Smoking cessation among patients at a university hospital in Curitiba, Brazil*

Cessação de tabagismo em pacientes de um hospital universitário em Curitiba

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Abstract

Objective: To determine the prevalence of smoking and the frequency of smoking cessation counseling among patients at a university hospital, as well as to compare smokers and former smokers in terms of smoking history. **Methods:** A cross-sectional study involving 629 patients at the Federal University of Paraná *Hospital de Clínicas*, located in the city of Curitiba, Brazil. **Results:** Of the 629 patients, 206 (32.7%) were male, 76 (12.1%) were smokers, 179 (28.5%) were former smokers, and 374 (59.5%) were nonsmokers. The mean age of the patients was 49.9 ± 15.0 years (range, 18-84 years). Of the 76 smokers and 179 former smokers, 72 (94.7%) and 166 (92.7%), respectively, were questioned about tobacco use. Smoking history and degree of nicotine dependence were higher among the former smokers (p = 0.0292 and p = 0.0125, respectively). Gender, age at smoking initiation, physician inquiry about tobacco use, and smoking cessation counseling were comparable between the two groups. The smoking cessation rate was 0.70. The prevalence of heavy smoking varied by gender and by age bracket, being higher in males and in the 41-70 year age bracket. **Conclusions:** The smoking prevalence in this group of patients was lower than that reported for patients at another university hospital, for adults in Curitiba, and for adults in Brazil. The smoking cessation rate was higher in these patients than in the general population of Curitiba. Smokers and former smokers differed regarding age, smoking history, and degree of nicotine dependence. Heavy smoking and a moderate or high degree of nicotine dependence were not obstacles to smoking cessation.

Keywords: Smoking/prevention & control; Smoking cessation; Hospitalization/statistics & numerical data.

Resumo

Objetivo: Determinar a prevalência de tabagismo e do aconselhamento para a cessação do tabagismo em um grupo de pacientes de um hospital universitário, assim como comparar a carga tabágica entre fumantes e ex-fumantes. **Métodos:** Estudo transversal com 629 pacientes do Hospital de Clínicas da Universidade Federal do Paraná, localizado em Curitiba. **Resultados:** Dos 629 pacientes, 206 (32,7%) eram do sexo masculino, 76 (12,1%) eram fumantes, 179 (28,5%) eram ex-fumantes, e 374 (59,5%) eram não fumantes. A média de idade dos pacientes foi de 49,9 ± 15,0 anos (variação: 18-84 anos). Dos 76 fumantes e 179 ex-fumantes, 72 (94,7%) e 166 (92,7%), respectivamente, foram indagados sobre o hábito de fumar. A carga tabágica e o grau de dependência de nicotina foram maiores entre os ex-fumantes (p = 0,0292 e p = 0,0125, respectivamente). Gênero, idade ao início do tabagismo, questionamento médico sobre hábito de fumar e orientação para cessação do fumo foram semelhantes entre os dois grupos. O índice de cessação de tabagismo foi de 0,70. A prevalência de fumo pesado variou entre os gêneros e as faixas etárias — maior entre os homens e na faixa etária de 41-70 anos. **Conclusões:** A prevalência de tabagismo neste grupo de pacientes foi menor do que a observada em pacientes de outro hospital universitário e na população adulta de Curitiba e do Brasil. O índice de cessação do tabagismo foi maior do que o da população de Curitiba. Fumantes e ex-fumantes diferiram em relação à idade, à carga tabágica e ao grau de dependência. Fumo pesado e dependência média ou elevada não impediram cessação do tabagismo.

Descritores: Tabagismo/prevenção & controle; Abandono do hábito de fumar; Hospitalização/estatística & dados numéricos.

Introduction

Smoking is an epidemic disease resulting from nicotine dependence. In the tenth revision of the International Classification of Diseases,[1] the World Health Organization included smoking in the group of mental and behavioral disorders caused by psychoactive substance use. The pharmacological and behavioral processes leading to nicotine dependence are similar to those leading to dependence on drugs such as heroin and cocaine.[2] Worldwide, smoking is the leading preventable cause of death, accounting for 15% of all deaths in developed countries.[3,4]

In Brazil, smoking-related noncommunicable diseases and conditions accounted for approximately 63% of deaths from identifiable causes in 2004.[5] It is estimated that there are 200,000 smoking-related deaths in Brazil every year.[2]

There is no safe level of exposure to nicotine, nor is there a safe way to be exposed to nicotine. Nonsmokers who live or work with smokers are at a 30% higher risk of lung cancer and a 25% higher risk of myocardial infarction than are those who do not.[4] Smoking cessation is the *sine qua non* for the reduction of smoking-related morbidity and mortality.

