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Relationship of nicotine dependence with depression, anxiety and psychological distress

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Abstract

It was aimed to determine the levels of nicotine dependence, depression, anxiety and psychological distress in smokers and to investigate the relationship between them. The study was carried out with 164 people who applied to the Family Health Center (FHC), accepted to participate in the study and current smoker. A questionnaire including demographic questions, Fagerström Test for Nicotine Dependence (FTND), Kessler Psychological Distress Scale (K10) and Patient Health Questionnaire-4 (PHQ-4) was applied to individuals after obtaining their consent. 79.87% (n=131) of the participants have tried to quit smoking at least once, and 79.26% (n=130) stated that they want to quit smoking. The most common reasons for those who want to quit; It was "for my own health" (93.84%) and "for economic reasons" (37.69%). The mean FTND score was 4.38 ± 2.79, the K10 score was 22.34 ± 9.25, and the PHQ-4 score was 4.48 ± 3.37. There was a significant but moderate relationship between FTND and K10 ($p<0.01$, $r=0.304$) and PHQ -4 ($p <0.01$, $r = 0.351$). There were nicotine dependence according to FTND in 81.48% (n=66) of people scoring 20 or higher from K10 and 76.52% (n=88) of people scoring 3 or higher from PHQ-4. It was found that there is a significant relationship between nicotine dependence and depression, anxiety and psychological distress levels. To overcome dependence, psychiatric disorders should also be considered and treated.

Keywords: Dependence, smoking, psychological distress, depression, anxiety

Introduction

Tobacco use is one of the leading causes of preventable death and disease in the world. Smoking is an important public health problem leading to many diseases, especially lung diseases such as chronic obstructive pulmonary disease, asthma, lung cancer. World Health Organization reported prevelance of current smokers was about 33.3% of the global population in 2000, this rate dropped to about a quarter of the global population (24.9%) by 2015, and assuming that efforts in tobacco control were maintained in all countries, expects the rate to drop to 20.9% by 2025 [1].

In Turkey, according a survey which made with 15 years and older people in 2012, 14.8 million people (27.1%) were using tobacco products [2], in 2016 it increased to 19.2 million people (31.6%) [3]. These high rates can be attributed to low quit rates because smokers do not perceive that smoking is a dependence.

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Cigarettes contain nicotine, which is highly addictive. Dependence can cause physical, mental or social problems. Euphoriant effects of nicotine may cause mental disorders by time or make existing mental disorder worse. Mental disorders can also cause smoking and nicotine dependence. In a study conducted with 23393 people, smoking rates of people with psychiatric problems ranged between 34.3% and 59.1%, and this rate was 18.3% for people without psychiatric disorders. In the same study, it was found that the number of accompanying psychiatric disorders increased the rate of smoking, and the rate of people with psychiatric disorders to achieve smoking cessation was low [4].

Depression and anxiety, generally occuring together, are the most common mental disorders worldwide. Psychological distress includes a series of negative mood states such as sadness, frustration, anxiety, hopelessness, irritability, depressed mood [5]. Depression is one of the important risk factors that affect the etiology of smoking and the course of nicotine dependence. Smoking can increase the risk of depression, and depression can increase the prevalence and the frequency of smoking [6].

There is a interrelationship between presence of mental illness and nicotine dependence. The aim of this study was to determine

the levels of nicotine dependence, depression, anxiety and psychological distress in smokers and to investigate the relationship between them.

Materials and Methods

This study was obtained by the Clinical Research Ethics Committee of SBU Antalya Training and Research Hospital with the letter No: 2019/351 and dated 12/12/2019.

The scope of this research constitute individuals who applied to FHC, agreed to participate in the study and stated that they smoke. We searched socio-demographic characteristics, smoking status, nicotine dependence levels, status of depression, anxiety, psychological distress and their relationship with each other. For this purpose, a questionnaire including demographic questions, FTND, K10 and PHQ-4 were used. Questionnaires were applied with consents of individuals aged 18 and over who applied to FHC unit and accepted to participate in the study between December 2019 and March 2020. The study was carried out with 164 people who agreed to participate.

Tools

FTND

FTND aimed at measuring degree of nicotine dependence [7]. Adapted to Turkish by Uysal et al [8]. FTND measures symptoms of nicotine dependence with a 6-item scale ranging from 0 to 10 points, and higher scores mean more dependency.

K10

K10 is a useful short scale for evaluating mental health problems in comprehensive research. K10, which was developed by Kessler et al. to screen non-specific mental distress in the community, was created choosing from 612 questions derived by 18 different scales [9]. Turkish adaptation of K10 has been proven to be valid and reliable in the measurement and screening of psychological distress [10].

PHQ-4

Developed by Kroenke et al., PHQ-4 is used as a valid short screening tool to detect both depression and anxiety disorders. Scores of 3 and more are not diagnostic but marker for depression and anxiety [11]. Adapted to Turkish by Demirci and Ekşi [12].

