



## Research Article

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# ASSESSMENT OF SMOKING HABITS OF HEALTHCARE PROFESSIONALS DURING THE COVID-19 PANDEMIC PERIOD

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## Abstract

**Objectives:** Our study aimed to assess the smoking habits of healthcare professionals who are at the forefront of the coronavirus disease-2019 (COVID-19) pandemic and are most exposed to the risk of getting infected and the factors affecting those habits.

**Materials and Methods:** All of 285 healthcare professionals who are 18 years old and over and are still smoking or quit smoking during the pandemic or started smoking during this period were included in the study. A sociodemographic data form, a questionnaire containing categorical questions on smoking behaviors and Beck's Anxiety Inventory were administered to the participants through face-to-face interview method.

**Results:** All of 31 participants (10.88%) did not smoke in the pre-pandemic period but started smoking during the pandemic period, 230 participants (80.70%) were smokers in the pre-pandemic period and still continued to smoke, and 24 (8.42%) participants quit smoking due to the pandemic while they were smoking in the pre-pandemic period. It was observed that healthcare professionals considering whether or not to quit smoking and considering that smoking increased deaths from COVID-19 infection experienced more anxiety (respectively  $p=0.012$ ;  $p=0.027$ ). It was also observed that healthcare professionals who had a COVID-19 infection and lost someone close to them due to COVID-19 significantly reduced the daily amount of cigarettes they smoked (respectively  $p=0.001$ ;  $p=0.003$ ).

**Conclusion:** Anxiety scores were found to be high among healthcare professionals who had COVID-19 and those who lost someone close to them due to COVID-19. It has been determined that the number of cigarettes smoked by healthcare professionals with high anxiety scores has decreased significantly.

**Keywords:** Anxiety, COVID-19, healthcare professional, smoking.

## Introduction

According to the World Health Organization, smoking addiction is a situation that must be tackled globally. Smoking is one of the leading causes of preventable death worldwide. In our country, approximately 100,000-110,000 people lose their lives every year due to smoking-related diseases.<sup>1</sup>

The Severe Acute Respiratory Syndrome (SARS-CoV-2; COVID-19) virus, which emerged in China and spread all over the world, was declared as a COVID-19 pandemic by the World Health Organization in March 2020.<sup>2-3</sup> It is well-known that smoking increases the risk of respiratory viral and bacterial infections and is associated with worse outcomes in possible infections.<sup>4-7</sup> Moreover, it is believed that behavioral factors related to smoking (e.g., regular hand-to-mouth movements) may increase SARS-CoV-2 infection and transmission in smokers.<sup>8</sup>

Since healthcare professionals play an active role in the treatment of nicotine addiction and constitute a professional group that people may look up to, they have a special place in tobacco control studies. Therefore, the smoking status of healthcare professionals is essential. Pandemics also lead to many negative psychological consequences for healthcare professionals. Ignoring the psychological stress that healthcare professionals are exposed to causes significant negative consequences in the capacity of health services at both individual and societal levels.<sup>9</sup>

Our study aimed to assess the smoking habits and affecting factors in healthcare professionals who face increased workload, anxiety, stress and disease risk during the COVID-19 pandemic period.

## Materials and Methods

This descriptive study was conducted between the dates of 1<sup>st</sup> of March and 31<sup>st</sup> of April 2021 at Ankara Training and Research Hospital and its affiliated district polyclinics. A total of 285 healthcare professionals of 18 years old and above who are currently working and still smoking or quit smoking during the pandemic or started smoking during the pandemic period were included in the study.

Non-smokers, including pre-pandemic and pandemic periods, were not included in the study.

The sociodemographic data form and a questionnaire aiming to determine the behavioral characteristics of the participants on their smoking habits were administered to the participants through face-to-face interview method. In the sociodemographic data form, participants were asked their age, gender, marital status, educational level, whether they have chronic diseases, whether they take medication regularly, whom they live

with at home, their COVID-19 status, length of hospital stay, whether they have complaints after COVID-19, whether there were any deaths due to COVID-19 among their household members, first-degree relatives or close circle outside of their family. Regarding their smoking habits, 20 questions were asked, including how their smoking status changed based on the pre-pandemic and post-pandemic period, the change in the number of cigarettes smoked, the age of first smoking, how many cigarettes smoked regularly, the number of cigarettes smoked per day, whether smoking increases the risk of COVID-19 infection, whether smoking increases death rates from COVID-19 infection and whether they consider quitting smoking. In addition, Beck's Anxiety Inventory consisting of 21 items, was applied to determine anxiety levels.<sup>10</sup>

The data collected during the research were transferred to the SPSS 25 software (Statistical Package for Social Sciences, version 25), and statistical analysis was performed. The normal distribution test was conducted using Kolmogorov-Smirnov and Shapiro-Wilk tests. The student's T-test was used to compare means between groups for those consistent with normal distribution, and the Mann Whitney-U test was used for those inconsistent with normal distribution. The Kruskal Wallis test was used for the statistical significance of the means between multiple dependent groups. The Chi-square test was used to compare categorical parameters.  $p$ -value $<0.05$  was considered statistically significant.

