Original Research / Orijinal Araştırma

Evaluation of Factors Affecting Treatment Results and Smoking Cessation Process in Those Who Applied to the Smoking Cessation Outpatient Clinic

Sigara Bırakma Polikliniğine Başvuranlarda Tedavi Sonuçlarını ve Sigarayı Bırakma Sürecini Etkileyen Faktörlerin Değerlendirilmesi

Engin YAVUZER[1], Ruhusen KUTLU[1]

Abstract

Aim: Quitting smoking will prevent health problems that can be caused by smoking. This study aimed to evaluate the factors that influence the success of quitting smoking and the process of quitting smoking.

Materials and Methods: In the presented study, 1812 patients applied to the smoking cessation outpatient clinic between January 2017 and December 2019. This study was completed with 957 patients. All participants were included in the motivational and pharmacological treatment program. Patient records were reviewed retrospectively. Between February 2020 and August 2020, patients' registered telephone numbers were called to ask about their current smoking status and the factors influencing it.

Results: It was found that 26.4% (n=253) of the participants quit smoking, 18.6% (n=178) did not quit, and 55% (n=526) quit and started again. Those who had tried to quit once (p=0.032), those who were unemployed (p<0.001), those who received free treatment, (p=0.007) and those who adhered to the three-month treatment program (p<0.001) were significantly more successful. Those who reported that motivation was the factor that most facilitated the process were significantly more successful (p<0.001). Drinking water was found to be the most effective way to resist the urge to smoke (p<0.001). The most common compelling factor was the urge to smoke, and the most common cause of relapse was stress.

Conclusion: Our study found that motivation, adherence to the three-month treatment program, and resisting the urge to smoke with drinking water were the factors that most increased quitting success.

Keywords: Tobacco use disorder, interview, treatment, smoking cessation.

Özet

Amaç: Sigarayı bırakmak, sigaranın neden olabileceği sağlık sorunlarını önleyecektir. Bu çalışmanın amacı, sigarayı bırakma başarısını etkileyen faktörleri ve sigarayı bırakma sürecini değerlendirmektir.

Gereç ve Yöntem: Sigara bırakma polikliniğine 1 Ocak 2017 ile 30 Aralık 2019 tarihleri arasında1812 hasta başvurdu, ancak çalışma kriterlerine uyan 957 hasta değerlendirmeye alındı. Tüm katılımcılar motivasyonel ve farmakolojik tedavi programına dahil edildi. Hasta kayıtları geriye dönük olarak incelendi. Şubat 2020 ile Ağustos 2020 tarihleri arasında hastaların kayıtlı telefon numaraları aranarak mevcut sigara içme durumları ve bunu etkileyen faktörler hakkında bilgi alındı.

Bulgular: Katılımcıların %26,4'ünün (n=253) sigarayı bıraktığı, %18,6'sının (n=178) bırakmadığı, %55'inin (n=526) sigarayı bırakıp yeniden başladığı belirlendi. Daha önce bırakmayı denemiş olanlar (p=0,032), işsiz olanlar (p<0,001), ücretsiz tedavi görenler (p=0,007) ve üç aylık tedavi programına uyanlar (p<0,001) anlamlı olarak daha başarılı olmuştur. Motivasyonun, süreci en çok kolaylaştıran faktör olduğunu bildirenler anlamlı derecede daha başarılı olmuştur (p<0,001). Su içmek, sigara içme dürtüsüne karşı koymanın en etkili yolu olarak bulunmuştur (p<0,001). En yaygın zorlayıcı faktör sigara içme dürtüsü, en yaygın nüksetme nedeni ise stresti.

Sonuç: Çalışmamızda motivasyon, üç aylık tedavi programına uyum ve su içme yoluyla sigara içme dürtüsüne direnmenin, sigara bırakma başarısını en çok artıran faktörler olduğu bulunmuştur.

Anahtar Kelimeler: Tütün kullanım bozukluğu, görüşme, tedavi, sigarayı bırakma.

