

The Factors Affecting Smoking Cessation and Efficacy of Quitting Methods

Esen Sayın Gülensoy¹, Evrim Eylem Akpınar¹

¹Ufuk University, Faculty of Medicine, Department of Chest Diseases, Ankara, Turkey

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Abstract

Objective: We aimed to compare the demographic-sociocultural characteristics of quitting and non-quitting individuals and to evaluate the factors affecting smoking cessation and success rates of treatment methods.

Methods: 179 patients were included in the study. Demographic characteristics, smoking behaviour, Fagerström nicotine dependence level were recorded. The treatment results at the end of the first year were evaluated. The efficacy of treatment methods used in the treatment of smoking dependence, gender, occupation, education, comorbidity, and family history were recorded in quitting and non-quitting individuals. Statistical analysis was performed using Statistical Package for Social Sciences Version 21.0 (SPSS-21.0).

Results: Of the 179 patients evaluated, 118 (65.6%) were male and 71 (39.7%) were married. The mean age was 41.5 ± 13.7 years. At the end of 12 months follow-up, 57 (31.8%) had been quit smoking. There was no difference between the quit and non-quit groups in terms of gender, age, working status and education level. It was found that being married and having no additional disease significantly increased smoking cessation rate ($p = 0.049$, $p = 0.010$, respectively). In both groups, combination of behavioural treatment and varenicline was the most common method. There was no significant difference among the pharmacological methods used.

Conclusion: In our study, smoking cessation rate was found to be 31.8%. The efficacy of different treatment modalities was similar. Despite the current treatments, the rate of smoking cessation is not at the desired level and further studies are needed to develop new methods for smoking cessation treatment.

Key words: Tobacco use, smoking reduction, smoking cessation

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Address for correspondence/reprints:

Esen Sayın Gülensoy

Telephone number: +90 (542) 64 519 11

E-mail: esen_sayin@hotmail.com

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Introduction

One of the biggest social problems in the world and in our country is cigarette addiction (Karnath 2002). Cigarette addiction is defined by the World Health Organization (WHO) as a chronic disease with recurrences (WHO, Report on the Global Tobacco Epidemic, 2019). Active and passive smoking affects all organs, tissues and systems, leading to death, disease and disability (Mackay and Eriksen, 2002; Fried, 2003).

In Global Adult Tobacco Survey, 19.2 million people in Turkey (31.6%) currently use tobacco products. The prevalence of tobacco use is still higher in men (44.1%) than in women (19.2%) (Global Adult Tobacco Survey, Turkey 2016).

In the world, more than a billion smokers are addicts. Most of these addicts would like to quit, but 5% can receive comprehensive services for the treatment against tobacco addiction. Countries should establish effective and inexpensive intervention programs for those who smoke and willing to quit. The fight against smoking is the duty of all physicians and it is recommended to support the quitting efforts of individuals using tobacco (Mackay and Eriksen, 2002).

It is known that the programs implemented in specialized smoking outpatient clinics increase the success of smoking cessation (Parrott and Godfrey, 1998).

The aim of this study was to investigate the demographic-sociocultural characteristics of patients followed up at the smoking cessation clinic, factors affecting smoking cessation, and the success rates of smoking cessation methods.

Methods

The files of the patients who applied to the smoking cessation clinic of Ufuk University Dr. Rıdvan Ege Hospital between the dates of January 2010 and December 2012 were retrospectively reviewed. The criteria for inclusion in the study were being > 18 years of age and follow-up in our smoking cessation clinic for at least one year. Patients who were followed-up for less than one year, ≤18 years of age and who had missing data on their file, and missing information about the smoking cessation treatment response were excluded from the study. All patients had Fagerström nicotine dependence test at their admission. Determination of addiction level is important for the choice of treatment and success of cessation. The Fagerström Test for Nicotine Dependence (FTND) is the most commonly used test for the assessment of cigarette dependence in daily practice (Demir, 2008). The Fagerström Tolerance Test was first proposed in 1978, and in 1991, Heatherton et al. (1991) called Fagerström Tolerance Scala. Adapting the test to Turkish was made by Uysal et al. (2004). Demographic characteristics, smoking behaviour and attitudes of the patients, FTND score, comorbid medical or psychiatric diseases and drugs used were recorded.

Behavioural therapies consisting of practical applications were recommended in our smoking cessation clinic. In order to cope with early withdrawal symptoms and late effects, the patient was advised to stay away from smoking environments, to be active, to use chewing gum, to perform deep breathing exercises and to prevent

weight gain. Patients were given a telephone number to call if they needed it. They were evaluated psychologically during their regular follow-up. The treatment method (pharmacological and/or behavioural treatment), duration of treatment, gender, occupation, education, comorbidity, family history, smoking at home and addiction scores were recorded in subjects who quit and could not quit. The results of the treatment at the end of the first year were evaluated by using file data and contacting the patients by telephone.