## Results

A total of 285 healthcare professionals were involved in the study, including 95 (33.33%) doctors, 97 (34.04%) allied health professionals (nurses, midwives, health technicians, health officers, emergency medical technicians) and 93 (32.63%) other healthcare professionals (security personnel, cleaning staff, and clinical support personnel). Out of the participants, 123 (43.16%) were female, and 162 (56.84%) were male. Some sociodemographic characteristics of the participants are presented in Table 1.

While 52 (18.25%) of the participants had a chronic disease, 233 (81.75%) stated that they did not have any chronic disease. One hundred fourteen people (40%) smoked 0-10 cigarettes per day, 120 people (42.11%) smoked 11-20 cigarettes per day, 43 people (15.09%) smoked 21-30 per day, and eight people (2.81%) smoked more than 31 cigarettes per day.

When we look at the smoking status of the participants during the COVID-19 pandemic; 31 participants (10.88%) did not smoke in the pre-pandemic period but started smoking during the pandemic period, 230 participants (80.70%) used to smoke in the pre-pandemic period and continued to smoke, and 24 (8.42%) participants quit smoking due to the pandemic while they were smoking in the pre-pandemic period (Table 3).

**Table 1.** Sociodemographic Characteristics of the Participants

Sociodemographic Characteristics		n	%
Gender	Female	123	43.16
	Male	162	56.84
Marital Status	Married	169	59.29
	Unmarried	86	30.18
	Divorced	30	10.53
Education Level	Elementary	14	4.91
	Secondary	4	1.41
	High School	68	23.86
	Two-year degree (Associate)	51	17.89
	University and above	148	51.93
Professional Status	Doctor	95	33.33
	Allied Health Professionals	97	34.04
	Other Healthcare Professionals	93	32.63
Who does s/he live with at home	Alone	70	24.56
	Family or friend	215	75.44

**Table 2.** Disease, COVID-19 and Smoking Status of the Participants

Chronic Disease, COVID-19 and Smoking Status		n	%
Chronic disease	Yes	52	18.25
	No	233	81.75
Cigarettes/pieces smoked per day	0-10 pieces	114	40
	11-20 pieces	120	42.11
	21-30 pieces	43	15.09
	31+	8	2.81
COVID-19 infection status	Yes	71	24.91
	No	214	75.09
Hospitalization due to COVID-19	Yes	4	1.40
	No	281	98.60
Ongoing complaint after COVID-19 infection	Yes	20	28.17
	No	51	71.83
Death of someone close due to COVID-19 infection	Yes	47	16.49
	No	238	83.51

**Table 3.** The Smoking Status of Healthcare Professionals during the Pandemic Period

Smoking Characteristics		n	%
Smoking status	I was not a smoker in the pre-pandemic period, but I am now.	31	10.88
	I used to smoke in the pre-pandemic period, and I still do.	230	80.70
	I used to smoke in the pre-pandemic period, and now I do not, I quit.	24	8.42
The amount of smoking	The number of cigarettes I smoke has increased.	80	28.07
	The number of cigarettes I smoke did not change.	147	51.58
	The number of cigarettes I smoke has decreased.	58	20.35

While 213 (74.74%) of the participants thought that smoking increased deaths due to COVID-19, 72 (25.26%) stated that they did not think that smoking increased deaths due to COVID-19. Furthermore, while 181 (63.51%) of the participants were considering quitting smoking, 104 (36.49%) stated that they did not want to quit smoking.

The Beck's Anxiety Inventory mean score was found to be  $10.32 \pm 9.19$  (min=0, max=43). It was determined that 142 people (49.82%) did not have anxiety; 70 (24.56%) had mild anxiety, 53 (18.59%) had moderate anxiety, and 20 (7.02%) had severe anxiety. While no significant relationship was found between their anxiety status and age, it was observed that the number of cigarettes smoked increased significantly as the mean age declined ( $p=0.007$ ). Anxiety scale scores were found to be significantly higher in female healthcare professionals ( $p=0.001$ ). The anxiety scale scores of primary school graduates were high, and the anxiety scores of high school graduates were low ( $p=0.036$ ).

