

Investigation of the results of a smoking cessation clinic and the factors associated with success

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Aim: To investigate the success rate and factors affecting success at a smoking cessation clinic.

Materials and methods: In this study, 608 patients (397 male and 211 female) admitted to a smoking cessation clinic to quit smoking between 1 January 2006 and 1 June 2010 were investigated. Routine biochemical and hematological tests, pulmonary function tests, exhaled carbon monoxide levels, electrocardiographs, and chest X-rays were obtained from all of the patients. The questionnaire forms, including the Fagerström Test for Nicotine Dependence (FTND), were filled by all of the participants. At the end of months 6, 12, and 18, the smoking cessation success rates were reviewed. Factors contributing to the success rate, causes of smoking, difficulties encountered in quitting, and factors that increased the desire to smoke were evaluated. SPSS 11 was used in the statistical analyses (chi-square test). $P < 0.05$ was considered statistically significant.

Results: Statistically significant factors included male sex, obtaining physician advice, and an FTND score of ≤ 6 . Inclination was the most common cause of starting to smoke, and the most commonly encountered difficulty in quitting was irritability and an increased desire to smoke in the postprandial period.

Conclusion: This study found a smoking cessation success rate of 40.4% over 1 year. The clinic was effective for smoking cessation. The findings from this clinic will be valuable for future tobacco control studies.

Key words: Tobacco control, smoking cessation clinic, smoking addiction

Sigara bırakma kliniği sonuçları ve başarıyı etkileyen faktörlerin araştırılması

Amaç: Bu çalışmada, sigara bırakma (SB) polikliniğimizde başarı oranını ve başarıyı artıran faktörleri araştırmayı amaçladık.

Yöntem ve gereç: Çalışmamızda, 1 Ocak 2006 ve 1 Temmuz 2010 tarihleri arasında SB polikliniğimize başvuran 608 (397 erkek, 211 kadın) olgu incelendi. Olgulardan rutin biokimyasal, hematolojik testler, solunum fonksiyon testi, nefes CO ölçümü, elektrokardiografi ve postero-anterior akciğer grafisi istendi. Tüm olgulardan, sigara içme durumu, Fagerström nikotin bağımlılık testi (FTND) ve demografik bilgilerin yer aldığı poliklinik formunu doldurmaları istendi. Altı, 12 ve 18. ayın sonunda sigara bırakma oranları gözden geçirildi. Başarıyı etkileyen faktörler, sigaraya başlama nedenleri, bırakırken karşılaşılan güçlükler ve sigara içme isteğini artıran faktörler değerlendirildi. İstatistik analizde SPSS 11 (ki-kare testi) programı kullanıldı. $P < 0,05$ anlamlı kabul edildi.

Bulgular: İstatistiksel olarak başarıyı etkileyen faktörler, erkek cinsiyet, sigara bırakmaları için doktor tavsiyesi alma ve düşük ($6 \leq$ FTND) bağımlılık olarak saptandı. Sigaraya başlamada en sık neden özenme, sigarayı bırakırken en sık karşılaşılan güçlük sinirlilik ve sigara içme isteğinin en yüksek olarak yemek sonrasında olduğu saptandı.

Sonuç: Bu çalışmada başarı oranı bir yıl için % 40,4 olarak bulundu. Sigara bırakma polikliniği, başarılı sigara bırakmada etkin ve önemliydi. Elde edilen bilgilerin tütün kontrolü için gelecekte yapılacak çalışmalar için yararlı olacağını düşünmekteyiz.

Anahtar sözcükler: Tütün kontrolü, sigara bırakma kliniği, sigara bağımlılığı

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Introduction

Smoking cessation (SC) clinics are important medical establishments for tobacco control. These clinics have been established to assist smokers with SC.

Tobacco use is globally associated with mortality and morbidity due to chronic obstructive pulmonary disease (COPD), lung cancer, and other pulmonary diseases. Tobacco addiction is a disease that produces neurochemical and behavioral changes. Brief intervention approaches are the first step in SC and have an important role. Encouraging smokers who wish to quit will help ease the process of quitting.

In SC, combination therapy, or behavioral therapy with pharmacotherapy, is better than a single therapy method and significantly increases the success rate of abstinence. Additionally, Internet SC programs are useful. For example, quitlines have provided effective results for many people. SC programs should be supported by the media, as media messages have an important role in the success of these programs.

