

Smoking habits and cessation success

What differs among adults and elderly?

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ABSTRACT

الأهداف: لتحديد العوامل المؤثرة لنجاح برنامج الإقلاع عن التدخين لمختلف الفئات العمرية، وحضور مركز الإقلاع عن التدخين (SCC) في بلدية إزمير بالكوفا.

الطريقة: كانت هذه الدراسة تدخلية واشتملت على 761 مريضاً والذين حضروا مركز الإقلاع عن التدخين (SCC) في بلدية إزمير بالكوفا. خلال الفترة من نوفمبر 2009م إلى ديسمبر 2011م. فالمتغيرات هي الإقلاع عن التدخين بشكل ناجح للسنة الأولى والمميزات الاجتماعية والديمقراطية ومحاولات سابقة للإقلاع عن التدخين وتدخين الزوج ومستوى الاعتماد على النيكوتين وخطورة الإصابة بالاعتكاف وطريقة الإقلاع عن التدخين وجود الأمراض المزمنة، تقليل التدخين في العام الماضي. وقد تم تحليل البيانات باستخدام الانحدار اللوجستي.

النتائج: قللوا من تدخين السجائر العام الماضي 43.8% من كبار السن و62.7% من البالغين. وذكرت تقارير سابقة أن معدل 11 سيجارة أو أكثر يومياً لـ 83.6% من المسنين و90.6% من البالغين. ثلثي المشاركين في كلا المجموعتين حاولوا الإقلاع عن التدخين. فقد كان مجموعة المقلعين عن التدخين 49% من المسنين و33.4% من البالغين. أظهر الاختبار أن الانحدار اللوجستي ومستوى اعتماد النيكوتين القليلة والمعتدلة ارتفاع لنجاح الإقلاع عن التدخين [OR=2.39 (1.11-5.17), p=0.026]، بينما في مجموعة المسنين، زيادة في العمر، [OR=1.02 (1.01-1.04), p=0.044]، [OR=1.69 (1.07-2.68), p=0.025]، ومستوى اعتماد النيكوتين القليلة والمعتدلة [OR=1.65 (1.09-2.49), p=0.018] واستخدام الدواء [OR=1.70 (1.13-2.56), p=0.011].

الخلاصة: هنالك متغيرات مختلفة في مجموعات عمرية مختلفة قد تؤثر في نجاح برنامج الإقلاع عن التدخين. ويجب أخذها بعين الاعتبار.

Objectives: To determine factors affecting smoking cessation success in different age groups.

Methods: This was an intervention study consisting of 761 patients attending the Balçova Municipality, Smoke Cessation Center, Izmir, Turkey, between November 2009 and December 2011. Variables were successful smoking cessation for one year, socio-demographic features, previous attempts at smoking cessation, a smoking spouse, nicotine dependency level, risk of depression, method of smoking cessation, presence of chronic disease, and decreasing smoking in the last year. Data was analyzed by logistic regression.

Results: Approximately 43.8% of the elderly, and 62.7% of the adults reduced the number of cigarettes smoked in the past year. Approximately 83.6% of the elderly and 90.6% of the adults reported previously smoking 11 or more cigarettes daily. Two-thirds of the participants in both groups had tried smoking cessation. Smoking cessation was 49% in the elderly group and 33.4% in the adult group. The logistic regression test showed that moderate and less nicotine dependency level increased the success of cessation in the elderly group (odds ratio [OR]=2.39, 95% confidence interval [95% CI] 1.11-5.17, p=0.026), while in the adult group: increasing age (OR=1.02, 95% CI: 1.01-1.04, p=0.044), male gender (OR=1.69, 95% CI: 1.07-2.68, p=0.025), moderate and less nicotine dependency level (OR=1.65, 95% CI: 1.09-2.49, p=0.018), and the use of medication (OR=1.70, 95% CI: 1.13-2.56, p=0.011) increased the success.

Conclusions: Different variables in different age groups may affect successful smoking cessation. These should be taken into consideration in efforts at smoking cessation.