Anxiety scores were significantly higher in healthcare professionals who lost someone close to them due to COVID-19 infection and in participants who smoked 21 or more cigarettes per day (respectively  $p=0.001$ ;  $p=0.026$ ). The anxiety levels of the participants who reduced the number of cigarettes they smoked daily during the pandemic period were found to be higher than those who did not change the amount of smoking and those who increased it, and this result was statistically significant ( $p=0.023$ ). It was determined that healthcare professionals who considered quitting smoking experienced more anxiety than the other participants who did not ( $p=0.012$ ). Moreover, it was found statistically significant that participants who thought that smoking increased death rates from COVID-19 infection had higher levels of anxiety ( $p=0.027$ ).

It was observed among the participants that "other healthcare professionals (security, cleaning, clinical support)" decreased the number of cigarettes they smoked during the pandemic period more than doctors, and allied health professionals did, and this difference was significant ( $p=0.014$ ). It was observed that healthcare professionals who had COVID-19 infection and lost someone close to them due to COVID-19 reduced the

number of cigarettes they smoked daily, and this result was significant (respectively  $p=0.001$ ;  $p=0.003$ ). It was observed that healthcare professionals who did not have COVID-19 infection increased the amount of smoking more than those who had infection did ( $p=0.001$ ).

Among the participants, those who thought that smoking increased the risk of being infected by COVID-19 significantly reduced their daily cigarette consumption more than the other participants did ( $p<0.001$ ). Healthcare professionals who thought that smoking increased death rates due to COVID-19 infection significantly reduced the amount of smoking compared to other participants ( $p<0.001$ ). Healthcare professionals who were considering quitting smoking also reduced the number of cigarettes significantly that they smoked during the pandemic period ( $p<0.001$ ).

## Discussion

Our study assessed some biopsychosocial characteristics related to the smoking habits of healthcare professionals who work in a training & research hospital during the COVID-19 pandemic period.

In the study of Elling et al. on the general population named "Tobacco smoking and smoking cessation in times of COVID-19"; while 68% of the smokers indicated that the coronavirus did not influence the number of cigarettes smoked per day, 19% indicated that they smoked fewer cigarettes during the pandemic and 14% smoked more cigarettes per day due to the coronavirus.<sup>11</sup> In another study conducted by Arpacioğlu et al. on the general population in the early period of the pandemic in December 2019, the number of smokers was 1271 and 48% of them stated that there was no change in their smoking, 15% increased their smoking and 37% reduced or quit smoking.<sup>12</sup> In the study of Klemperer et al. on the general population in the United States, it was observed that 28% of tobacco users reduced their tobacco use, 30% increased their tobacco use, and 42% did not change the amount of tobacco use during the COVID-19 period.<sup>13</sup> Similarly, in our study on healthcare professionals, it was determined that the number of cigarettes smoked by 28% of current smokers increased, the amount of smoking remained unchanged for 52%, and the number of cigarettes smoked by 20% declined. However, there are similarities when the studies are compared, both the population group in which the studies were conducted and the different pandemic periods in which the studies were carried out limit reliable comparisons. The tendency to quit or reduce smoking was found to be at a higher rate in the study conducted in the early period of the pandemic, which made us think that the tobacco use habits of people may have returned to the pre-pandemic situation after long-term quarantine and pandemic conditions, and there may be desensitization against the COVID-19 pandemic.

In a study conducted in our country during the COVID-19 pandemic and examining the psychological state of healthcare professionals, it was found that female healthcare professionals had higher anxiety and depression

scores than men.<sup>14</sup> In a study conducted in a tertiary pandemic hospital in China, the incidence of anxiety among female healthcare professionals and anxiety and stress disorder scores of females were found to be higher than male healthcare professionals.<sup>15</sup> In the literature, it was stated that four independent variables were found to be associated with the risk of anxiety among healthcare professionals, including living in rural areas, being at risk of contact with COVID-19 patients in hospitals, organic diseases, and being a woman.<sup>16,17</sup> In our study, anxiety was found to be higher in women, which supports the literature.

In a study by Stanton et al. in Australian adults during COVID-19, the average anxiety of single people was found to be significantly higher than those of married and divorced.<sup>18</sup> In a study conducted with healthcare professionals in our country, it was stated that the Health Anxiety Inventory scores of married healthcare professionals were lower than non-married ones.<sup>14</sup> In our study, the anxiety level of single healthcare professionals was, however, lower than the other two groups; but this difference was not statistically significant. The difference we observed in our study compared to the literature may be explained by the concern of healthcare professionals living with their families to transmit the disease from the work environment to the people they live with.

