe). Three separate pain scores are obtained using

SFMPQ: sensory pain score, perceptual pain score, and total pain score (Melzack, 1987). Cronbach's alpha value of the scale was found to be .78.

Data Collection
The data were collected by the researcher between November 2020 and December 2021 via face-to-face interviews. "Personal Information Form," "Fagerström Test for Nicotine Dependence," "ISI," and "McGill Pain Scale Short Form" were used to collect the data.

Statistical Analysis
Statistical Package for the Social Sciences (IBM SPSS Corp., Armonk, NY, USA) 20.0 program was used for statistical analysis. Demographic data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation). Categorical variables (gender, education level, and marital status) were analyzed using number and percentage, and continuous variable (age) was analyzed using mean and standard deviation. In all the analyses, $p < .05$ was considered statistically significant in all the analyses.

Ethical Consideration
Before starting the study, the ethical board approval no. B.30.2.ATA.0.01.00/516 has been taken from the Medical Faculty Ethical Board of a Ataturk University. The patients voluntarily accepting to participate in the study have been included. Verbal approvals of the patients have been taken after giving necessary explanations. Participants have been told that they could leave the questionnaire filling process whenever they want. The attained data and the identity of the answerer have been specified to be kept confidential. Because it is necessary to protect individual rights, Human Rights Helsinki Declaration has been respected during the study.

Results

Table 1 shows the sociodemographic characteristics of the patients. Accordingly, 51.2% of the patients were male, 19.8% were between the ages of 25 and 34, 68.8% were married, 67.8% lived in the city center, 69.3% did not have chronic diseases, and 24% were housewives. It was determined that 52.5% of the patients were smokers. Of smokers, 24% reported a decrease in smoking after being diagnosed with COVID-19. It was found that 22.3% of smokers did not try to quit smoking, whereas 35.3% were not interested in smoking cessation programs.

Table 2 shows the responses of the patients to FTND. Accordingly, 26.5% of the patients smoked an average of 11–20 cigarettes per day, 16.8% smoked their first cigarette within 6–30 minutes after waking up, 33.8% had difficulty in not smoking at places where smoking is forbidden, 18% found it difficult to give up cigarettes during the morning period, and 36% smoked more frequently during the day compared to the first few hours after waking up.

When pain scores of patients who tested positive for COVID-19 were evaluated using SFMPQ, it was found that the sensory dimension mean score was 4.52 ± 4.83, emotional dimension

Table 1.
Sociodemographic Characteristics of Patients (n = 400)

Variables	Number	%
Age		
18–24	69	17.2
25–34	79	19.8
35–44	54	13.5
45–54	71	17.8
55–64	64	16
65–75	63	15.7
Gender		
Female	195	48.8
Male	205	51.2
Marital status		
Married	275	68.8
Single	125	31.2
Location of residence		
City center	271	67.8
County-Town	78	19.5
Village	51	12.7
Profession		
Tradesmen	32	8
Worker	42	10.5
Civil servant	79	19.7
Retired	40	10
Student	48	12
Non-working	25	6.2
Housewife	96	24
Farmer	21	5.3
Other	17	4.3
Chronic disease		
Yes	122	30.7
No	278	69.3
Smoking		
Yes	210	52.5
No	190	47.5
Smokers		
Did you smoke less	96	45.7
Did you smoke more	46	21.9
Have you considered quitting smoking	54	25.7
Have you quit smoking	14	6.7
Number of quitting attempts		
0	89	42.3
1	39	18.6
2	36	17.1
3	23	11
4+	23	11
Interest in smoking cessation programs		
Yes	69	32.9
No	141	67.1

Table 2.
Responses of COVID-19-positive smokers to FTND

FTND (n = 210)	Number	%
How soon after you wake up do you smoke your first cigarette?		
Within 5 minutes	42	20
6–30 minutes	67	31.9
31–60 minutes	45	21.4
After 1 hour	56	26.7
Do you find it difficult to refrain from smoking in places where it is forbidden?		
Yes	135	64.3
No	75	35.7
Which cigarette would you hate most to give up?		
The first one	68	32.4
Morning	72	34.3
Others	70	33.3
How many cigarettes per day do you smoke?		
10 or less	63	30
11–20	106	50.5
21–30	30	14.3
31 or more	11	5.2
Do you smoke more frequently during the first few hours after waking than during the rest of the day?		
Yes	66	31.4
No	144	68.6
Do you smoke when you are so ill that you are in bed most of the day?		
Yes	104	49.5
No	106	50.5

COVID-19, coronavirus disease 2019; FTND, Fagerström Test for Nicotine Dependence.

