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Effect of coronaphobia on smoking habits

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ABSTRACT

Introduction and Objective: Coronavirus disease 2019 (COVID-19) epidemic had exhibited negative effects on patients with a nicotine use disorder because of social stress situations. The objective of this study is to investigate the changes that occurred in the smoking habits of the patients who applied to our smoking cessation clinic because of the COVID-19 outbreak's effect (coronaphobia) on their mental health.

Method: In this study, we included the patients who applied to our smoking cessation clinic between January 1 and June 30, 2020. We conducted telephonic and face-to-face interviews with the patients during the outbreak, and inquired about the changes in their smoking habits.

Results: In total, 114 volunteers (mean age: 41.2 years [min–max: 18–82 years], M/F: 70/44 [61.4/38.6%]) who registered in the smoking cessation clinic of Chest Diseases Clinic were included in the study. The number of people with and without coronaphobia was 64 (56.1%) and 50 (43.9%), respectively. The analyses of the changes in smoking behaviors because of coronaphobia demonstrated that people with coronaphobia exhibited a significantly higher decrease or cessation of smoking as compared to no change in smoking behavior or increase in the number of cigarettes (*p*: .006).

Conclusions: Success in smoking cessation can be increased with the accurate analyses of the anxiety effects caused by coronaphobia after COVID-19 outbreak on the desire of smoking cessation. This resolution depends on the solution-oriented strategies that will increase the awareness of physicians and patients, a close follow-up of patients with tools such as telemedicine, and a quick determination of their needs.

KEYWORDS
Coronaphobia; COVID-19; smoking; smoking cessation; telemedicine

Introduction

The new coronavirus disease 2019 (COVID-19) first emerged in December 2019 in the city of Wuhan, the Hubei province of China, and had acquired the epidemic status because of its rapid progression worldwide. It has been reported that smoking is a risk factor in terms of developing COVID-19 infection, and it also increases the risk of complications in the people who have developed this infection.[1,2] Considering these reasons, the COVID-19 outbreak provides an unmatched opportunity for the patients with a nicotine use disorder to quit smoking.[3] Notwithstanding that there are no proven data on the benefits of quitting smoking during this epidemic, it is anticipated that smoking cessation for four weeks or longer will decrease the risk of contracting COVID-19 and its related complications.

Until an effective treatment and vaccine of this disease are developed, the implementation of preventive health services around the world has become the basic approach to the disease to minimize the spread of COVID-19. Behavioral approaches, such as following general hygiene rules, practicing social distancing, and the use of a mask are recommended to prevent the spread of this disease. Short videos were published in social media and televisions for raising the awareness of society in this regard. However, the effects of smoking on COVID-19 are overshadowed in other fundamental subjects in public information messages addressing the issue of protection from COVID-19, and the negative effects of smoking on contracting the virus and COVID-19 prognosis are insufficiently highlighted.

There has been a substantial decrease in the normal clinical services during the pandemic

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period in our country. Among these clinics, there were smoking cessation clinics providing service in the university hospitals and the hospitals under the Ministry of Health in Turkey since 1992. Those who continue to be treated in the smoking cessation polyclinics or those who would apply for new applications could not benefit from this service during the COVID-19 period. The treatment of patients who received medical treatment to quit smoking was left unfinished, and the patients had difficulty in reaching their physicians. Some of these people decreased or completely quit smoking with the concern of being infected by SARS-CoV-2 virus or experiencing the severe disease; however, the number of used cigarettes had been increased in some others because of the anxiety caused by uncertainty and loneliness brought on by the quarantine in the pandemic period. The increased rates of death, unemployment, and economic anxieties, concern of becoming unhealthy, possibility of damage experienced by their loved ones, loneliness brought about by the quarantine and social distancing, and an increased state of anxiety developed because of all of these factors is defined as "*Coronaphobia*" in literature.[4,5]

The objective of this study is to investigate the changes that occurred in the smoking habits of the people who applied to the smoking cessation clinic because of coronaphobia.