The anxiety levels of doctors and allied health professionals were found to be higher than other healthcare professionals in our study, but it did not make a significant difference. In a study conducted among healthcare professionals in a tertiary COVID-19 pandemic hospital in China, a higher incidence of anxiety and stress disorder was noted among healthcare professionals who were in direct contact with patients, and it was stated that the incidence of anxiety in nurses was higher than that of doctors.<sup>1</sup> In the literature, this has been attributed to the fact that the treatments are carried out by nurses, that nurses work longer hours than doctors in isolated wards, and that they have closer contact with patients. This situation made us think that high-risk contact with COVID-19 disease may be an important factor in the level of anxiety.

In the literature, it has been mentioned that healthcare professionals are afraid of carrying the disease home and transmitting it to their loved ones and family members, elderly parents, newborns and immunocompromised relatives.<sup>19</sup> In the study of Nguyen et al. on healthcare professionals in Vietnam; it was observed that the stress levels of those living with vulnerable groups were higher than the other group, and in two similar studies, it was reported that excessive workload, contact with heavy COVID-19 patients, infection and fear of infecting relatives caused stress in this group.<sup>20-22</sup> In our study, in accordance with the literature, the level of anxiety was found to be higher in healthcare professionals living with their families compared to those living alone, but it did not constitute a significant difference. This situation made us think that the thoughts of healthcare professionals to carry infection to their families during the COVID-19 period increased the level of anxiety.

Stress and boredom are known emotional triggers for smoking. Unexpected stress and increased stress at unusual times may be a significant risk for smoking. Especially the psychological effects of social isolation and increased stress may explain the increase in smoking rates.<sup>12</sup> In our study, the anxiety levels of the participants who stated that the amount of smoking decreased during the pandemic period were found to be significantly higher than the other two groups.

In a study conducted in Holland, a third of smokers were more willing to quit because of the coronavirus. Motivation to quit due to coronavirus was positively associated with beliefs that coronavirus is a serious threat, higher risk of being infected by the coronavirus and developing a serious illness, smokers being at a higher risk than non-smokers, and quitting smoking to reduce symptoms.<sup>11</sup> In a study on the general population among current and former smokers in Israel; it was stated that 66% of the participants were still smoking, 7% quit smoking in the first period of the restriction, and 44% of the smokers increased the amount of smoking while 16% tried to quit smoking.<sup>23</sup> 181 (64%) of the healthcare professionals who participated in our study stated that they were considering quitting smoking and 24 (8%) participants stated that they stopped smoking during the pandemic period. It was understood that the data of our study has similar smoking cessation data with the study conducted in Israel. Again, similar to the literature, it has been observed that those who have thoughts about the negative effects of smoking on COVID-19 infection (smoking increases the risk of COVID-19 infection and smoking increases death rates due to COVID-19 infection) are more inclined to reduce the amount of smoking.

The COVID-19 pandemic has made individuals much more open to smoking cessation advice. Thus, in our study, 64% of healthcare professionals stated that they wanted to quit smoking and 8% of healthcare professionals stated that they quit smoking during the pandemic period. There were significant differences in the amount of smoking among the participants with high levels of anxiety. As the level of anxiety increased, smoking decreased. In conclusion, the importance of combating smoking during the COVID-19 pandemic period has been understood once again. Support can be provided to healthcare professionals who can be seen as role models in society and who work in risky environments due to working conditions.

**Ethical Considerations:** Before initiating the study, approval was obtained from the Clinical Research Ethics Committee of Ankara Training and Research Hospital, University of Health Sciences by decision numbered 614/2021 and dated 24/02/2021.