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Smoking behavior for all age groups is a major health risk. More than 5 million people worldwide each year lose their lives due to smoking. By 2030, this number is expected to exceed 8 million.¹ According to the Global Adult Tobacco Survey 2012,² which was the second global survey after 2010, 27% of adults >15 years of age were currently daily smokers. Smoking is more frequent in the 35-44 years age group (36.2%), and in the 25-34 years age group (34.9%). Elderly smoking prevalence is lower compared with the younger age group.² Smoking prevalence in the elderly varies between 13.2-25%,^{3,4} according to some studies conducted in Turkey. Although smoking cessation reduced the risk of mortality in all age groups, the benefits of smoking cessation were especially observed in the younger age group. The case is different with the elderly. Resistance to changing long-term habits was the biggest obstacle to elderly smoking cessation, and they also had the belief that smoking cessation would not be beneficial at their age.⁵ However, it is also important to support smoking cessation in the elderly as the quality of life may be increased, diseases may be controlled more easily, and finally life expectancy may increase if it is accomplished.^{6,7} However, doctors recommend smoking cessation less to the elderly compared with the younger patients. In a study conducted in England,⁸ grandsons and granddaughters were one of the main factors in smoking cessation. In adults, possible health problems in the future, and social concerns were more prominent.^{9,10} Different age groups may have different priorities. The purpose of the current study was to determine the factors affecting success in smoking cessation in adults and the elderly attending the Izmir Balcova Municipality Smoking Cessation Center (SCC).

Methods. This was an interventional study conducted in the Izmir Balcova Municipality SCC, Izmir, Turkey. Dokuz Eylul University Ethical Committee reviewed and approved the study protocol (796-GOA/2012). Verbal and written consents were obtained from all participants.

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Study participants. Our study was carried out at the Balcova Municipality SCC, Izmir, western Turkey. This was a community-based center. The clinic was established to reduce smoking as a part of the Balçova Heart Study activity.¹¹ The study population consisted of 826 patients who were admitted to the center between November 2009 and December 2011, with a minimum number of 4 visits during the study period. Of the 826, 761 participants that completed a 12-month follow-up were enrolled into the study (Figure 1).

The questionnaire and file contained 3 sections: 1) socio-demographic data: age, gender, education level, marital status, employment status. 2) Smoking history: age at onset of smoking, age of initiation of regular smoking, status of reducing smoking within the last year, the number of cigarettes smoked per day, smoking in the household, earlier attempts to quit smoking. 3) Initial and follow-up notes: physical examination, nicotine dependence level, the presence of signs and respiratory carbon monoxide (CO) level at the first visit, the presence of the risk of depression, smoking cessation method, chronic illness presence, and smoking cessation condition at follow up.

The dependent variable was “smoking cessation success for one year”. At the end of the 12 month

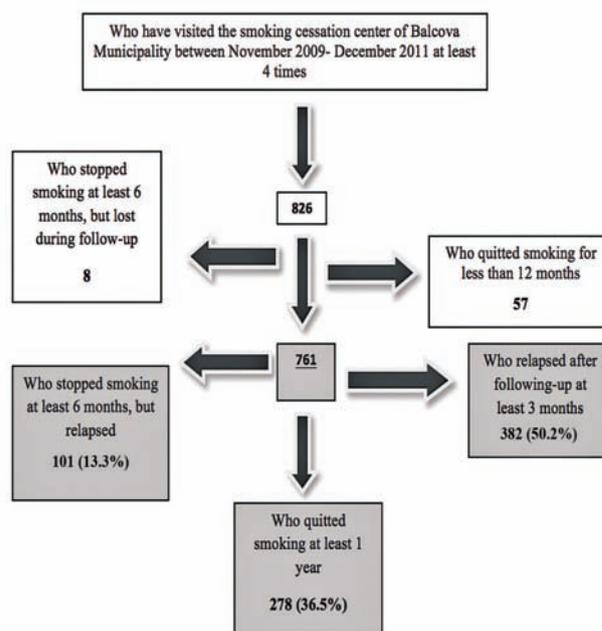


Figure 1 - Flow chart of the studied population consisting of 826 patients admitted to the cessation center of Izmir Balcova Municipality Smoking Cessation Center (SCC), between November 2009 and December 2011, with a minimum number of 4 visits during the study period.