Method

Our study was planned as a single-center cross-sectional survey. We included the patients who applied to our smoking cessation clinic between January 1 and June 30, 2020 including the pandemic period in our study. We conducted face-to-face or telephonic interviews during the outbreak to assess the changes in their smoking habits.

The volunteers who accepted to participate to the study and replied to the survey completely were also requested to reply to the survey covering demographic data, such as age, gender, educational status, place of residence (urban/rural), changes in smoking habits during the pandemic, and questions evaluating their feelings and related thoughts. Exclusion criteria of this study were as follows: patients aged under 18 years, patients who refused participation in this survey, patients with a physician-diagnosed psychiatric disorder, and patients who were not able to reply to the questionnaires because of cognitive reasons.

At the same time, we inquired and recorded whether the patients contracted COVID-19 in this period.

Statistical analysis

We assessed the data by "Statistical Package for Social Sciences (SPSS)" for Windows version 17.0 (SPSS Inc., Chicago, IL, 2008) program. The continuous variables were expressed as mean, minimum, and maximum values. We tested the conformity of continuous variables to normal distribution by Kolmogorov–Smirnov test, and used the Mann–Whitney *U* test for their comparisons. The categorical variables were defined as frequency (*n*) and percent (%), and we compared these variables with Pearson's chi-square test. The patients were divided into two groups: individuals with and without COVID-19. We examined the relationship between the variables and anxiety by logistic regression analysis. $p < .05$ was considered as statistically significant value for this study.

Ethics committee approval and work permit

After obtaining the approval of scientific research from the Republic of Turkey Ministry of Health General Directorate of Healthcare Services for the study, we obtained the ethical committee approval from the Recep Tayyip Erdoğan University Clinical Research Ethical Committee (Ethical committee No: 2019-174).

Results

We probed the patients who applied to our smoking cessation clinic between January 1 and June 30, 2020 and provided approval of their participation to the survey. The mean age of 114 volunteers who accepted to participate in this study was 41.2 (min–max: 18–82) years, and 70 (61.4%) of them were men. The rate of those with high school and above education was 57%.

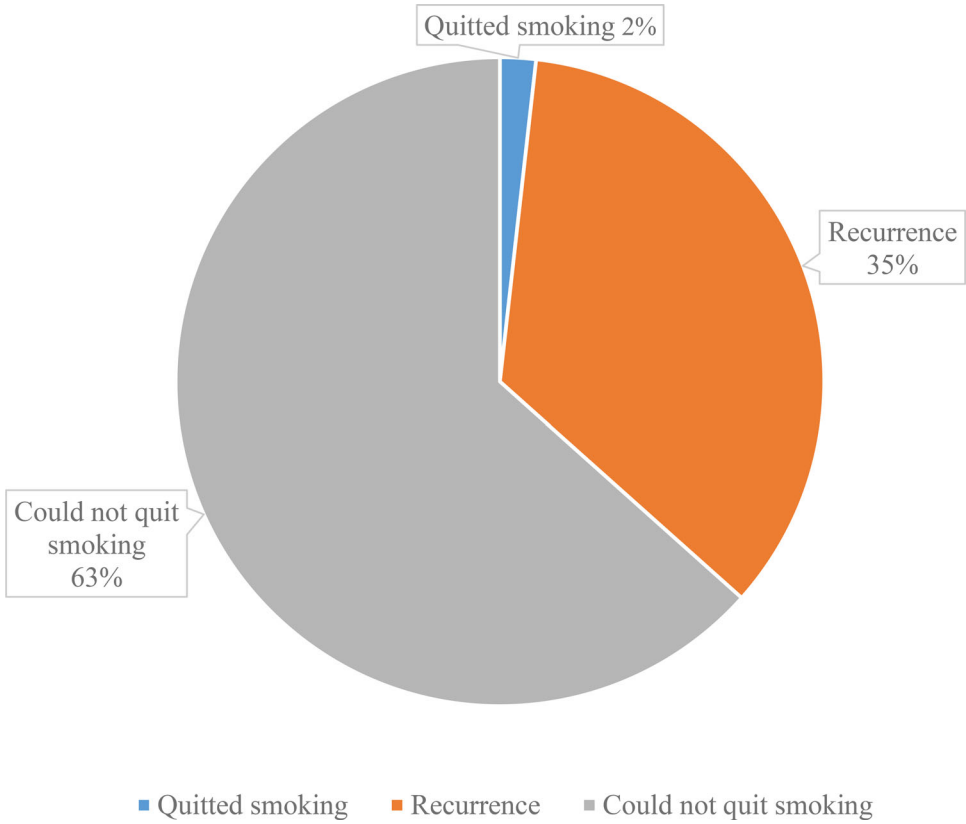


Figure 1. Distribution of smoking cessation rates.