Design of the study was summarized in figure 1.

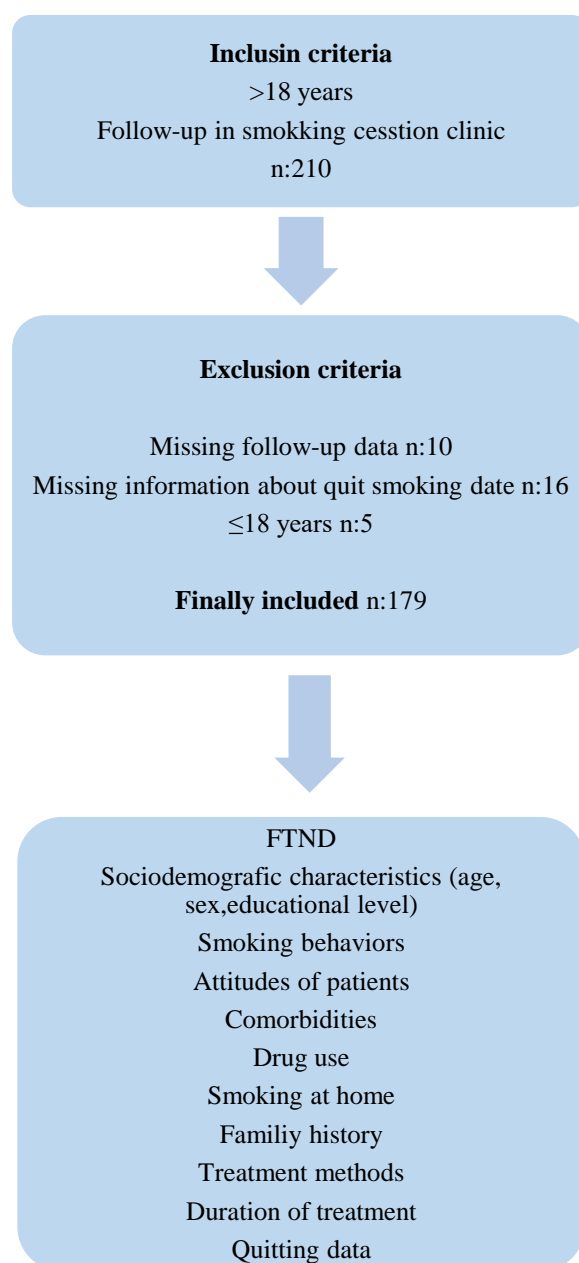


Figure 1. Design of the study

Statistical analysis: Data were analysed using Statistical Package for Social Sciences Version 21.0 (SPSS-21.0). In the evaluation of the data, the Kolmogorov-Smirnov test was used to compare whether the variables were normally distributed or not. The t test was used for normal distributions and Mann-Whitney U test was used for non-normally distributed variables. Chi-square analysis was used for categorical variables. Odds ratios were calculated by Cochran's and Mantel-Haenszel test. $p < 0.05$ was considered as statistically significant.

Results

Of the 210 individuals who applied to our outpatient clinic and completed the first year controls, 18-year-old patients ($n = 5$), who could not obtain information about the smoking cessation treatment response ($n = 16$) and who had incomplete information on their file ($n = 10$) were excluded from the study. As a result, 179 patients were included to the study. The mean age was 41.5 ± 13.7 years and 118 (65.6%) were male and 71 (39.7%) were married. 141 people (78.8%) were in high school and above. The highest rate of beginning to smoke was between the ages of 16 and 20 years (50.8%).

Behavioural treatment was applied to all individuals who applied to the outpatient clinic. If moderate and high levels of addiction were detected, pharmacological treatment was recommended.

At the end of twelve-month follow-up, 57 (31.8%) out of 179 people had quit smoking. The patients who quit smoking classified as Group 1 and those who did not as Group 2. There was no difference between Group 1 and Group 2, in terms of gender, age, working status and education level ($p = 0.356$, $p = 0.421$, $p = 0.603$, $p = 0.465$, respectively). Marital status was a protective factor for smoking cessation ($p = 0.049$ OR = 0.51 95% CI = 0.267-0.961) (Table 1).

Very low-moderate addicts (FTND score ≥ 5) and high-very high addicts (FTND score > 5) were compared in terms of smoking cessation status. There was no significant relationship between smoking cessation and FTND score ($p = 0.297$). (Table 2).