follow-up and patient's statement regarding smoking cessation was considered. Relapse was defined as smoking at least one cigarette.¹² We considered the patient an adult if under 60 years of age, and elderly if 60 years and above. Presence of chronic disease included self-reporting of hypertension, diabetes, asthma, bronchitis, stroke, cancer, and coronary heart disease diagnosed by a physician. Nicotine dependency was revealed by the Fagerstrom dependency test.¹³ Risk of depression was assessed by the Hospital Anxiety and Depression Scale. The validity and reliability of the scale was established by Yazici et al.^{14,15} Respiratory levels of carbon monoxide (CO) was measured with a Pico brand carboxymeter (piCO+™ CO monitor, Bedfont Scientific Ltd, England, UK).

Smokers who sought help to quit smoking applied to the center. Physical examinations upon admittance were carried out by a physician. Counseling issues included: dealing with nicotine withdrawal symptoms, lifestyle changes, and motivation. Levels of CO, nicotine, and depression were also determined. The treatment modality was decided with the participation

of the patient, considering all the possible alternatives. Behavioral therapy was also provided by a psychologist. At the end of the first application, a date for smoking cessation was determined.

Patients were followed-up for one year according to the center's protocol: once a week in the first month, every second week in the second month, and monthly after the third month. Follow-up in the first month was performed by the physician, other follow ups were carried out by phone call using the trained personnel of the center. The results of each follow-up were recorded.

Statistical analysis. The Statistical Package for Social Sciences for Windows, version 15.0 (SPSS Inc., Chicago, IL, USA) was used for data analysis. The descriptive data was provided as mean \pm standard deviation (SD) or median (min-max). The Chi-squared test was firstly used for the analytic assessment, and then logistic regression. The Type 1 (α) Error was considered as 0.05.

Results. Demographic characteristics of the participants were presented in Table 1. The mean age was 44.1 ± 10.2 (16-59 years) in the adult group, and 66.0 ± 5.2 (60-86 years) in the elderly group. The smoking history and habits of the adults and elderly are presented in Table 2. Eighty-six of the elders (56.2%) had at least one chronic disease, 35.9% had hypertension, 17.2% had coronary heart disease, 16.3% had diabetes, 5.9% had cancer, 9.8% had asthma and bronchitis, and 6.6% had a history of stroke. In the adult group, 183 (30.1%) had at least one chronic disease, as follows: 16.5% hypertension, 2.3% cancer, and 8.6% asthma and bronchitis, 7.4% diabetes, 4.1% coronary heart disease, and 1.3% stroke.

Behavioral therapy was provided to 88 elders (57.5%). In the elderly medication group, 53.8% used bupropion, 23.1% varenicline, and 23.1% nicotine replacement therapy. Behavioral therapy was provided to 308 adults (50.7%). In the adult medication group, 34.3% used varenicline, 48.7% bupropion, and 17% nicotine replacement therapy. Nicotine dependence at

Table 1 - Demographic characteristics of the studied population consisting of 761 patients admitted to the cessation center of Balcova municipality between November 2009 and December 2011.

| Variables | Adult smokers n=608 | Elderly smokers n=153 |
|---|------------------------|--------------------------|
| Gender | | |
| Male | 288 (47.4) | 101 (66.0) |
| Female | 320 (52.6) | 52 (34.0) |
| Education | | |
| ≤ 5 years | 168 (27.6) | 85 (55.5) |
| 6-8 years | 71 (11.7) | 16 (10.5) |
| ≥ 9 years | 369 (60.7) | 52 (34.0) |
| Marital status | | |
| Married | 486 (80.0) | 128 (83.7) |
| Other* | 122 (20.1) | 25 (16.3) |
| Work status† | | |
| Retired | 147 (25.3) | 102 (68.5) |
| Housewife | 165 (28.4) | 30 (20.1) |
| Who work with regular income | 229 (39.3) | 9 (6.0) |
| Who work with irregular income and unemployed | 39 (6.7) | 8 (5.4) |

Data are expressed as number and percentage (%).
*divorced/separated/widowed/single; †580 adults and 149 elders

Table 2 - Smoking history and habits among 761 patients admitted to the cessation center of Balcova municipality between November 2009 and December 2011.

