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The Relation Of Quitting Behaviour Of Smokers With Anxiety, Depression And Addiction: Cross-Sectional Study

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Abstract

Objective: The objective of this research was to determine the association of anxiety, depression, and addiction to smoking quitting in patients who applied to a smoking cessation clinic.

Materials and Methods: Sociodemographic data, smoking habits, and quitting experience of smokers older than 18 years, who applied to the smoking cessation clinic of Dokuz Eylul University, Family Medicine Department between March 1, 2014, and March 1, 2015. Depression, anxiety (using the Hospital Depression Anxiety (HAD) Scale), and dependence levels (using the Fagerstrom Nicotine Dependency Test (FNBT)) were determined by face to face and the smoking cessation status of the patients was questioned by telephone call after one year.

Results: Of the 128 patients who were examined in the smoking cessation clinic, 57.0% were women, 59.4% were married, 52.3% were graduated from university, 52.3% were employed, and the average age was 39.3 ± 13.4. Nicotine addiction level was very low in 7,8%, low in 18,0%, moderate in 14,1%, high in 26,6% and very high in 32,8% of the participants. Depression was detected in 33.6% of the participants, and anxiety was detected in 36.7% of the participants at the first consultation. The rate of non-smokers was 21.9% after one year of treatment. Smoking cessation doesn't have association with the depression, anxiety and dependence level.

Conclusion: Depression, anxiety, and nicotine dependece were not found to have an association with one-year smoking cessation.

Keywords: Smoking, anxiety, depression, addiction, family medicine

Introduction

Smoking is among the preventable causes of death in the world **[1]**. Around 1,3 billion people are smokers. Although the smoking rate in women is less, it is known that this rate has still been increasing. The majority of smokers live in Asian countries such as China, Indonesia, India, even more, the total three in four smokers live in ten countries, including Turkey **[2]**.

According to the Global Adult Tobacco Survey 2012 data on tobacco use, prevalence in Turkey is 27.1% of 14.8 million people use tobacco and tobacco products **[3]**.

In the literature, there are researches indicating a positive correlation between nicotine addiction and smoking cessation, as well as studies indicating that there is no relationship **[4]**. Various studies have been conducted to search the impacts of sociodemographic factors, comorbidities, and smoking characteristics on smoking cessation success. Age, gender, socioeconomic status, and nicotine dependence **[5]**.

Depression was shown to be a risk factor for nicotine addiction; a history of depression is more common among smokers **[6]**. It is a strong possibility that depressed people can smoke in order to feel better. Nicotine can be calming or stimulating in different situations for different people. It changes the regulation of norepinephrine and serotonin, such as antidepressant drugs, and may have some kind of antidepressant effect on the person. Nicotine, which has a dopamine and norepinephrine stimulating effect on the mesolimbic system has a reinforcing effect on the central nervous system by these mechanisms. It provides an increase in pleasure, work performance and memory improvement with its positive booster effect; with its

negative booster effect, it causes a decrease in anxiety, appetite and withdrawal symptoms **[7]**.

In recent years, studies have been published indicating a lack of correlation between smoking dependence and mental illnesses, even though there has been a noticeable rise in the prevalence of lifelong mood disorders, psychosis, anxiety disorders, drug misuse, and personality disorders among smokers. **[8]**. Determining the level of nicotine dependence, anxiety, and depression in smokers is significant. This is because the severity of dependence and the presence of concurrent anxiety and depression play crucial roles in making smoking cessation more challenging. Understanding these factors is pivotal not only in selecting appropriate treatment methods but also in comprehending the individual's distress during the cessation process. **[9]**. The aim of this research was to investigate the relationship between smoking cessation and levels of nicotine dependence, depression, and anxiety.

Materials and Methods

This research was conducted as a cross-sectional analytical study in patients over 18 years of age who admitted to the Smoking Cessation Policlinic of Dokuz Eylul University Faculty of Medicine, Department of Family Medicine between March 1, 2014, and March 1, 2015. Ethical approval of the study was obtained by the Dokuz Eylül University Non-Interventional Research Ethics Committee dated 11.05.2015 and decision number 2015 / 12-06.

In this study, sociodemographic information, smoking status, experience of quitting, depression, anxiety and addiction levels of 128 volunteers over 18 years of age were examined.

The study was carried out using the data in the files of the patients who applied to the smoking cessation clinic between March 1, 2014, and March 1, 2015. One year after the admission, the patients were questioned about their smoking cessation and the duration of their stay without smoking by face-to-face / telephone interview.