In total, 82.5% of these volunteers resided in urban areas, whereas 15.8% of them lived in rural areas. The distribution of their diseases was as follows: no additional disease in 69 people, asthma in seven people, diabetes in five people, cancer in two people, chronic obstructive pulmonary disease in 14 people, renal failure in one person, and hypertension in 12 people.

The investigation of clinical continuance of the patients revealed that 38.6% of them could not continue to smoking cessation clinic because of the pandemic, and 39 patients (35%) started to smoke again after the cessation of smoking. The rate of participants who quit smoking and succeeded in not start smoking again in the pandemic period was 2%. Patients who attempted to quit smoking but started again in the process had gone an average of 3.7 months without smoking (Figure 1).

The examination of the question whether the patients had anxiety due to COVID-19 and restrictions showed following results: 64 (56.1%) of them replied as "*yes, I'm anxious due to the disease and its associated reasons*," whereas 50 (43.9%) of them replied as "*no, I am not anxious due to the disease.*" The rate of coronaphobia was higher in the patients with a mean age of 55 years and above ($p = .008$). Coronaphobia was found to be significantly higher in individuals with high school and below education and individuals living in the rural areas (p values: .038 and .044, respectively) (Table 1).

The investigation of the effects of coronaphobia on the smoking behaviors during the pandemic period revealed that 77 patients (67.5%) had no behavioral change associated with smoking, 17 (15%) patients decreased or completely quit smoking because of coronaphobia, and 20 (17.5%) patients increased the number of cigarettes (Figure 2).

The analyses of the changes in coronaphobia and smoking behaviors revealed that people with coronaphobia exhibited a significantly higher decrease or cessation of smoking as compared to no change in smoking behavior (p: .006, odds ratio: 18.222 (2.301–144.305). Again, decrease or cessation of smoking in people with coronaphobia was found significantly greater in the

Table 1. Demographic characteristics of the patients with and without coronaphobia.

	Patients with coronaphobia ($n = 64$)	Patients without coronaphobia ($n = 50$)	p Value
Age, year (mean ± SD)	44.3 ± 17.8	37.3 ± 11.8	.008
Gender, male, *n* (%)	38 (70)	32 (64)	.615
Education, University, *n* (%)	12 (19)	18 (36)	.038
Residence, city, *n* (%)	50 (78)	46 (92)	.044
Additional disease, yes, *n* (%)	17 (27)	9 (18)	.284