Tobacco use is a major contributor to the burden of health expenses. The disease burden related to tobacco use is declining in developed countries but has continued to increase in developing countries.

National interventions for SC may provide an important public health benefit, especially in developing countries. SC clinics that provide professional support are useful establishments. Public education, economic precautions, national laws and regulations, and evidence-based policy interventions are effective and should be used extensively. Tobacco control strategies have contributed to dramatic declines in the prevalence of smoking.

Materials and methods

In this study, 608 patients (397 male and 211 female) admitted to the smoking cessation clinic of the Department of Chest Disease of Atatürk University, Erzurum, Turkey, between 1 January 2006 and 1 June 2010 were investigated. Routine biochemical and hematological tests, pulmonary function tests (PFTs), expiratory carbon monoxide (CO) levels, electrocardiographs, and chest X-rays were obtained from all of the patients, and the results of these tests were recorded in their files. A standardized form that included demographic information, the Fagerström

Test for Nicotine Dependence (FTND) (1), and questions about the patient's smoking habits were completed by all of the participants. The age of the patients ranged from 14 to 74 years.

At the end of months 6, 12, and 18, the SC success rates were reviewed. The patients were divided into groups based on many factors, such as sex, age at which they began smoking, and their FTND score (a score of 6 or lower versus a score of 7 or higher). PFTs, treatment options, educational level, amount of nicotine use, and job status were investigated for their effects on the success rate. The reason for starting to smoke, the difficulties encountered while trying to quit, and the factors that increased the desire to smoke were evaluated.

SPSS 11 was used in the statistical analyses. Chi-square tests were applied to evaluate the data. $P < 0.05$ was considered statistically significant.

Results

In this study, 608 patients (65%, $n = 397$ male; 35%, $n = 211$ female) were included. The mean ages were 40 ± 12 years for male participants and 37 ± 10 years for female participants (an overall range of 14-74, overall mean age of 39 ± 11). Previous thoughts of quitting smoking were reported by 85% ($n = 518$) of the patients, and 81% ($n = 499$) had attempted to quit smoking.

Inclination was the most common reason why participants started smoking (Figure 1). Irritability and the desire to smoke were the most commonly reported complaints while quitting (Figure 2). Meals were the most common trigger of cravings to smoke (Figure 3).

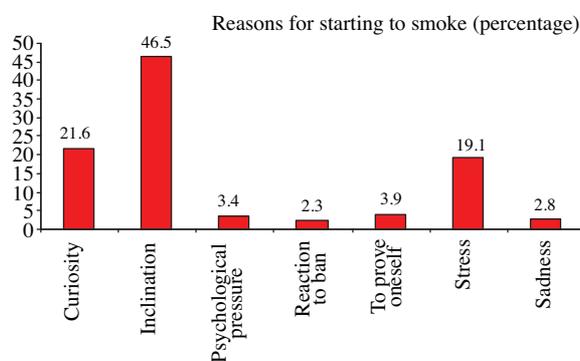


Figure 1. Reasons for starting to smoke.

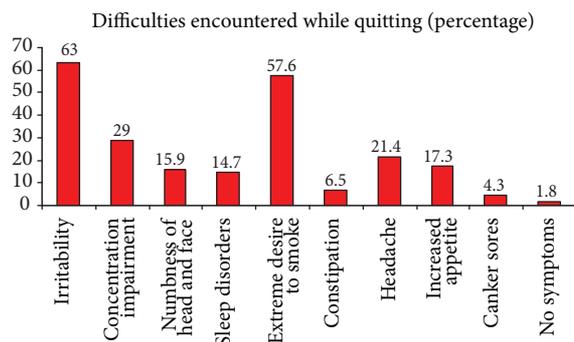


Figure 2. Difficulties encountered while quitting.

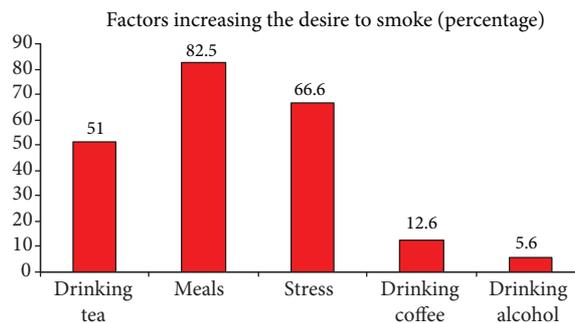


Figure 3. Factors increasing the desire to smoke.