| Variable | Adult smokers n=608 | | Elder smokers n=153 | |
|---|------------------------|---------|------------------------|---------|
| | Median | Min-Max | Median | Min-Max |
| Age at onset of smoking | 17 | 6-43 | 18 | 6-53 |
| Age at initiation of regular smoking | 19 | 7-45 | 20 | 10-55 |
| Reduced level of smoking in the past year (%) | 102 | 16.9 | 67 | 43.8 |
| Smoking 11 or more cigarettes daily (%) | 550 | 90.6 | 127 | 83.6 |
| Had earlier attempts to quit smoking (%) | 454 | 75.4 | 119 | 77.8 |
| Smoking in the household (%) | 324 | 53.3 | 68 | 44.4 |

the beginning, kind of treatment used, and smoking status at the end of one year is given in Table 3.

Successful smoking cessation as a result of the interference was 49% (n=75) in the elderly, and 33.4% (n=203) in the adults ($p<0.001$). The most common reasons for smoking cessation in both groups were fear of future illness (80.7%), to be a role model (78%), and to be less harmful to the environment (77.9%). While being a role model (80.4%) was the most often cited reason for the elderly, the fear of future illness (81.7%) was most frequent in the adult group. More than half

of both groups cited economic reasons for the desire to cease smoking. Doctors' recommendations were effective in 50% of both groups, and more frequent in the elderly group. Reasons for smoking cessation for adults and elderly are presented in Figure 2.

The effect of independent variables on smoking cessation by age group were analyzed using the logistic regression (Table 4). The success of smoking cessation in the elderly was significantly affected by levels of nicotine dependence that were moderate and less, while for adults, success was affected by increasing age, male gender, having moderate and less nicotine dependence, and being treated with medication.

Table 3 - Nicotine dependence at the beginning, kind of treatment, and smoking status at the end of one year among 761 patients admitted to the cessation center of Balcova municipality between November 2009 and December 2011.

| Variables | Adult smokers n=608 | | Elderly smokers n=153 | |
|--|------------------------|--------|--------------------------|--------|
| | n | (%) | n | (%) |
| <i>Nicotine dependence level at first visit (Fagerstrom score)</i> | | | | |
| Very low | 62 | (10.2) | 28 | (18.3) |
| Low | 102 | (16.8) | 33 | (21.6) |
| Moderate | 90 | (14.8) | 16 | (10.5) |
| Severe | 214 | (35.2) | 45 | (29.4) |
| Very severe | 140 | (23.0) | 31 | (20.3) |
| <i>Treatment</i> | | | | |
| Behavioral therapy | 196 | (32.2) | 68 | (44.4) |
| Nicotine replacement therapy | 70 | (11.5) | 19 | (12.4) |
| Bupropion | 216 | (35.5) | 46 | (30.1) |
| Varenicline | 126 | (20.7) | 20 | (13.1) |
| <i>Smoking cessation condition at the end of one year</i> | | | | |
| Ex-smokers | 203 | (33.4) | 75 | (49.0) |
| Relapse | 85 | (14.0) | 16 | (10.5) |
| Continuous smoking | 320 | (52.6) | 62 | (40.5) |

Discussion. The strength of the study was the long duration of follow up, which was a full year. Another powerful aspect of the study was conducting it in a community-based center. The major limitation of our study was the lack of smoking status confirmation by exhaled CO values in a substantial number of subjects. In our study, one out of 2 elderly and one out of 3 adults quit smoking. In Brazil, smoking cessation success for one year was 43.5% for adults and 53.3% for the elderly.¹⁶ In our study, the success of smoking cessation was significantly higher in the elderly than adults. Studies from Turkey, Spain, and Poland reported a rise in smoking cessation with increasing age.^{2,17-21} Diseases resulting from smoking are more prominent in the elderly, with increasing awareness and quitting.¹⁶ In our study, the most common smoking cessation reasons for both groups were to be a role model, fear of future