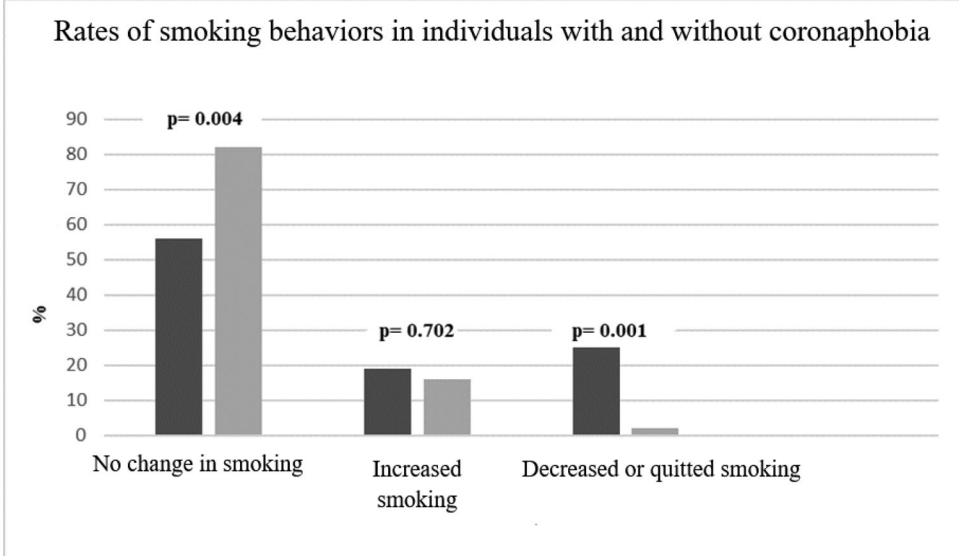


Figure 2. Change of smoking behaviors because of the presence of coronaphobia.

individuals who had severe anxiety than individuals who increased smoking (p: .36, odds ratio: 10.667 [1.171–97.185]) (Table 2).

There was no difference in the individuals with and without additional disease in terms of anxiety ($p = 0.284$). Furthermore, there was no statistical significance while considering the difference in anxiety by gender ($p > .005$). The examination of COVID-19 history of the patients revealed that three (2.6%) of them had contracted the disease.

Discussion

Relationship of COVID-19 and cigarettes

It is known that smoking and COVID-19 have significantly negative effects on the respiratory system. Smoking is a crucial risk factor for many respiratory infections and can accelerate the progression of the disease in the individuals with infection.[6] Structural and immunological changes play a role in the mechanisms that cause smoking to increase the lung damage. Fibrosis that develops because of inflammation, increased mucosal permeability, degeneration of respiratory tract epithelial cells, and decreased mucociliary clearance result in altered airway architecture. At the same time, cellular and humoral immunity is also affected.[7] The studies conducted during Middle East respiratory syndrome-related coronavirus (MERS-CoV) epidemic, which is a virus similar to SARS-CoV-2, have shown that smoking is a risk factor for MERS-CoV infection and associated with a high mortality.[8]

Smokers are at a higher risk of contracting severe complications after being infected by SARS-CoV-2. A recent systematic review looked at five studies analyzing the smoking status of patients during the COVID-19 outbreak in China. The authors of the review concluded that the possibility of developing severe COVID-19 infection is 1.4 times higher (RR: 1.4; 95% CI: 0.98–2.00) in the smokers than in the non-smokers. Additionally, the need for intensive care, mechanical ventilation, or mortality was 2.4 times higher (RR: 2.4; 95% CI: 1.43–4.04) in this group.[9] Another Chinese research study compared the incidence of severe COVID-19 symptoms in 52 patients receiving intensive care. Acute respiratory distress syndrome and the need

Table 2. Logistic regression analysis results showing that smoking reduction or smoking cessation behavior is greater in coronaphobia.

	Beta	SE	*p* Value	Odds ratio (95% confidence interval)
Compared to those who have made no change in smoking	2.828	1.062	.008	2.108–135.568
Compared to those who increased smoking	2.275	1.137	.045	1.048–90.909

for mechanical ventilation were found to be increased in the smokers as compared to the nonsmokers. Furthermore, it has been observed that the rate of comorbidities, such as heart failure, kidney failure, and chronic respiratory disease is higher in the smokers.[10]

COVID-19-related restrictions and smoking behavior

Intentional domestic isolation due to the prevention of disease transmission and inability to go out due to a ban/lockdown will increase the consumption of tobacco in the patients with a nicotine use disorder. In this period, there will be an increased risk of passive tobacco smoke exposure to the patients with a nicotine use disorder as well as those living with them. Subsequently, there will be an increase in the possibility of watching and witnessing parents using tobacco products by the children and young people. This phenomenon may constitute the basis for starting the use of tobacco by the adolescents and young adults. At the same time, the duration of smokers being unmasked, their additional presence in social environments, and the consumption of hookah, one of the other tobacco products, through the use of common equipment increase the risk of disease transmission.