Statistical analysis

For evaluating findings obtained from study, SPSS 25 (Statistical Package for Social Sciences) for Windows program was used for statistical analysis. In statistical analysis, frequency and percentage, mean value, standard deviation, highest and lowest values were used for descriptive statistics. Descriptive statistics, Shapiro-Wilk normality test, Spearman correlation analysis, Chi-square analysis tests were used as statistical methods. The results were evaluated at 95% confidence interval and significance at $p < 0.05$ level.

Results

164 people participated in our study, 49 were women and 115 were men. 68.90% of the participants were married (n = 113), 24.39% (n = 40) were single, and 6.71% (n = 11) were widowed or divorced. 36.58% were university (n = 60), 33.54% (n = 55) were primary school and 29.88% (n = 49) were high school graduates. The mean body mass index (BMI) was 26.42 ± 4.41. 33 people who over 30 rate according to BMI, were in obese class. 42 people (25.60%) had at least one chronic disease. The mean number of smoking cigarettes per day was 18.38 ± 9.26 (1-60), the mean age to start smoking was 18.28 ± 4.28 (10-42) and the mean duration of smoking (years) was 19.48 ± 12.58 (1-60) (Table 1).

Table 1. Socio-demographic characteristics

	Minimum	Maximum	Mean	SD	Total (n)
Age	18	74	38.45	12.34	164
Body Mass Index	17.59	38.87	26.42	4.41	164
Number of Cigarettes per day	1	60	18.38	9.26	164
Age to start smoking	10	42	18.28	4.28	164
Duration of smoking (year)	1	60	19.48	12.58	164

79.87% (n = 131) of the participants have tried to quit smoking at least once, and 79.26% (n = 130) stated that they want to quit smoking. When the reasons of those who want to quit smoking were questioned; 93.84% (n = 122) "Worrying about my health", 37.69% (n = 49) "Economic reasons", 19.23% (n = 25) "Worrying about health of my relatives" and 12,30% (n = 16) “Family / Community pressure” were stated that they wanted to quit smoking because of. When the reasons of 34 people who do not want to quit smoking were questioned, 47.05% (n = 16) “I like smoking”, 47.05% (n = 16) “Because I could not quit”, 38.23% (n = 13) “Because of habit” and 14.71% (n = 5) of “Because people around me smoke” responses were received (Table 2).

According to the answers given to FTND, those who scored 3 and more were considered nicotine dependents. Accordingly, 48 people (29.27%) did not have nicotine dependence and 116 people (70.73%) had varying degrees of nicotine dependence. When the socio-demographic characteristics of people with and without nicotine dependence were examined, there was no significant association between nicotine dependence and the factors of gender difference (p = 0.953), presence of obesity according to BMI (p = 0.946), presence of chronic disease (p = 0.136), trying to quit smoking (p = 0.719) and wanting to quit smoking (p = 0.281) (Table 3).

When the responses of participants to scales were analyzed, the mean FTND score was 4.38 ± 2.79, K10 score was 22.34 ± 9.25, and PHQ-4 score was 4.48 ± 3.37. A positive moderate correlation was found between FTND and K10 ($p < 0.01$, $r = 0.304$) and PHQ-4 ($p < 0.01$, $r = 0.351$). Considering the responses given to K10, cut off point was 20, 50.61% (n = 83) of the participants were likely to be well. 81 people (49.39%) had likely to have psychological distress, 12.19% of them were mild, 14.63% were moderate and 22.56% were severe. When responses given to PHQ-4 were examined; cut off point was 3, 115 people (70.12%) scored 3 points or more, while 49 people (29.88%) scored less than 3 points. In 81.48% (n = 66) of people scoring 20 or higher from K10 and 76.52% (n = 88) of people scoring 3 or higher from PHQ-4 had nicotine dependence according to FTND (Table 4).

Table 2. Status of trying and wanting quit smoking

Have you ever tried to quit smoking?	n	%	FTND		
			Mean	SD	p-value
Yes	131	79.9	4.55	2.85	0.130
No	33	20.1	3.73	2.45	
Do you want to quit smoking?					
Yes	130	79.3	4.45	2.73	0.579
No	34	20.7	4.15	3.02	
Reasons why want to quit smoking (n=130)					
Worrying about my health	122	93.84	4.51	2.74	0.314
Economic reasons	49	37.69	4.27	2.63	0.559
Worrying about health of my relatives	25	19.23	4.56	2.45	0.818
Family / Community pressure	16	12.30	4.44	1.96	0.989
Others (Smell, "I don't want")	2	1.54	4.50	0.71	0.978
Reasons why not want to quit smoking (n=34)					
I like smoking	16	47.05	3.94	3.21	0.709
I could not quit	16	47.05	6.13	2.12	0.000*
Habit	13	38.23	5.31	2.93	0.077
People around me smoke	5	14.71	3.80	3.03	0.785
Others (I don't want to quit smoking)	4	11.76	1.50	3.00	0.061