The SC success rate was higher in males than in females, especially at the end of month 18 ($P = 0.001$) (Table 1).

It was demonstrated that a physician's advice to quit smoking was an important factor. At the end of months 6 and 12, the SC success rate was statistically significant ($P = 0.002$ and $P = 0.001$, respectively) (Table 2).

The SC success rate was higher in the group with an FTND score of ≤ 6 than in the other group. This result was statistically significant, especially at month 6 (Table 2).

The participant's job status, age at which he or she began smoking, educational level, cigarette consumption (in packs/day and packs/year), forced expiratory volume per second (FEV1), and forced vital capacity (FVC) did not impact the success of SC (Table 2).

Most patients (82%) were given behavioral + nicotine replacement therapy (NRT) treatment. All of the treatment methods had similar results (Table 2).

Male sex, advice from a physician, and an FTND score of ≥ 6 were statistically significant factors.

COPD, early-stage lung cancer, and cardiovascular disease were diagnosed in 7, 2, and 5 patients, respectively.

Discussion

SC clinics are important for tobacco control worldwide. These clinics have been established to assist to smokers in quitting. In Turkey, the number of these clinics has increased over time.

The success rate of SC in 1 year varies from clinic to clinic, from 10% to 43.2% (Table 3) (1-12). The causes of these differences may include population differences, the numbers of patients, or treatment methods. In the present study, the success rate was higher than that of other studies at month 6, but the results were similar to those of other studies at month 12. There are no studies with which to compare the results after 18 months. It is known that the success rate of quitting varies in the early and late periods. Generally, success rates are higher in the early period than in the late period. To increase the long-term success rate, intensive support must be provided to smokers while they are quitting and be continued afterwards.

Table 1. Smoking cessation success rates at 6, 12, and 18 months according to sex.

Sex / Months	6 months (%)	12 months (%)	18 months (%)
Female	49	38	24
Male	53	48	34
P-value	0.4	0.4	0.01

Table 2. Success rates at 6, 12, and 18 months according to the reason for clinic admission, employment status, age when smoking was initiated, FTND scores, FEV1/FVC (%), educational attainment, therapeutic approaches, daily consumption, and packs/year.

		6 months (%)	12 months (%)	18 months (%)
Reason for admission	Physician advice (9%)	73	63	44
	Patient request (87%)	49	37	30
	Other cause (4%)	64	50	36
	P-value	0.002	0.001	0.08
Employment status	Employed (56%)	49	41	30
	Unemployed (33%)	53	39	32
	Retired (11%)	53	45	29
	P-value	0.7	0.6	0.8
Age when smoking was initiated	Before 20 years old (78%)	52	41	32
	After 20 years old (22%)	52	38	26
	P-value	0.9	0.5	0.2
FTND scores	≤6 (53%)	58	44	35
	≥7 (47%)	45	36	27
	P-value	0.03	0.04	0.03
FEV1/FVC (%)	<70 (13%)	50	42	32
	≤70 (87%)	52	41	31
	P-value	0.7	0.8	0.9
Educational attainment	Primary school graduate (20%)	55	45	35
	Middle school graduate (12%)	53	45	33
	High school graduate (32%)	52	40	32
	University graduate (34%)	49	38	28
	P-value	0.7	0.5	0.5
Therapeutic approaches	Behavioral (6%)	54	38	35
	B ¹ + NRT ² (82%)	50	40	30
	B + NRT+ bupropion (2%)	67	33	33
	B + bupropion (7%)	69	53	38
	B + varenicline (3%)	65	55	30
	P-value	0.7	0.2	0.8
Daily consumption	≤1 pack per day (65%)	55	44	34
	>1 pack per day (35%)	46	32	27
	P-value	0.05	0.08	0.08
Packs/year	≤20 packs/year (83%)	52	41	32
	>20 packs/year (17%)	50	39	28
	P-value	0.5	0.7	0.5

¹B, behavioral; ²NRT, nicotine replacement treatments.

Table 3. Comparison of the success rates (%) in previous studies with the present study.

Studies	Success rate (%) at the end of each period (months)				
	3	6	9	12	18
ACS and AASCC ¹ (2)		21.42		17.87	
Foulds et al. (3)	17.7				
Akkaya et al. (4)				43.26	
Tonnesen et al. (4)		24			
TNSG ² (4)		26			
Zow et al. outpatient group inpatient group (5)				36 32	
Giraud et al. (6)		27			
Fung et al. (7)				32	
Demir et al. (8)				33.6	
Sippel et al. (9)			11		
Smith et al. (10)		*29.9			
Rovina et al. (11)				**34.3	
Pardell et al. (12)		42.7		33.7	
Present study		51.7		40.4	30.9

*Bupropion + lozenge.