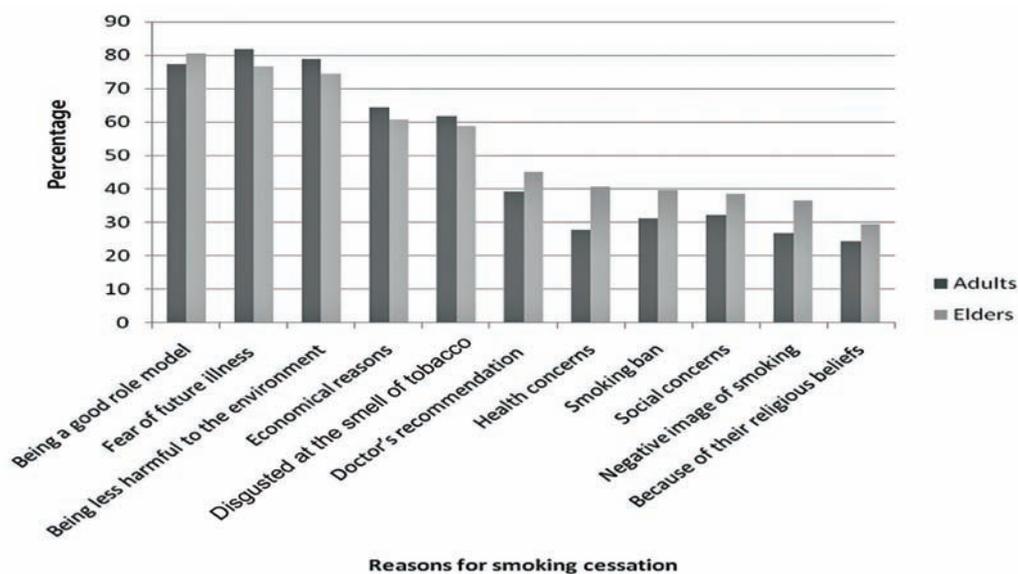


Figure 2 - Reasons for smoking cessation in adults and elders among 761 patients admitted to the cessation center of Balcova municipality between November 2009 and December 2011.

Table 4 - The effects of variables on smoking cessation success among 761 patients admitted to the cessation center of Balçova municipality between November 2009 and December 2011.

| Variables | Smoking cessation success | | | |
|--|---------------------------|---------|-------------------------|---------|
| | Adult smokers (n=608) | | Elderly smokers (n=153) | |
| | OR (95% CI) | P-value | OR (95% CI) | P-value |
| Age (continuous variable) | 1.02 (1.01-1.04) | 0.044 | 1.08 (0.99-1.17) | 0.054 |
| Gender (male) | 1.69 (1.07-2.68) | 0.025 | 2.01 (0.72-5.63) | 0.184 |
| Working condition (having regular income) | 0.94 (0.58-1.52) | 0.793 | 0.46 (0.16-1.34) | 0.155 |
| Nicotine dependence (moderate and below) | 1.65 (1.09-2.49) | 0.018 | 2.39 (1.11-5.17) | 0.026 |
| Partner's smoking status (no) | 1.25 (0.83-1.87) | 0.284 | 1.33 (0.58-3.06) | 0.507 |
| Treatment method (drug therapy) | 1.70 (1.13-2.56) | 0.011 | 1.06 (0.48-2.37) | 0.884 |
| No risk of depression | 1.47 (0.90-2.41) | 0.128 | 1.23 (0.45-3.35) | 0.681 |
| Has chronic diseases | 1.20 (0.78-1.87) | 0.409 | 0.97 (0.47-2.04) | 0.941 |
| Decreased the number of cigarettes smoked over the last year | 1.19 (0.78-1.81) | 0.419 | 0.94 (0.33-2.71) | 0.910 |

Reference groups for logistic regression: being female, not working with regular income, being severe-very severe nicotine dependent, having a smoker partner, taking behavioral therapy, risk of depression, no chronic diseases, not decreased the number of cigarettes smoked over the last year. CI - confidence intervals

disease, and the desire not to be harmful to others. Having a disease already was obviously more frequent in the elderly. While adults who want to quit because of financial reasons had significantly lower success, adults who want to quit because of the unpleasant smell associated with smoking had significantly higher success. It has been reported that, smoking cessation success is lower in disadvantaged groups such as low socio-economic conditions.^{22,23} Reasons for smoking cessation in some studies were reported as preventing long-term health problems, social concerns, to protect other people's health, unpleasant smell, and staining of hands and teeth.^{9,10} In a qualitative study that was carried out in the same region, smokers described cigarettes as a friend, and smoking as a dependency that could not be abandoned. However, they also described cigarette as torture linked to weakness of will and unpleasant smell. Smokers' main reasons for smoking were regarding cigarettes as a "friend" and a way to cope with daily stresses and problems.²⁴