**Conflict of Interest:** The authors declare no conflict of interest.

## References

1. Sağlık Bakanlığı Halk Sağlığı Müdürlüğü Küresel Yetişkin Tütün Araştırması,2012. [Internet] [https://havanikoru.saglik.gov.tr/dosya/dokumanlar/yayinlar/KYTA-2012-TR-25-07\\_2014.pdf](https://havanikoru.saglik.gov.tr/dosya/dokumanlar/yayinlar/KYTA-2012-TR-25-07_2014.pdf) (Accessed: 07.07.2021)
2. Li Q, Guan X, Wu P, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Eng J Med* 2020;382(13):1199-1207.
3. Organization WH. Infection prevention and control during health care when COVID-19 is suspected: interim guidance, 19 March 2020. World Health Organization; 2020.
4. Denholm JT, Gordon CL, Johnson PD, et al. Hospitalised adult patients with pandemic (H1N1) 2009 influenza in Melbourne, Australia. *Med J* 2010; 192:84-6.
5. Abadom TR, Smith AD, Tempia S, Madhi SA, Cohen C, Cohen AL. Risk factors associated with hospitalization for influenza-associated severe acute respiratory illness in South Africa: a case-population study. *Vaccine* 2016;34:5649-55.
6. Almirall J, González CA, Balanzó X, Bolívar I. Proportion of community-acquired pneumonia cases attributable to tobacco smoking. *Chest* 1999;116:375-9.
7. Feldman C, Anderson R. Cigarette smoking and mechanisms of susceptibility to infections of the respiratory tract and other organ systems. *J Infect* 2013;67:169-84.
8. Vardavas CI, Nikitara K. COVID-19 and smoking: a systematic review of the evidence. *Tob Induc* 2020;18:20.
9. Preti E, Di Mattei V, Perego G, et al. The psychological impact of epidemic and pandemic outbreaks on healthcare workers: Rapid Review of the Evidence. *Curr Psychiatry Rep*, 2020;22(8):43.
10. Ulusoy M, Şahin N, Erkmen H. Turkish version of Beck Anxiety inventory: Psychometric Properties. *Journal of Cognitive Psychotherapy: An international Quarterly*. 1998;12(2):163-72.
11. Elling JM, Crutzen R, Talhout R, de Vries H. Tobacco smoking and smoking cessation in times of COVID-19. *Tob. Prev. Cessation* 2020;6(July):39.
12. Arpacioğlu S, Ünübol B. Investigation of changes in alcohol-smoking usage and related situations in the coronavirus outbreak. *Cyprus Turkish Journal of Psychiatry & Psychology* 2020;2(3):128-38.
13. Klemperer EM, West JC, Peasley-Miklus C, Villanti AC. Change in tobacco and electronic cigarette use and motivation to quit in response to COVID-19. *Nicotine and Tobacco Research* 2020;22(9):1662-3.
14. Yildirim TT, Atas O, Asafov A, Yildirim K, Balibey H. Psychological Status of Healthcare Workers during the Covid-19 Pandemic. *J Coll Physicians Surg Pak* 2020;30(Supp3):26-31.
15. Huang JZ, Han MF, Luo TD, Ren AK, Zhou XP. Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19. *Chinese Journal of Industrial Hygiene and Occupational Diseases* 2020;38(3):192-5.

16. Zhang WR, Wang K, Yin L, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychother Psychosom* 2020;89(4):242-50.
17. Polat Ö, Coşkun F. Determining the Relationship Between Personal Protective Equipment Uses of Medical Healthcare Workers and Depression, Anxiety and Stress Levels in the COVID-19 Pandemic. *Med J West Black Sea* 2020;4(2):51-8.
18. Stanton R, To QG, Khalesi S, et al. Depression, anxiety and stress during COVID-19: associations with changes in physical activity, sleep, tobacco and alcohol use in australian adults. *Int J Environ Res Public Health*. 2020;17(11):40-65.
19. Chen Q, Liang M, Li Y, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatry* 2020;7(4):15–6.
20. Nguyen NPT, Le DD, Colebunders R, Siewe Fodjo JN, Tran TD, Vo TV. Vietnam, Da Nang Şehrinin COVID-19 Merkez üssünde Ön saflardaki Sağlık Çalışanları Arasındaki Stres ve İlişkili Faktörler. *Int J Environ Res Halk Sağlığı* 2021;18(14):73-8.
21. Srivastava A, Srivastava S, Upadhyay R, Gupta R, Jakhar K, Pandey R. COVID-19 Pandemisi sırasında sağlık hizmeti sağlayıcıları arasındaki stressörle mücadele stratejileri ve motive edici faktörler. *Kureus* 2021;13:848-9.
22. Prasad K, McLoughlin C, Stillman M, et al. Prevalence and correlates of stress and burnout among U.S. healthcare workers during the Covid-19 pandemic: A national cross-sectional survey study. *Clinical Medicine*, 2021;16;35:100879.
23. Bar-Zeev Y, Shauly M, Lee H, Neumark Y. Changes in smoking behaviour and home-smoking rules during the initial COVID-19 lockdown period in Israel. *Int J Environ Res Public Health*, 2021;18(4):19.