The participants were given a data record form including sociodemographic characteristics, smoking, and smoking cessation after one year, and Hospital Anxiety Depression Scale (HAD) and Fagerström Nicotine Dependence Test (FNDT).

FNDT was developed by Fagerström et al. And the Turkish validity and reliability study was carried out by Uysal et al., this scale is used to measure the physical dependence of nicotine. The cut-off point of the Turkish form of this scale is accepted as a low nicotine dependence level between 0-3 points, a moderate level between 4-6 points, and high-level nicotine dependence above 7 points; this study was accepted as such **[10]**.

Aydemir et al. conducted a validity and reliability research on the HADS scale. It is used to gauge a patient's level of anxiety and despair. The Turkish version of the scale's cut-off points were found to be 10 for the anxiety subscale and 7 for the depression subscale after its validity and reliability were established; these values were adopted as cut-off points in this study. **[11]**.

In this study, those who had not smoked for a year were considered to have quit smoking.

Descriptive statistics such as mean and standard deviation were computed for continuous variables using the Statistical Package for Social Sciences (SPSS) 22.0. Frequency and percentage distributions were employed for categorical variables. The comparison between categorical independent variables and dependent variables was conducted using the Chi-square test, while the t-test was employed to compare.

Results

128 patients were involved the study because 4 of 143 patients who applied to the ECHRP between 1 March 2014 and 1 March 2015 did not want to participate and 11 of them could not be reached by phone or rejected to participate in the study. Of the 128 patients examined, 57.0% were women, 59.4% were married, 52.3% were graduated from a university, 52.3% were employed, and the mean age was 39.3 ± 13.4 years. The rate of non-smokers was 21.9% one year after the initiation of treatment. It was found that 50% of women and 14% of men stopped smoking at the follow-up one year later, but no significant difference was found between male and female in terms of smoking cessation **(Table 1)**. When the demographic variables and smoking status were compared, it was found that those with higher education quit smoking at a higher rate than the other groups (p = 0.01).

Table 1: Distribution of Sociodemographic Variables According to Smoking Cessation Status

Sociodemographic Variables	n	Quit smoking %(n)	Not quit smoking %(n)	p
Gender				
Male	28	50,0(14)	50,0(14)	0,54
Female	100	14,0(14)	86,0(86)	
Age Groups				
≤25 years	27	14,8 (4)	85,2 (23)	
26-35 y	28	14,2 (4)	85,8 (24)	
36-45 y	29	24,1 (7)	75,9 (22)	0,41
46-55 y	31	35,4 (11)	64,6 (20)	

≥55 y	13	15,3 (2)	84,6 (11)	
Education Status				
Secondary school and below	19	26,3 (5)	73,6 (14)	**0,01**
High school	42	21,4 (9)	78,6 (33)	
University	64	20,2 (14)	79,7 (50)	

The percentage of those who were very low (7.8%), low (18.0%), moderate (14.1%), high (26.6%), and very high (32.8%) addicted to nicotine. Of the individuals, 33.6% suffered from depression, and 36.7% from anxiety. **(Table 2)**.

There was no statistically significant difference found between the levels of sadness, anxiety, or both, dependency level, and smoking cessation rate when compared to the smoking cessation status. **(Table 2)**.

Table 2: Smoking Cessation Status According to the Presence of Anxiety, Depression and Nicotine Dependence Level

	n	**Quit smoking %(n)**	**Not quit smoking %(n)**	**p**
Nicotine Dependence Level				
Very low	10	10,0 (1)	90,0 (9)	
Low	23	13,0 (3)	86,0 (20)	
Middle	17	23,5 (4)	77,5 (13)	0,09
High	34	32,3 (11)	67,6 (23)	
Very high	40	20,0 (8)	80,0 (32)	
Depression				
Yes	43	97,7 (42)	2,3 (1)	
No	85	90,6 (77)	9,4 (8)	0,27
Anxiety				
Yes	47	95,7 (45)	4,3 (2)	
No	81	91,4 (74)	8,6 (7)	0,48
Depression+Anxiety				
Yes	31	96,8 (30)	3,2 (1)	
No	97	91,8 (89)	8,2 (8)	0,34

Discussion

In this study, the levels of nicotine dependence, anxiety, and depression were compared between participants who quit smoking and those who did not. The results indicated no significant difference in depression, anxiety, and dependence levels between the quitting and non-quitting groups.