Taking doctors' advice to give up smoking was stated as a reason for smoking cessation by almost half of both groups, and it was more common in the elderly group. This data shows us the importance of health workers' sensitivity in providing information on a product that is known to be harmful. Many studies have shown the positive effect of doctors' advice on smoking cessation.^{10,25,26} A qualitative study has reported that patients disliked doctors who smokes.²⁴ Health workers should realize that opposing tobacco consumption for health reasons, and being a role model is part of their professional attitude.

Our study showed that smoking cessation success in the elderly was increased by the level of nicotine

dependency, which was moderate or less. In adults, increasing age, male gender, nicotine dependency, which was moderate or less, and medication increased the success rate. In a Turkish study,²⁷ smoking cessation success was increased by male gender, doctors' advice, and a low level of dependency. Female gender in adults seems to be a factor which decreases success rates. It is known that women are more prone to the effects of the substances they use and therefore find it easier to be addicted.²⁸⁻³⁰ As in our study, a high nicotine dependency level had a negative effect in smoking cessation success both in adults and the elderly.^{16,17,19,30,31} In Spain,¹⁷ smoking cessation success found to be increased by increasing age, a spouse not smoking. While in Poland¹⁸ by high level of education, knowing the hazards of smoking, and having a job. In a multicenter study from North Carolina,³² it was found that chronic disease and psychological stress may have a significantly positive effect on smoking cessation in the elderly when compared with adults. Medication increased smoking cessation success significantly.²⁶ In our center, medication and health service provision was free from charge. Providing free medication or acquiring health insurance coverage for medication would increase smoking cessation. Reda et al³³ reported that when there was a reimbursement for any kind of medication by health insurance, smoking cessation for at least 6 months was increased by 4.38 fold (CI: 1.94-9.87). Perception of cigarettes as a part of daily life and smoking as a beneficial are shown to be obstacles for smoking cessation. To increase the success rate, time for cessation should be flexible, the smoker should do this with freewill, the service should be free, and there should be family and peer support.^{23,34} In our study, two thirds of the adults and elderly had made

attempts to quit smoking. Smoking cessation attempts in the last 12 months for the age group 15 and older was 45%, and for the elderly 41%.² It was stressed that motivation for smoking cessation was necessary, but not always enough on its own. In a study conducted in 4 western countries,³⁵ high level of education and income had a positive effect on willingness to give up smoking and success in smoking cessation. For each level of education, smoking cessation success was increased both with the increasing age and also by the increase of educational level. In the lower education group, willingness to give up smoking and success in doing so increased as age increased. Smoking cessation success differed from country to country. Reasons were socioeconomic, personal, or political. In the same study, people with a high socioeconomic level found it easier to quit smoking abruptly. Gradual smoking cessation, while having a lower success rate, was more commonly preferred by people of lower socioeconomic level.^{35,36} Although economic difficulties increase the willingness to give up, it has an adverse effect on success. In Asia, willpower in smoking cessation success is more important than in western countries.³⁷ In our study, educational levels or income had no effect on smoking cessation. Smoking was common in all education levels; this might cause insignificant differences. The factor of 'income' was considered to be 'a job with regular income,' and housewives were not considered as having a regular income. Different classifications might cause different results from other studies.

In conclusion, our study revealed that, smoking cessation success was increased by nicotine dependency level in the elderly, and by medication, nicotine dependency level, and male gender in adults. Therefore, we suggest the use of medication in smoking cessation programs for adults. Continuous follow-up and support for the patients might result in higher success in smoking cessation. It is beneficial to know which factors affect smoking cessation and willingness to quit smoking in different age groups, and develop an approach and strategies towards smoking cessation accordingly.

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