Table 1. The effect of socio-demographic characteristics on smoking cessation

		Group 1		Group 2		p
		N	%	N	%	
Gender	Male	36	63.2	82	67.2	0.356
	Female	21	36.8	40	32.8	
Age (year)	18-44	39	68.4	80	65.6	0.421
	≥ 45	18	31.7	42	34.4	
Working status	Employee	50	87.7	107	87	0.603
	Unemployed	7	12.3	15	12.3	
Education status	Secondary school and under	11	19.3	27	22.1	0.465
	High school	12	21.1	34	27.9	
	University	34	59.6	61	50	
Marital status	Married	29	50.9	42	34.4	0.049
	Single	28	49.1	80	65.6	

Group 1: patients who quit smoking

Group 2: patients who do not quit smoking

Table 2. The relationship between FTND smoking cessation status

FTND	Group 1		Group 2		P
	N	%	N	%	
≤ 5	34	59.6	66	54.1	0.297
> 5	23	40.4	56	45.9	

FTND: Fagerström Test for Nicotine Dependence

Group 1: patients who quit smoking

Group 2: patients who do not quit smoking

In Group 1, 46 patients (80.7%) did not have comorbidity, while in Group 2, 46 patients (37.7%) had comorbidity. The presence of comorbidity in Group 1 was significantly lower than Group 2 ($p = 0.010$) (Table 3).

Smoking cessation rates were evaluated according to the treatment method used. In Group 1, the ratios of different treatment methods that were used were as follows; nicotine replacement therapy (NRT) and behavioural therapy 14% ($n=8$), varenicline and behavioural therapy 35.1% ($n=20$), bupropion and behavioural therapy 21.1% ($n=12$), combined treatment (varenicline, bupropion and behavioural therapy) 7% ($n=4$). When the distribution of treatment methods was examined, behavioural treatment with varenicline was the most common method in both groups. No significant difference was observed between the two groups in

terms of treatment methods used ($p = 0.541$) (Table 4).

Table 3. The presence of another smoker at home, the presence of comorbidity, previous attempts to quit smoking and the assessment of smoking cessation

		Group 1		Group 2		P
		N	%	N	%	
Another smoker in the home	Present	34	59,6	67	54,9	0.333
	Absent	23	40,4	55	45,1	
Comorbidity	Present	11	19,3	46	37,7	0.010
	Absent	46	80,7	76	62,3	
Attempt to quit	Yes	35	59,6	66	54,1	0.279
	No	23	40,4	56	45,9	

Group 1: patients who quit smoking

Group 2: patients who do not quit smoking

Table 4. Evaluation of methods used for cessation treatment

	Group 1		Group 2		P
	N	%	N	%	
NRT+ BT	8	14	23	18,9	0.541
Vareniclin + BT	20	35,1	44	36,1	
Bupropion + BT	12	21,1	31	25,4	
Behavioral therapy	13	22,8	16	13,1	
Combined treatment	4	7	8	6,6	

Group 1: patients who quit smoking

Group 2: patients who do not quit smoking

NRT: Nicotine replacement therapy

BT: Behavioral therapy

Discussion

The use of cigarettes and other tobacco products is an important public health problem and puts a huge burden on the national economy (WHO Report on the Global Tobacco Epidemic 2019). Today, smoking addiction, which is accepted as a disease, can be successfully treated with professional support (Karlıkaya et al., 2006). For this reason, WHO recommends that nicotine addicts should be encouraged to quit smoking and that the health system concentrates on smoking cessation methods and helps patients.

It has been reported that long-term success in self-quitters is less than 10% (Rigotti, 2012).

Studies have shown that outpatient clinics for smoking cessation increase the success rate (Carlson et al., 2002; Godfresten, 2008; Bize et al., 2010) One-year smoking cessation rate in our outpatient clinic was 31.8%. In similar studies conducted in our country, 1-year dropout rates were found to be 36.5% and 40.4% (Saglam, 2012; Argüder et al.,

2013). In a Canadian study, the 1-year dropout rate was 43% (Carlson et al., 2002). The fact that the family of the individual was included in the social support program in this study, may be a factor that increases the success of quitting. In a Swiss study, the 1-year dropout rate was 27.1% (Bize et al., 2010).

In our study, the mean age at which the patients smoked for the first time was quite early (17.79 ± 4.52 years) and more than half of the patients (50.8%) had started smoking before the age of 20. Therefore an effective and correct approach towards smoking cessation in all age groups and especially in adolescents and early youth will be helpful to decrease the smoking rates and also quality of life and life expectancy could be increased. Beginning of smoking in adolescence period causes to become highly addictive and these individuals quit smoking more difficult. Tobacco Industry is therefore particularly target young people in their advertisements (Ozlu, 2002) Global Youth Tobacco Survey was assessed in 2017 at the age group of 13-15 years' students in a nationwide report on Turkey. 17.9% of students (23.2% of boys, 12.1% of girls) currently smoked a tobacco product, 7.7% (9.9% of boys and 5.3% of girls) were still smoking and 40.2% (46.8% of males and 33.1% of females) have tried a tobacco product at least once (Global Youth Tobacco Survey, Turkey, 2017).