**Bupropion SR + cognitive behavioral group therapy.

¹American Cancer Society and American Lung Association Smoking Cessation clinics.

²Transdermal Nicotine Study Group.

Most smokers have considered quitting and have attempted to quit smoking. In this study, this rate was 81%. In a study by Lando et al., the rate of quit attempts was 82.9% (2). The rate of prior quit attempts was 79%-85% in another study (9). In the study by Lando et al., most current smokers (71.8%) indicated that they had previously tried to quit (13). Similarly, 70% of Americans who smoke say that they would like to quit. Approximately 30% of those Americans make a serious quit attempt each year. Fewer than 10% of these succeed in quitting permanently (14). Generally, the results of all of the studies regarding quit attempts have been similar.

Physician advice is one of the most effective factors to encourage SC. In this study, physician advice was a significant factor for the success rate ($P = 0.001$). This factor also had an important role in other studies. Therefore, healthcare professionals should be encouraged to advise and motivate patients to quit

smoking. All physicians should ask all patients if they smoke and whether they are willing to quit. Among the participants in this study who received physician advice to quit smoking, the cessation rate was significantly greater than among those who did not receive this advice (15). In a study in Switzerland by Eckert and Junker, physician advice to quit smoking motivated patients and increased their desire to quit (53%), especially among heavier smokers (16). Ossip-Klein et al., in their investigation, found that over half of smokers over 50 years of age had received physician advice to quit and that the advice had influenced the patient's decision "extremely" or "quite a lot." Approximately one-third of patients indicated that this advice increased their confidence in quitting (17). Gilpin et al. compared smokers who had never been advised to quit by their physician and those who had been advised to quit at their last visit. Quitting attempts were higher in smokers who were advised

to quit by their physicians (18). Almost half (46.5%) of the current smokers indicated that a physician had advised them to quit smoking. Furthermore, 56.6% indicated that advice from a physician would be helpful to them in quitting (13).

A physician's advice to quit smoking is a simple intervention to incorporate at every visit for every smoker and has an important impact on tobacco control. Most smokers visit their family physician almost every year. Their physician's advice to quit will increase their motivation to quit smoking. The rate of patients referred by a physician was low (13.6% overall; 5.8% general practitioners, 3.8% office specialists, and 4% hospital physicians (9). All physicians must be encouraged to advise their patients to quit smoking. Physicians are health role models and leaders, and they can affect attitudes in the community. It is also important for patients to quit smoking so that they may serve as a role model for their children.

Smoking status should be considered as a vital sign and can be gathered using 2 questions. These questions should address the patient's smoking status and plans to quit, which may encourage an increased amount of SC counseling by physicians (19). Keeping records of the smoking status of all patients may also be important for future practices. If the patient is a smoker, the physician may intervene earlier to assist in quitting. Technology-driven interventions have recently gained popularity, and using these may help SC programs.

A study by Lindsay et al. found that physicians who had previously taken part in formal training programs for SC counseling felt more prepared to counsel patients and spent more time doing so than their counterparts who had not received formal training. These findings suggest that special training programs for physicians will enhance their perceived preparedness and increase the likelihood that they will engage in appropriate strategies with patients (20).

Liu and Tang stated in their letter that physicians have an ethical obligation to educate their patients about SC and should routinely provide advice on quitting (21).

A study demonstrated that a "pay-for-performance program" substantially increased the rate of clinician

referrals to tobacco quitline services (22). Tobacco quitlines use evidence-based treatments to help smokers, and smokers can be referred by their clinicians to these services (20). The "It's time" SC program explained that a reduction in the prevalence of smoking depends on the widespread delivery of the program to all patients who smoke (23).

In the present study, 13% of the patients had an FEV1/FVC lower than 70%. This finding was not significant when compared to the FEV1/FVC values found in the literature. If the numbers of both groups were equal or approximately equal, the results may have been different. It has been shown that a history of COPD has no effect on the success of SC. The success rate was 29% in patients with COPD and 49% in the healthy control group (24). In another study by the same author, in 2 groups of patients, with pulmonary disease (such as COPD or lung cancer) and healthy controls, the smoking quit rate was 41.2% and 38.2% at the end of 1 year, respectively ($P > 0.005$). In this trial, having a serious smoking-related disease did not motivate smokers to quit smoking (25).