*p<0.01

Table 3. Association between nicotine dependence and sociodemographic characteristics

Variables	Category	FTND				n	p
		< 3		≥ 3			
		n	%	n	%		
Gender	**Woman**	15	30.61	34	69.39	49	0.953
	Man	33	28.69	82	71.31	115	
BMI	**< 30**	39	29.77	92	70.23	131	0.946
	≥ 30	9	27.27	24	72.73	33	
Presence of chronic disease	**No**	40	32.78	82	67.22	122	0.136
	Yes	8	19.04	34	80.96	42	
Trying to quit smoking	**No**	11	33.33	22	66.67	33	0.719
	Yes	37	28.24	94	71.76	131	
Wanting to quit smoking	**No**	13	38.23	21	61.77	34	0.281
	Yes	35	26.92	95	73.08	130	

Table 4. Association between the FTND and the K10 and the PHQ-4

Variables	Category	FTND				n	p
		< 3		≥ 3			
		n	%	n	%		
K10	**< 20**	33	39.76	50	60.24	83	0.003**
	≥ 20	15	18.52	66	81.48	81	
PHQ-4	**< 3**	21	42.86	28	57.14	49	0.012*
	≥ 3	27	23.48	88	76.52	115	

*p<0.05; **p<0.01

Discussion

Nicotine dependence is a problem that has psychological, sociological, economic and clinical effects on human health. Fighting against nicotine dependence is important because it is a preventable cause of mortality. It is known that a significant number of smokers start smoking at a young age. The mean age which people start smoking has been identified as 17.1 in 2012 [2] and as 17 in 2016 [3] held in Turkey. Similarly, in our study, the mean age of starting smoking was 18.28 ± 4.28. Therefore, young age group should be target in fighting dependence.

Health problems occuring by smoking are primary factors in quitting smoking. According a study in 2012, 55.1% of smokers thought to quit smoking, about half (46.0%) had tried to quit smoking in last 1 year and health problem (63.4%) was stated most as the reason for it [2]. 79.9% (n = 131) of the individuals in our study had tried to quit smoking at least once, and 79.3% (n = 130) stated that they want to quit smoking, and when the reasons for those who want to quit are questioned, mostly their health problems (% 74.4) and economic reasons (29.9%) were stated as reasons. As it is seen, deteriorated health condition is the most important factor that leads to quitting smoking, but it will be more meaningful to quit smoking before health condition deteriorates.

Although there are many factors that individuals to be dependent, psychological causes are the leading ones. In our study, 81.48% of people with likely to have psychological distress according to K10 and 76.52% of people with possible depression and anxiety to PHQ-4 were nicotine dependent according to FTND. In a similar study, compared to without psychological problems, it was found that people with depression, anxiety, or psychological distress smoke more and frequently, have a higher dependency and less success in quitting [13]. According to the data of USA National Health Survey, it was observed that people with high levels of psychological distress continue to smoke at high rates, and smoking rates of people who have low or no psychological distress drop faster [14]. Lawrence et al. showed that the rate of smoking increased by high level of psychological distress and that people with high level of psychological distress were nearly twice that of other smokers [15]. Leung et al. determined that current smokers and those who were less successful in quitting or reducing smoking had higher psychological distress [16].

In this study, it was found that there was a positive correlation between nicotine dependence and depression-anxiety ($p<0.01$, $r=0.351$) and psychological distress levels ($p<0.01$, $r=0.304$). Fidan et al. in their study, anxiety and depression scores were found to be significantly higher than in group of current smoker than those who quit smoking [17]. While nicotine dependence increases in people with conditions such as depression, anxiety and psychological distress, psychological disordes in people who are dependent to nicotine, cause to smoke more and to become more dependent. In a study which investigating smoking cessation and changes in mental health, smoking cessation was found to be associated with reduced depression, anxiety and stress, and effect of quitting smoking was found to be equal to or greater than antidepressant treatment [18]. Smokers try to self-treatment of their psychological disorders by smoking, it can be considered as a reason for the relationship between smoking and psychological disorders.

Conclusion

Mental health problems such as depression, anxiety and psychological distress seem to be common in society. Smoking is common in people with severe psychiatric disorders and is a major cause of mortality and morbidity. Considering psychiatric disorders in smokers with common mental health problems will contribute to reduction of cigarette-related morbidity and mortality. Psychiatric disorders increase the rate of smoking in individuals, nicotine dependence also exacerbates psychiatric disorders. Therefore, treatment of cigarette dependence will lead to improvement of psychiatric disorders, and treatment of psychiatric disorders will decrease or treat dependence. When fighting dependence, underlying psychiatric disorders should also be considered and treated.

Conflict of interests
The authors declare that they have no competing interests.

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Ethical approval
This article was approved by the Antalya Training and Research Hospital Ethics Committee on 12/12/2019 (no. 351)

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