Table 3.
McGill Pain Questionnaire Short Form Scores

Pain Scores	Mean ± SD
Sensory dimension	4.52 ± 4.83
Emotional dimension	2.50 ± 2.93
Overall pain severity	4.60 ± 3.10

SD, standard deviation.

age group of 55–64 years, whereas patients in the age group of 55–64 years had higher nicotine dependency scores than those in the age group of 18–24 years. A statistically significant relationship was found between marital status and sensory pain score ($p < .05$). Married patients had a higher sensory pain score than single patients ($p < .05$). When the relationship between the presence of chronic disease and pain sub-dimension scores was examined, it was found that the overall pain severity was significantly higher in patients with chronic diseases than in those without chronic diseases. When the relationship between profession and pain scores was examined, it was found that the overall pain severity score was significantly different between working and non-working patients. Non-working patients had higher overall pain severity scores than working patients. It was found that nicotine dependency scores were significantly higher among tradesmen than among other occupational groups. It was found that smokers had higher ISI levels than non-smokers ($p < .05$).

Discussion

This is the first study conducted in Erzurum province to examine the relationship between the prevalence of smoking, pain, and sleep disorders in patients who tested positive for COVID-19 and were presented to the emergency department. Among the patients who participated in the present study, 52.5% were smokers. After being diagnosed with COVID-19, 24% of smokers showed a decrease in their smoking habits, 22.3% did not try to quit smoking, and 35.3% were not interested in smoking cessation programs. Further, the results show that there is a slight difference in the frequency of smoking in patients who tested positive for COVID-19. In Australia, Stanton et al. (2020) found that 93% of respondents reported no change in smoking status since the onset of the COVID-19 pandemic. In that study, 16.3% of smokers reported a decrease in smoking habits and 38.4% reported no change, whereas 49.9% reported an increase in smoking habits (Guan et al., 2020). A study in Sweden that examined life changes in both the first and second wave of the COVID-19 pandemic reported that the habit of tobacco use continued in a similar way to that observed during the pre-pandemic period (Blom et al., 2021). Another study involving 17 countries from the Middle East and North Africa showed that no difference was observed in smoking behaviors during the COVID-19 pandemic (Abouzid et al., 2021).

In a study evaluating the chronic diseases and smoking status of 1590 patients diagnosed with COVID-19 in China, it was reported that the smoking rate was higher in patients with chronic diseases than those without chronic diseases (Guan et al., 2020).

mean score was 2.50 ± 2.93, and overall pain severity score was 4.60 ± 3.10 (Table 3).

As shown in Table 4, a statistically significant difference was found in pain sub-dimension scores with respect to gender ($p < .05$). It was determined that women had a higher emotional dimension score and overall pain severity score than men. When the relationship between gender and insomnia severity was examined, it was found that women had higher ISI levels than men. When the relationship between gender and nicotine dependency was examined, it was determined that men had higher levels of nicotine dependency than women. On examining the relationship between age and insomnia severity and nicotine dependency, a statistically significant difference was found in insomnia severity and nicotine dependency scores with respect to age ($p < .05$). It was found that patients in the age group of 65–75 years had higher ISI levels than those in the

Table 4.

Comparison of McGill Pain Questionnaire Short Form, Fagerström Test for Nicotine Dependency, and Insomnia Severity Index (ISI) Scores According to Sociodemographic Characteristics of Patients