A brief intervention including the 5 As (ask, assess, advise, assist, and arrange) has increased SC rates and decreased morbidity and mortality due to smoking.

Different treatment methods have resulted in different success rates, but any treatment is better than a placebo (2,3,8,12). In the present study, a placebo was not used. We most commonly used NRT and behavioral support. For other treatments, the success rate was not statistically significant.

In a study of 300 physicians and pharmacists, Pardell et al. observed that the success rates of NRT after 6 and 12 months were 42.7% and 33.7%, respectively (12). In a study by Demir et al., smokers were divided into 2 groups. Either NRT, education, and motivation or only education and motivation were given to the first and second groups, respectively, for SC, and the success rates were 33.6% and 10.9%, respectively (8). Quit rates were 11% at a 9-month follow-up in another study, in which all of the patients were given NRT. Most of the patients who wanted to quit smoking had not used NRT because of the cost. In the same study, the authors stated that routine spirometry and CO monitoring might be helpful for more motivated smokers (9).

In primary care clinics, the effectiveness of 5 SC pharmacotherapies was investigated. Six-month abstinence rates were found to be 16.8% for bupropion SR, 19.9% for the lozenge, 17.7% for the patch, 26.9% for the patch + lozenge, and 29.9% for bupropion + lozenge (10). In another study, if pharmacotherapy (bupropion SR) was combined with brief counseling, nonspecific psychological group support, and cognitive behavioral group therapy, the chance for success was increased, and sustained abstinence rates were 29.6%, 28.1%, and 34.3%, respectively, at the end of 12 months (11). The quit rates were not statistically significant among the different treatments (36% for bupropion, 36% for nicotine patch, 23% for nicotine patch + bupropion, and 38% for no pharmacotherapy) (5). In these studies, different treatment methods were used, and the results varied. However, combining the interventions has shown promising results when compared with a single intervention.

A study suggested that the “use of mass media is an effective method for informing smokers about cessation services and that enrolment could be improved by modifying public messages to address barriers as well as expanding outreach to specific demographic groups” (26).

Inclination to quit (“I just decided to quit”) was more important than NRT or the advice of a physician for former smokers. In the same literature, legislated measures (restriction on smoking in public places and on sales, less advertising, and higher taxes), cessation aids (cessation clinics, self-help books, and programs on TV/radio), and information about the harmful effects of tobacco were helpful for smokers who wanted to quit (27). Smokers who were confident in their ability to quit had a higher abstinence rate (34%) than those who were not (5%) at 12 months (7).

Male sex, physician’s advice, and an FTND score of 6 or higher were statistically significant factors in the present study. Fung et al. demonstrated that the following factors have been consistently related to successful abstinence: male sex, lower dependence on nicotine, older age, higher socioeconomic status

or educational achievement, previous quit attempts, and health concerns or problems. In the same study, the prognostic factors favoring SC were as follows: having no heavy smokers in the family or the nearby environment, consumption of fewer than 25 cigarettes with a nicotine content of less than 0.6 mg, smoking at breakfast or later, an FTND score of less than 6, and previous attempts to stop smoking lasting more than 1 week (9). Generally, a lower dependency and being male were common factors in SC achievement.

In the present study, it was found that patients frequently experienced irritability (63%) and a desire to smoke (57.6%) (Figure 2). These rates were higher during treatment than at other times. Can et al. found that 52.6% of their patients had complaints while quitting (28). Stress (56%), irritability (28%), withdrawal (22%), and weight gain (9%) were factors that impacted the decision to start smoking again (7). Irritability (8.5%) and concentration difficulties (7.4%) were found in another study (8). A resolution of these problems is important for continuing the treatment and success in SC.

In the present study, 79% of the subjects had started smoking before the age of 20. In another study, 90% of the subjects had started smoking before the age of 20 (6). There was no statistically significant difference in the abstinence rates according to the age at which patients began to smoke.

In conclusion, our clinics were more successful than most of those in previous studies. A physician’s advice to quit smoking was the most important factor related to successful SC. Physicians must be encouraged to advise all smokers to quit. Additionally, the level of nicotine dependence was an important factor for success. Overall, we conclude that SC clinics improve public health and that the number of these clinics should be increased.

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