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[1] Department of Family Medicine, Meram Medical Faculty, Necmettin Erbakan University, KONYA/TURKEY

Address for Correspondence / Yazışma Adresi: Engin YAVUZER. Department of Family Medicine, Meram Medical Faculty, Konya Necmettin Erbakan University, 42080 Konya / TURKEY

E-posta: enginyavuzer@hotmail.com Tel: +90 332 2236601 - +905077251706

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Introduction

The tobacco epidemic is one of the world's greatest public health problems. The World Health Organization (WHO) has indicated that tobacco is a significant contributor to mortality, with an estimated 8 million deaths annually. It is estimated that over seven million of these deaths are attributable to direct tobacco use, with over one million thought to be the result of exposure to secondhand smoke. There are about 1.3 billion tobacco users worldwide, and consumption is significantly higher (80%) in low- and middle-income countries.[1] In Turkey, 28% of people aged 15 years and over use tobacco daily (41.3% males, and 14.9% females).[2] Approximately 100,000 people die each year from diseases caused by the use of tobacco products.[3]

Smoking, which is associated with an increase in overall mortality and morbidity, is implicated in the etiology of many cancers, particularly lung, head, and neck cancers. Furthermore, smoking significantly increases the risk of developing many diseases, including atherosclerotic disease, cerebrovascular disease, and chronic obstructive pulmonary disease.[4]

In 2008, WHO developed the MPOWER policy package, which has proven effective in tobacco control.[5] In Turkey, the MPOWER policy package is being successfully implemented, and the Tobacco Control Strategy Document and Action Plan were developed in 2018 with work within the Ministry of Health. The ultimate goal of the Action Plan is to protect everyone in society from the social, health, environmental, and economic harm caused by tobacco products between 2018 and 2023.[3]

Outpatient smoking cessation clinics provide patients with the motivation, psychiatric support, and, if necessary, pharmacological treatment they require to quit smoking successfully. In Turkey, nicotine patches, varenicline, and bupropion are generally available free of charge from the Ministry of Health. Patients apply to the smoking cessation outpatient clinic at least once a month for three months. They receive comprehensive support, including guidance on the process and medication, to help them successfully quit smoking. If drugs are not provided, patients buy them themselves from pharmacies.[6] The main cause of early relapse in quitters is nicotine withdrawal and the inability to stop the urge to smoke. Although relapse is usually seen within the first few weeks, it can occur months or years later.[7]

This study aims to determine the factors affecting the success of quitting smoking, the facilitating and complicating factors that patients encounter in the process of quitting smoking, the reasons for quitting smoking, and methods of resisting the urge to smoke.

Method

Research Design and Setting: This study was planned as a retrospective study covering 1812 patients who applied to Necmettin Erbakan University Meram Medical Faculty Family Medicine Smoking Cessation Polyclinic to quit smoking between 01.01.2017 and 30.12.2019. The patients' files were reviewed, registered telephone numbers were called, patients were briefly informed about the purpose of the study, and their verbal consent was obtained following the principles of the Declaration of Helsinki. Current smoking status and factors affecting it were questioned. Patients were called between February 2020 and August 2020. The study was completed in October 2020 with 957 patients because 185 patients had incorrect telephone numbers, 669 patients did not answer the phone, and one refused to participate.

Approval from the Ethics Committee of Meram Medical Faculty was obtained before the start of the study (number: 2020/2283 date: 07.02.2020).

Data Collection: Sociodemographic characteristics (such as age, gender, working status), Fagerström Test for Nicotine Dependence, Beck Depression Inventory, cigarette consumption (packs/year), carbon monoxide (CO) level, and smoking characteristics of 957 patients who met the inclusion criteria were obtained from the files recorded at first admission.

In telephone interviews with participants, questions were asked about their current smoking status, whether the treatment was paid or free, adherence to the three-month treatment program, factors that made it facilitating/challenging to quit, methods of resisting the urge to smoke, causes of relapse, and the most positive effects seen in quitters. The results indicated that the participants could be classified into three groups: those who successfully quit smoking, those who relapsed (i.e., those who initially quit but subsequently resumed smoking), and those who did not quit (those who did not quit even one day). Participants who stopped smoking for at least six months and did not start again were included in the quit group. We excluded people under the age of 18, pregnant women, the deceased, and people with severe psychiatric illnesses.

Carbon Monoxide Measurement: Exhaled CO levels were measured using the Bedfont Scientific PiCO Smokerlyzer Breath CO Monito. In a non-smoker, the CO level is measured between 0-4 ppm, the higher the number of cigarettes smoked daily, the higher the CO level.[8]

Fagerström Test for Nicotine Dependence (FTND): The Fagerström Test for Nicotine Dependence, developed by Karl-Olov Fagerström, is a standard tool used to assess the degree of physical nicotine dependence. Uysal et al.

conducted a validity and reliability study for Turkey. It contains six questions that assess nicotine dependence. According to the total score obtained, nicotine dependence is classified into five groups: very low (0-2 points), low (3-4 points), moderate (5 points), high (6-7 points) and very high (8-10 points).[9]

Beck Depression Inventory (BDI): The BDI was developed in 1961 by Beck et. al (1966) to measure behavioral symptoms of depression.[10] Depression-specific behaviors and symptoms were defined and each item was scored from 0 to 3. It consists of 21 items and the items range from mild to severe. The level of depression according to the scores collected; minimal depression was classified as 0-9 points, mild depression as 10-16 points, moderate depression as 17-29 points, and severe depression as 30-63 points. In studies using the BDI, the cut-off score has generally been set at 17 (11-13). In our study, the cut-off score was also set at 17.