In a study conducted by Şahbaz et al., it was shown that being married had a positive effect on smoking cessation success (Şahbaz et al., 2007). Similarly, in a study from England which had ten years' follow-up period, the rate of smoking cessation was significantly higher in the married individuals compared to those were unmarried (Chandola et al., 2004). In our study, in accordance with the literature, smoking cessation rate was higher in married patients. This may be due to the fact that married individuals are more determined to quit smoking because of their sense of responsibility and protection towards their families.

We found that absence of comorbidity had a positive effect on smoking cessation success. In the literature, there are studies reporting that patients with chronic disease quit smoking more difficult than those without. One study showed that patients with COPD quit smoking more difficult than healthy smokers (Solak et al., 2006; Onen et al., 2010). This made us think that patients with comorbidity may have been thought smoking cessation unnecessary because of their poor health. Contrary to these results, the presence of comorbidity has been

reported to have a positive effect on smoking cessation success in two studies (Can et al., 2004; Global Initiative for Chronic Obstructive Lung Disease (GOLD) Guidelines, 2011).

In a meta-analysis, it was reported that all forms nicotine replacement therapies increased smoking abstinence by 1.58 times (95% CI = 1.50-1.66) (Parsons et al., 2009). In another meta-analysis, the quit rate for six months was 22% in the nicotine patch group and 22% in the placebo group (Fiore et al., 1994). In our study, we did not only use NRT, but we found a one-year smoking cessation rate of 31.6% in individuals with NRT and behavioural therapy. The smoking cessation rate was 27% (Roddy, 2004) and 28% in two studies using bupropion treatment for six months (Hays et al., 2001). In a study comparing bupropion and nicotine patches, after 9 weeks of treatment, cessation rates were 32.5% for placebo, 41.4% for nicotine patches, 57.8% for bupropion, and 66.1% for bupropion and NRT combination. At the end of 1 year, cessation rates were 35.5% in the combination group, 30.3% in the bupropion group, 16.4% in the patch group, and 15.6% in the placebo group (Jorenby et al., 1999). In these studies, it was not indicated whether behavioural therapy was added or not to medical treatment (Jorenby et al., 1999; Hays et al., 2001; Roddy, 2004). In our study, quitting rates were 29.4% in the bupropion and behavioural treatment group, compared to quitting rate with bupropion in the literature and 31.6% in the NRT and behavioural treatment group. In a study comparing varenicline and NRT, one group received 1 mg varenicline twice a day and the other group received 21 mg transdermal patch. At the end of the twelve weeks of standard treatment regimen, quitting rates with varenicline were significantly higher than rates with standard transdermal nicotine treatment (56% and 43%, respectively) (Cahill et al., 2009). In our study, the difference between varenicline and NRT in terms of smoking cessation was not significant.

In a meta-analysis, it was shown that smoking cessation rate increased significantly for six months in parallel with the total minute duration in behaviour therapy contacts. The ratios of quitting were 14% in one to three minutes of counselling, 19% in 4-30 minutes of counselling and 27% in 31-90 minutes of counselling and 11% dropout rates was found among patients who did not take counselling therapy was given (Fiore, 2011). In our study, the rate of one-year smoking cessation was 31.7% in individuals who received only behavioural treatment.

In a placebo-controlled study which enrolled 51 patients the authors evaluated the use of combinations of bupropion SR and nicotine patch, and nicotine gum and behavioural therapy; they showed that addition of bupropion SR to the treatment regimen increased the reduction rate more than 50% (Evins et al., 2007). In our study, the rate of one-year smoking cessation was 41.7% in individuals using combined therapy. However, in our study, since the number of individuals who received combined treatment was very small, individuals were examined as one group heading, regardless of their drug differences.

Our study had some limitations. Retrospective method of the study may have been prevented the standardization of treatment. Because it is a single-center study, the patient population does not represent the whole population. In our study behavioural therapy applied to the patients was not uniform. So this could cause a confounding effect on the results. We had to exclude patients who had missing follow-up and quit smoking data. This limited the number of included patients.

As a result; Although there was no significant difference among the quitting methods used in our study, the quit rates (31.8%) were higher than the non-intervention quit rates reported in the literature. Patients with a high level of addiction benefit from smoking cessation methods. Being married in the smoking cessation process may positively affects the success of cessation. Since smoking is started mostly in adolescents and early youth, there is an urgent need for preventive measures to stop smoking and especially not to start.

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