Variables	Sensory Dimension (Mean ± SD)	Emotional Dimension (Mean ± SD)	Overall Pain Severity (Mean ± SD)	Nicotine Dependency (Mean ± SD)	ISI (Mean ± SD)
Gender					
Female	5.01 ± 4.99	2.82 ± 3.07	5.29 ± 3.11	3.67 ± 2.49	10.07 ± 6.76
Male	4.06 ± 4.64	2.19 ± 2.76	3.94 ± 2.95	4.94 ± 2.59	8.76 ± 6.34
	$t = 1.96$ $p = .05$	$t = 2.13$ $p = .03$	$t = 4.44$ $p = .00$	$t = -3.4$ $p = .01$	$t = 1.19$ $p = .04$
Age					
18–24	3.75 ± 3.67	2.36 ± 2.45	4.47 ± 3.35	3.69 ± 2.32	9.64 ± 6.18
25–34	4.75 ± 6.08	2.96 ± 3.71	4.43 ± 3.38	4.28 ± 2.37	9.81 ± 7.17
35–44	4.68 ± 5.34	2.57 ± 3.09	4.40 ± 3.20	5.10 ± 2.52	8.66 ± 6.69
45–54	5.09 ± 5.22	2.76 ± 2.97	5.05 ± 3.19	4.43 ± 2.72	9.40 ± 6.50
55–64	4.96 ± 4.10	2.34 ± 2.69	4.54 ± 2.57	5.45 ± 2.88	7.54 ± 6.23
65–75	3.84 ± 3.86	1.88 ± 2.24	4.69 ± 2.80	3.94 ± 2.67	11.17 ± 6.22
	KW = 5.89 $p = .31$	KW = 3.14 $p = .67$	KW = 2.25 $p = .81$	KW = 11.31 $p = .04$	KW = 11.53 $p = .04$
Marital status					
Married	4.89 ± 5.01	2.55 ± 2.88	4.79 ± 3.04	4.88 ± 2.73	9.34 ± 6.63
Single	3.71 ± 4.34	2.38 ± 3.04	4.19 ± 3.20	3.08 ± 2.25	9.54 ± 6.49
	$t = -2.27$ $p = .02$	$t = -0.52$ $p = .60$	$t = -1.80$ $p = .07$	$t = -2.8$ $p = .05$	$t = 0.26$ $p = .78$
Chronic disease					
Yes	4.99 ± 4.51	2.73 ± 3.18	5.20 ± 2.82	4.43 ± 2.73	10.30 ± 6.65
No	4.34 ± 4.98	2.40 ± 2.82	4.36 ± 3.19	4.57 ± 2.60	9.04 ± 6.53
	$t = 1.22$ $p = .22$	$t = 1.04$ $p = .29$	$t = 2.50$ $p = .01$	$t = -0.35$ $p = .72$	$t = 1.75$ $p = .08$
Profession					
Tradesmen	3.78 ± 3.68	1.96 ± 2.27	3.68 ± 2.40	6.34 ± 2.59	7.34 ± 6.08
Worker	3.71 ± 6.14	2.63 ± 3.23	3.88 ± 3.12	5.09 ± 2.73	8.88 ± 7.87
Civil servant	4.59 ± 5.42	2.56 ± 3.01	3.98 ± 3.31	4.18 ± 2.52	10.22 ± 6.69
Retired	3.85 ± 4.14	1.97 ± 2.35	4.38 ± 2.70	4.19 ± 2.44	8.75 ± 5.56
Student	4.54 ± 4.83	3.06 ± 3.74	5.10 ± 3.32	3.10 ± 1.94	9.04 ± 5.98
Non-working	5.80 ± 4.76	3.80 ± 3.36	5.80 ± 2.94	4.17 ± 2.45	10.12 ± 6.21
Housewife	4.69 ± 4.49	2.50 ± 2.61	5.23 ± 3.05	3.50 ± 2.26	10.25 ± 6.83
Farmer	3.52 ± 3.68	1.66 ± 2.78	4.66 ± 3.05	6.27 ± 2.72	7.52 ± 6.13
Other	5.05 ± 5.33	1.64 ± 2.08	4.70 ± 3.07	4.50 ± 2.34	9.88 ± 6.57
	KW = 7.51 $p = 0.48$	KW = 11.27 $p = .18$	KW = 17.60 $p = .02$	KW = 29.21 $p = .00$	KW = 9.73 $p = .28$
Smoking					
Yes	4.90 ± 5.02	2.42 ± 2.69	4.37 ± 3.00	4.51 ± 2.62	10.11 ± 6.62
No	4.10 ± 4.59	2.58 ± 3.17	4.86 ± 3.19	--	8.61 ± 6.45
	$t = 1.66$ $p = .09$	$t = -0.53$ $p = 0.59$	$t = -1.59$ $p = 0.11$	-- --	$t = 2.28$ $p = 0.02$

Note: KW, Kruskal–Wallis; SD = standard deviation.

Studies evaluating the nicotine dependency of smokers reported that the FTND total score average was 3.88 ± 2.34 in the study conducted by Moreno-Coutiño & Villalobos-Gallegos (2017). In a study conducted by Svicher et al. (2018) with 869 individuals, the FTND total score was 3.62 ± 2.36 in women and 4.20 ± 2.47 in men ($p < .05$). In the study conducted by Tunç and Kolburan (2019), it was found that nicotine dependency was higher in male students than in female students. Likewise, in the present study, the nicotine dependency levels were higher among men (4.94 ± 2.59) than among women (3.67 ± 2.49).

When the relationship between age and nicotine dependency was examined, Kaptanoğlu et al. (2012) reported a positive correlation between the smoking addiction level and age of smokers. Dependency rates were found to be higher in older age groups than in younger age groups. Similarly, in the present study, nicotine dependency was found to be higher in people between the ages of 55 and 64 years than those between the ages of 18 and 24 years. This can be explained by the fact that older individuals have less daily life activities and tend to smoke more (Çelepkolu et al., 2014).