Statistical Evaluation: The Statistical Package for Social Sciences (IBM SPSS) version 20.0 was used for statistical analysis. Descriptive statistics are presented as numbers, percentages, means, and standard deviations. The chi-square test was used for statistical analysis of categorical data. For statistical analysis of quantitative data, one-way ANOVA (post hoc Tukey test) in groups of three was used for data with normal distribution. The statistically significant difference was $p<0.05$.

Results

The mean age of the participants was 38.4±12.1 (18-75) years. Of the 957 participants included in the study, 82.5% (n=790) were male and 17.5% (n=167) were female. No significant association was identified between current smoking status and sex, marital status, presence of depression, or diagnosed disease ($p>0.05$). However, a statistically significant difference was observed among age groups (**p=0.004**), educational status (**p=0.040**), and working status (**p<0.001**) (Table 1).

Telephone interviews revealed that 26.4% (n=253) of participants successfully quit smoking, 18.6% (n=178) did not quit, and 55.0% (n=526) relapsed. Most relapsers (39.4% (n=207)) started smoking again within the first month.

Table 1. *Comparison of current smoking status with demographic characteristics*

Parameters	**Those who quit (n=253)**		**Those who didn't quit (n=178)**		**Those who relapse (n=526)**		***p****
	n	**%**	**n**	**%**	**n**	**%**	
Sex							
Male	204	25.8	148	18.7	438	55.5	0.644
Female	49	29.3	30	18.0	88	52.7	
Age groups							
18-29	59	23.5	35	13.9	157	62.6	
30-39	78	24.7	57	18.0	181	57.3	**0.004**
40-49	53	25.6	44	21.3	110	53.1	
50 and older	63	34.4	42	23.0	78	42.6	
Marital status							
Married	199	27.3	141	19.3	389	53.4	0.203
Unmarried	54	23.7	37	16.2	137	60.1	
Educational status							
Middle school	96	25.5	85	22.5	196	52.0	**0.040**
At least high school	157	27.1	93	16.0	330	56.9	
Working status							
Employed	150	22.5	130	19.1	398	58.4	**<0.001**
Unemployed	100	36.2	48	17.4	128	46.4	
Diagnosed disease							
Yes	81	27.3	62	20.8	154	51.9	0.355
No	172	26.1	116	17.5	372	56.4	
Beck depression score							
<17 points	207	26.8	141	18.3	424	54.9	0.796
≥17 points	46	24.9	37	20.0	102	55.1	

*Chi-square test

Table 2. *Comparison of smoking status with some parameters*

Parameters	Those who quit		Those who don't quit		Those who relapse		*p**
	n	%	n	%	n	%	
Cigarette consumption							
0-19 pack years	124	27.6	58	12.8	268	59.6	**<0.001**
20-39 pack years	72	22.9	71	22.5	172	54.6	
≥40 pack years	57	29.7	49	25.5	86	44.8	
Number of attempts to quit							
0	92	24.9	86	23.2	192	51.9	**0.032**
1	143	28.4	80	15.9	281	55.8	
≥2	18	21.7	12	14.4	53	63.9	
FTND							
0-2 very low addicted	43	39.1	12	10.9	55	50.0	**0.016**
3-4 low addicted	48	27.3	29	16.5	99	56.2	
5- moderate addicted	33	25.8	21	16.4	74	57.8	
6-7 high addicted	76	26.2	55	19.0	159	54.8	
8-10 very addicted	53	20.9	61	24.2	139	54.9	
Time to smoke first cigarette after waking							
In the first 5 minutes	89	24.4	79	21.6	197	54.0	**0.005**
In 6-30 minutes	57	21.0	52	19.2	162	59.8	
In 31-60 minutes	59	31.2	33	17.5	97	51.3	
After 1 hour	48	36.4	14	10.6	70	53.0	
Number of cigarettes smoked per day							
1-10	31	39.2	10	12.7	38	48.1	**0.002**
11-20	122	28.4	71	16.5	237	55.1	
21-30	67	25.1	47	17.6	153	57.3	
31 and above	33	18.3	50	27.6	98	54.1	
Whether the pharmacological treatment is free							
Paid	17	17.2	29	29.3	53	53.5	**0.007**
Free	236	27.5	149	17.4	473	55.1	
Compliance with the treatment program							
Compatible	93	33.2	32	11.4	155	55.4	**<0.001**
Incompatible	160	23.6	146	21.6	71	54.8	
Methods to resist smoking cravings							
Chewing gum	29	22.5	22	17.0	78	60.5	**<0.001**
Dried nuts	51	22.1	40	17.3	140	60.6	
Occupation with something	21	16.9	10	8.1	93	75.0	
Willpower	80	23.8	102	30.4	154	45.8	
Drinking water	72	52.6	4	2.9	61	44.5	