Age, gender, socioeconomic status, working status, education level, home conditions, various cardiac and pulmonary diseases, daily cigarette smoking and nicotine dependence levels, which are thought to be effective on smoking cessation, have been studied and published **[12]**. In these studies, age, gender, socioeconomic status, and nicotine dependence level in smoking cessation were defined as well-defined factors **[12,5]**. Studies assessing the impact of education level on smoking cessation have demonstrated a positive association, indicating that individuals with higher education levels are more likely to quit smoking, while the prevalence of smoking cessation is lower among those with lower levels of education **[12,5,13]**. In alignment with existing evidence, this study identified a significant disparity in educational status between individuals who successfully quit smoking and those who continued to smoke. The incidence of smoking cessation was notably higher among individuals with a high school and higher education level. However, no significant differences were observed when comparing smoking cessation status with gender and age groups.

In the literature, there are researches indicating a positive correlation between addiction and smoking cessation **[14]**; there are also studies indicating that there is no correlation **[15]**. Various researches have been conducted to search the impacts of sociodemographic factors, comorbidities, and smoking characteristics on smoking cessation success. The success of smoking cessation is influenced by multiple factors, including age, gender, socioeconomic status, and nicotine dependence. This underscores the complexity of the cessation process and the need for a comprehensive approach to address the diverse factors that contribute to tobacco addiction **[5]**.

In this study, participants were classified into groups based on their Fagerström Nicotine Dependence Test scores, ranging from very low to very high dependence. These groups were then consolidated into

three categories for statistical analysis. No significant difference was observed in terms of smoking cessation among the three groups. When reviewing existing literature, it becomes apparent that the relationship between anxiety, depression, and nicotine dependence is intricate.

As well as it causes serious health problems, cigarette addiction is also associated with mental disorders, especially depression and anxiety which are reported to cause failure in addicts who try to quit **[16,17]**. It is stated in the researches that the rate of major depression, which is 22%, increases in cigarette addicts (60%), it is stated that 44.7% of individuals with major depression are cigarette addicts and those who fail in the quitting process frequently experience depression **[18,19]**. Furthermore, studies indicate a higher prevalence of anxiety than depression among cigarette smokers. Research findings suggest that individuals with cigarette addiction tend to experience higher rates of anxiety compared to depression **[20]**.

Evidence obtained from various studies conducted between 1996 and 2010 shows that as anxiety level increases, people are more prone to smoking **[21]**. In one research, it was shown that the frequency of major depression in non-smoker adults in the last year was two times higher (13.8% versus 6%) than in smokers **[22]**.

On the other hand, nicotine was found to have an antidepressant effect. It changes the regulation of norepinephrine and serotonin, such as antidepressant drugs, and may have some kind of antidepressant effect on the person. In autopsy studies, it was shown that the neurons in the brains of smokers who had smoked for a long time had similar neurochemical changes as in the brains of animals given antidepressant drugs. In animal experiments, nicotine has been shown to reduce depression-like behaviors **[23,24]**. Nicotine, which has a dopamine-enhancing effect on the mesolimbic system with a positive reinforcing effect in the brain and a stimulating effect of cortical activated norepinephrine, has a reinforcing effect on the central nervous system by these mechanisms. It provides an increase in pleasure, work performance and memory improvement with positive reinforcing effect; anxiety, appetite and withdrawal symptoms are reduced with its negative reinforcing effect **[7]**. It is significant to note that quitting smoking can trigger a new period of depression in people with a depression history. When depressed, smokers are more likely to start smoking again after quitting, and relapse rates and nicotine dependence levels are higher; the symptoms of anxiety (anxiety, depression) when they quit smoking are more severe and more common than the general population **[25]**.

Although some studies have shown depression as a risk factor that negatively affects success in smoking cessation treatment, a meta-analysis study has shown the opposite **[26]**. The fact that patients with mental disorders have more difficulty in quitting smoking and need closer follow-up should not discourage physicians from dragging and treating negative thoughts about this patient group because it is known that those patients may be more willing to quit smoking and need more support from the general population **[27]**.

Conclusion

As a result of the research, no significant correlation was identified between anxiety, depression, dependence level, and smoking cessation. The success of smoking cessation was not influenced by anxiety, depression, or nicotine dependence levels. While some studies suggest a significant association between anxiety, depression, dependence level, and smoking cessation, others fail to establish such a link. When treating smoking cessation, it would be advisable to consider that the presence of anxiety and depression may not negatively impact the success of smoking cessation. However, further high-quality studies are needed to establish the effect of addiction on smoking cessation.

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Authors contributions

LAD provided research material, collected and organized data, conducted research and interpreted data, and wrote initial drafts. ÇA, CA, AD, OG and VM wrote the methods and results. ÇA, CA, AD, OG wrote the introduction and discussion. VM supervised the research, participated in the review, provided logistical support, and revised the final version of the article. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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