The severe acute respiratory syndrome coronavirus 2 can affect different tissues of the body, leading to pain symptoms (Weng et al., 2021). Studies report that patients who test positive for COVID-19 may experience various pain symptoms, such as headache, muscle pain, sore throat, and abdominal pain (Chow et al., 2020; Pan et al., 2020). In the present study, it was found that women had higher emotional pain scores and overall pain severity scores than men. This is an important topic of discussion and evaluation in the literature. A comprehensive meta-analysis reported that the higher pain scores in women were associated with different factors, such as physiological, anatomical, fertility characteristics, lifestyle and sociocultural characteristics, and the fact that women can express pain in an easier way than men (Şahin, 2004). In addition, the restrictions imposed during the COVID-19 pandemic increased the time spent at home, which in turn increased the responsibilities of women at home. It can be argued that this has caused women, who are physically more sensitive compared to men, to experience more pain than men. Subjective experiences, such as pain, are strongly influenced by gender and individual genetic, social, cultural, and personal characteristics (Özüdoğru et al., 2021).

It is stated in the literature that the increased time spent in the house, spending this time inactively, and excessive engagement with technological devices, especially during the COVID-19 pandemic, can cause individuals to experience pain (Liu et al., 2020). In the present study, a statistically significant was found between the pain experienced by working patients and that experienced by non-working patients. This finding can be attributed to decreased physical activity. At the same time, this situation may be due to the psychological burdens of non-working patients, who are constantly busy with themselves, have no work to do, cannot make a financial contribution to the household, have to live in isolation at home, and have to stay away from their loved ones.

Studies in the literature showed that COVID-19 was more severe in individuals with a history of chronic diseases compared to those with no history of chronic diseases. Similarly, Arentz et al. (2020) reported that COVID-19 was more severe in patients with chronic diseases, such as hypertension and diabetes, and the disease symptoms were more common (Deng et al., 2020). In the present study, the overall pain severity score was found to be higher in patients with chronic diseases than in those without chronic diseases. Patients with chronic diseases who experience more pain may suggest that COVID-19 is more severe among these patients.

During the COVID-19 pandemic, the loss of jobs was more significant in the occupational groups of workers, tradesmen, and farmers. Many businesses went bankrupt with COVID-19 and many employees lost their jobs (Başpınar, 2021). In the present study, the nicotine dependency rates were found to be higher among tradesmen and farmers than among other occupational groups. It can be considered that the increase in nicotine dependency is associated with unemployment and loss of income brought about by the pandemic.

Rapid transmission of COVID-19, isolation, and the effects of drugs on patients increase the incidence of sleep disorders and sleep disturbance (Liu et al., 2020). In a systematic meta-analysis of 5153 COVID-19-diagnosed patients from 31 studies, Deng et al. (2020) reported that the prevalence of sleep disorders was 34%. In Australia, Stanton et al. (2020) reported a negative change in sleep quality in 40.7% of the participants since the onset of the COVID-19 pandemic (Abouzid et al., 2021).

Although Egeli et al. (2021) reported no difference in the ISI levels between men and women, Pieh et al. (2020) found that women had worse sleep quality than men. Similarly, in the present study, it was determined that women had higher ISI levels than men. In the study conducted by Egeli et al. (2021), a significant positive correlation was found between age and sleep problems. Consistent with the literature, in the present study, a significant relationship was found between age and insomnia severity. Older patients experience more sleep problems, which may suggest that they experience emotions such as anxiety and fear of death more intensely and their sleep quality is affected by these psychological factors.

When the relationship between nicotine dependency and sleep quality was examined, Liao et al. (2019) found that smokers experienced significant sleep disorders compared to non-smokers. In a systematic review examining sleep quality and smoking between 2010 and 2020 at the national thesis center of the Higher Education Thesis Board, it was found that one in four people smoked and one in two slept poorly, and the sleep quality was 69.7% better among non-smokers than smokers (Başpınar, 2021). Consistent with the literature, in the present study, it was found that smokers had significantly higher ISI levels than non-smokers.

Study Limitations
The research is limited to the patients who applied to the emergency department of Atatürk University Health Research and Application Hospital and Erzurum City Hospital, met the sample selection criteria, and accepted to participate in the study.

Therefore, the results of the study can only be generalized to patients with the characteristics of this sample group.

According to the results of the present study, pain, smoking, and sleep disorders in patients diagnosed with COVID-19 were affected by sociodemographic characteristics.

Conclusion and Recommendations

It was determined that women had a higher emotional dimension score, overall pain severity score, and had higher ISI levels than men. It was determined that men had higher levels of nicotine dependency than women. It was found that patients in the age group of 65–75 years had higher ISI levels than those in the age group of 55–64 years, whereas patients in the age group of 55–64 years had higher nicotine dependency scores than those in the age group of 18–24 years. Married patients had a higher sensory pain score than single patients. It was found that the overall pain severity was significantly higher in chronic diseases. Non-working patients had higher overall pain severity scores than working patients. It was found that nicotine dependency scores were significantly higher among tradesmen than among other occupational groups. It was found that smokers had higher ISI levels than non-smokers ($p < .05$). Further studies should be conducted with different risk factors and larger samples to provide further insights into this topic.

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