*Chi-square test

Table 3. *Relationship between smoking status and age, pack years, FDS*, CO and BDS***

Parameters	Those who quit[a] Mean±SD	Those who don't quit[b] Mean±SD	Those who relapse[c] Mean±SD	F	*P*
Age	39.9 ±12.9	40.9±12.7	36.8±11.4	10.363	**<0.001**[ac,bc]
FDS	5.3±2.4	6.3±2.3	5.7±2.3	10.147	**<0.001**[ab,ac,bc]
Pack years	23.2±17.9	28.7±18.1	22.5±17.4	8.334	**<0.001**[ab,bc]
CO	12.0±6.6	15.5±7.5	14.1±6.7	14.782	**<0.001**[ab,ac,bc]
BDS**	11.3±8.9	12.0±9.1	10.9±8.1	1.137	0.120

Values are presented as mean±standard deviation. (By One Way ANOVA test (post hoc Tukey test). SD= Standard deviation; FDS*: Fagerstrom dependence score, BDS**: Beck depression score, CO= Carbon monoxide.

Smoking cessation success decreased statistically significantly with increasing degree of FTND (p=0.016) and number of cigarettes smoked per day (p=0.002) and increased statistically significantly with increasing time to first cigarette after waking (p=0.005). Smoking cessation success was significantly higher among those who received free treatment (p=0.007), those who adhered to the three-month treatment program (p<0.001), and those who tried to quit once (p=0.032). It was found that 52.6% (n=72) of those who resisted the urge to smoke with drinking water quit smoking (Table 2).

It was found that smoking cessation success decreased statistically significantly as pack-years, Fagerström addiction score, and mean CO level increased (p<0.001) (Table 3).

It was found that 58% (n=134) of those who reported the presence of motivation as the factor that most facilitated the process quit smoking after treatment (p<0.001) (Table 4).

Stress was the cause of relapse in 35.7% (n=188) of relapses. In 32% (n=81) of those who quit, the most positive effect of quitting was improved breathing (Table 5).

Table 4. *Factors that most facilitate the quitting process*

Parameters	**Those who quit (n=253)**		**Those who relapse (n=526)**		***p****
	n	**%**	**n**	**%**	
Presence of motivation	134	58.0	97	42.0	**p<0.001**
Health anxiety	37	15.4	204	84.6	
Drug support	51	25.8	147	74.2	
Saving money	5	16.7	25	83.3	
Social support	26	32.9	53	67.1	

*Chi-square test

Table 5. *The factors that make the process the most difficult, the causes of relapse, and the most positive effects of quitting*

The factor that makes the process the most difficult (n= 957)	**n**	**%**
Urge to smoke	391	40.9
Smoking environments	192	20.1
Irritability and stress	130	13.5
Hand-lip habituation	98	10.2
Drug side effect	68	7.1
None at all	78	8.2
Total	957	100.0
The causes of relapse (n= 526)		
Stress	188	35.7
The presence of smokers around	112	21.3
Smoking pleasure	93	17.7
Weakness of will	91	17.3
Inability to complete treatment due to medication side effects	28	5.3
Other reasons	14	2.7
Total	526	100.0
The most positive effects of quitting (n= 253)		
Improved breathing	81	32.0
Economic benefits	54	21.3
Better quality sleep	31	12.2
Reduced risk of developing the disease	29	11.4
Better taste of food, increased appetite	15	5.9
Absence of bad odors	12	4.7
Being more energetic	12	4.7
Better social relationships	8	3.2
Other benefits	11	4.6
Total	253	100

Discussion

The World Health Organization has identified tobacco use as one of the most dangerous public health threats facing the world. It affects not only those who use tobacco products but also those who are exposed to tobacco smoke. It is possible to minimize these problems by quitting smoking.[1-3] Knowing the factors affecting the smoking cessation process will increase the success of quitting smoking in polyclinics. This study is important in terms of the aim of increasing the success of quitting smoking by determining the factors affecting smoking cessation.