Our study detected no differences between the genders in terms of coronaphobia. Wang et al.'s study stated that female gender is related to stress, anxiety, and depression because of COVID-19[11]. This incompatibility between the two study results can be related to the international socio-cultural differences or can be associated with both genders being equally affected by the social effects of COVID-19 outbreak and the quarantine.

In our study, in compliance with the literature, it has been shown that coronaphobia is significantly higher in the people with high school and below education.[12] Parallelism of the education levels, awareness levels of the individuals, and a closer follow-up of the developments in the epidemic agenda in the educated population explain this result.

The results of our study show that coronaphobia is not solely sufficient for the people to quit smoking. According to the data of Republic of Turkey Ministry of Health, the success rate of smoking cessation clinic in our country was 25% in 2018[13]. This rate has been identified as 37% in our study for the first half of 2020, but a serious increase has been observed in the rate of recurrence. Jackson et al.'s study compared the before and after lockdown rates in the pandemic. After the lockdown, it has been observed that despite the people's desire to quit smoking, smoking cessation attempts were unsuccessful, and the daily amount of cigarettes smoked had increased (the smoking prevalence rates were 15.9 and 17% before and after the lockdown, respectively).[14] The result of this pre-print is in compliance with the result of our study. In our study, it has been observed that 37% of the patients who applied to smoking cessation clinic in the pandemic period quit smoking but only 2% of them were able to discontinue smoking in the pandemic period. Moreover, the available studies show that COVID-19 has positive results on smoking cessation behavior.[1,15] Klemperer et al.'s study reported that 28.3% of the patients decreased the use of tobacco because of the concern of contracting the epidemic, 41.4% showed no behavioral difference, and 30.3% increased the amount of product they were using.[16] In our study, the rate of patients who quit or decreased smoking because of coronaphobia was 15%, the rate of patients with no change was 67.5%, and the rate of patients who increased smoking was 17.5%. The likely reason of this difference is that the anxiety level of the sample group in Klemperer's study was higher than the anxiety level of the volunteers in our study (7.9–8.4 of 10). This result supports the idea that with the increase in anxiety levels, there is an increase in the smoking

cessation behavior in the direction of cessation, but in our study, since there was no quantitative evaluation measuring the level of anxiety of the patients; it is not possible to make a clear comment in this regard.

Use of telemedicine in the approaches to smoking cessation during the pandemic

In social isolation and quarantine periods, telemedicine can be used to make effective suggestions in smoking cessation and to recommend pharmacotherapy because of having difficulty in reaching the physician. For individuals with chronic diseases to benefit from health services without coming to the hospital during the pandemic period in the world, the patient follow-up system with "Telemedicine" has seen a recent increase in its usage. The available studies emphasize the benefit of chronic patient follow-up with this method.[17–19]

In our country, the individuals using tobacco products are encouraged to quit smoking, and the necessary support is provided *via* Smoking Cessation Hotline and smoking cessation polyclinics opened in October 27, 2010 for the ones who want to quit smoking. Hot Line is intended for encouraging, giving motivation, and guiding and consulting about the behavioral changes to the individuals who decided to not smoke. The more active usage of this existing infrastructure during COVID-19 period will benefit in the encouragement of the individuals to quit smoking tobacco products, following up, and the patients under treatment and continuance of their treatment. With the use of this method, smoking cessation services will not be interrupted during the pandemic period. In order to encourage the use of telemedicine methods, the frequency of physicians' application to telemedicine methods will increase with the emphasis of the guides on this issue.[20]

Limitations of the study

Because our study is designed as a cross-sectional study of a clinical sampling, the results cannot be generalized. Furthermore, since the questions evaluating coronaphobia and level of anxiety are subjective to the volunteers in the survey, no quantitative evaluation was done regarding the anxiety levels.

Conclusion

Smoking cessation will decrease the risk of development of COVID-19 along with the possibility of severe complications. The cessation of tobacco products should be carefully emphasized in the public health campaigns made for social awareness during the pandemic.

Declaration of interest

The authors declare that they have no conflict of interest.

Data and materials

Data and materials are available if necessary.

Ethical approval

The ethics committee approval was obtained by Recep Tayyip Erdoğan University (Ethics committee approval number is 2019/209).

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