In the presented study, older age, having at least a high school education, being unemployed, having tried to quit once, being very low dependent, smoking the first cigarette one hour after waking up, smoking 1-10 cigarettes a day, adhering to the three-month treatment program, and receiving free treatment were found to be factors that significantly increased the success of quitting smoking. No significant correlation was identified between current smoking status and the following variables: gender, marital status, presence of a diagnosed disease, and presence of depression. Fai et al. found that similar to our study, gender, marital status, and the presence of a diagnosed disease were not effective in smoking cessation. In the same study, smoking cessation success was higher among people who did not work and were less dependent, but this difference was not statistically significant.[14] The economic burden imposed on the unemployed by the increase in cigarette prices as a result of the MPOWER policy of increasing taxes on tobacco products may have increased the success of smoking cessation among the unemployed. Chandola et al. found that smoking cessation success was higher among people with higher levels of education, similar to this study.[15] This may be due to the increased awareness of the harms of smoking among people with higher education levels. Similarly, Raherison et al. found that smoking cessation success increased with age.[16] This result may be because health anxiety caused by smoking-related health problems is more common in older age.

It was found that 26.4% of the participants quit smoking, and most (39.4%) of the relapsers started smoking again within the first month after quitting. Similarly, Kocak et al. reported that most (48.9%) of those who relapsed started smoking again within the first month.[17] We believe that more frequent follow-up in the first month, either face-to-face or by telephone, will reduce recurrences.

Raherison et al. found that as the number of quit attempts increased, quit success decreased. The study revealed that the success rate of smoking cessation was significantly higher among individuals who had never attempted to quit and who made a single attempt, compared to those who made two or more attempts. In people who try to quit smoking, high levels of nicotine dependence, reduce the success of quitting.[14] Branstetter et al. reported that nicotine dependence was higher in those who smoked the first cigarette of the day earlier than in those who smoked later.[18] In this study, those who smoked their first cigarette of the day one hour after waking were significantly more successful at quitting.

Pezzuto et al. found that quit success was higher in those who smoked fewer cigarettes per day, and that average exhaled CO levels were lower in those who quit.[19] In this study, these differences were statistically significant. In our study, those who did not quit were found to smoke significantly more cigarettes (packs/year). Bacha et al. found that those who did not quit smoked significantly more cigarettes (packs/year).[20]

In this study, adherence to the three-month treatment program and the fact that the medications used in pharmacological treatment were available free of charge were found to be significant predictors of success in smoking cessation. Berkesoglu et al. found similar results in their study.[21] The free supply of medicines is one of the most important factors in increasing motivation among low-income and unemployed people. The success of smoking cessation can be increased by encouraging patients to adhere to the treatment program at their first visit to the outpatient clinic.

In this study, the three methods used against the urge to smoke that most increased the success of quitting were drinking water, willpower, and chewing gum, respectively. Those who resisted the urge to smoke by drinking water were significantly more successful in quitting. Cohen et al. reported that chewing gum reduced the urge to smoke.[22] Phanucharas et al. reported that the most commonly used methods against the urge to smoke were not buying cigarettes, willpower, exercise, drinking water or bathing, and staying away from smokers.[23]

The first three factors reported by participants as facilitating the process and increasing the success of quitting were the presence of motivation, social support, and medical support. Similar to this study, Bacha et al. found that individuals with high motivation exhibited greater success than those with low motivation.[20] Chandola et al. found that moderate and high levels of social support positively affected smoking cessation compared with low levels of social support.[15] Cahill et al. reported that pharmacological support increased smoking cessation success.[24]

Among the participants, the most common compelling factor was the urge to smoke, the most common cause of relapse was stress, and the most common positive effect of quitting was improved breathing. Similarly, Patten et al. reported that the most common difficulty was the urge to smoke.[25] Buczkowski et al. found that the most common cause of relapse was stress.[26] Pezzuto et al. reported that respiratory symptoms improved in those who quit smoking.[19]

Conclusion

The results of this study indicate that the most significant factors contributing to the success of smoking cessation are the presence of motivation, adherence to the three-month treatment program, and resistance to the urge to smoke with drinking water. Giving importance to motivational interviewing, adherence to treatment, and behavioral therapies in patients applying to the outpatient smoking cessation clinic can increase smoking cessation success. In addition, providing the drugs used in treatment free of charge will increase the success of quitting.

Limitations

The most important limitation of the study was that the drugs used in smoking cessation treatment were sent to patients in different numbers by the Ministry of Health between January 2017 and December 2019, and bupropion was started less frequently as a pharmacological treatment, and the effectiveness of bupropion in smoking cessation treatment could not be adequately evaluated. The other important limitation of our study was that the phone numbers of 118 patients were wrong, 669 patients did not answer the phone and one patient refused to participate.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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