In 1996, the Brazilian National Cancer Institute created the National Program for Smoking Control,[2] and, since 2002, the program known as Treatment and Support for Smokers[4] and the Brazilian Medical Association guidelines on nicotine abuse and dependence[6] have recommended the use of counseling and pharmacological treatment to promote and facilitate smoking cessation. Public health care facilities should provide cognitive-behavioral therapy and pharmacological treatment to smokers at no cost. Health care professionals, including dentists and oral hygiene technicians, should question their patients about smoking, provide them with smoking cessation counseling/motivation, and offer them treatment or refer them to pharmacological treatment.[2,5]

The objective of the present study was to determine the prevalence of smoking, the rate of physician intervention for smoking, and the frequency of smoking cessation counseling among patients at a university hospital, as well as to compare smokers and former smokers in terms of smoking history.

Methods

This was a cross-sectional study involving only 629 patients under treatment at the *Hospital de Clínicas da Universidade Federal do Paraná* (HC-UFPR, Federal University of Paraná *Hospital de Clínicas*), located in the city of Curitiba, Brazil. Of those 629 patients, 90 (14.3%) were treated in the Department of Clinical Surgery, 55 (8.7%) were treated in the Department of General Clinical Medicine, 410 (65.2%) were treated in the Department of Specialized Clinical Medicine, and 74 (11.8%) were treated in the Department of Gynecology and Obstetrics. The patients were invited to participate in the study when reporting to the HC-UFPR Clinical Analysis Department for collection of biological material. All participants completed a specific questionnaire administered by medical students at the UFPR, between 6:30 and 7:30 a.m., between February 10 and 20 and on February 26 and 27, 2009, as well as between March 3 and 16 of the same year.

Smokers were defined as individuals who, at the time of the interview, had smoked any amount of tobacco, in any form, for at least six months. Former smokers were defined as those who, having been smokers, had not smoked any amount of tobacco, in any form, in the last six months. Nonsmokers were defined as those who had never smoked or who had smoked so little or sporadically, at some point in their lifetime, that they could not be considered smokers or former smokers. Passive smokers were defined as nonsmokers who were routinely exposed to smoking in unventilated indoor environments, either in the workplace or at home.

Smoking history was measured in pack-years, which is an indicator calculated by multiplying the number of packs of cigarettes smoked per day by the number of years of consumption. The degree of nicotine dependence was determined by administering the Brazilian Portuguese-language version of the Fagerström Test for Nicotine Dependence (FTND) crafted by Carmo & Pueyo.[7] Heavy smokers were defined as those who reported smoking more than 20 cigarettes per day. The smoking cessation rate, which corresponds to the percentage of former smokers among those who have smoked at least once in their lifetime, is the ratio between the number of former smokers and the sum of the numbers of current and former smokers.[8]

For the descriptive analysis, quantitative variables with non-normal distribution (as determined by the Shapiro-Wilk test) were summarized as means and standard deviations, whereas those with normal distribution were summarized as medians and limits. Categorical variables were summarized as frequencies and percentages with 95% CIs. In order to compare the groups (smokers vs. former smokers), we used the independent sample t-test or ANOVA for quantitative variables with normal distribution and the Mann-Whitney test for those with non-normal distribution. For categorical variables, we used the chi-square test or Fischer's exact test, when recommended. The level of statistical significance was set at $p < 0.05$.[9] We used the STATISTICA software, version 7.0 (StatSoft Inc., Tulsa, OK, USA).

The study was approved by the HC-UFPR Research Ethics Committee. All participants gave written informed consent.

Results

Of the 648 patients who completed the questionnaire, 629 were included in the study. Of those, 206 (32.7%) were male. The mean age was 49.9 ± 15.0 (range, 18-84 years). A total of 19 patients were excluded from the study because they were under 18 years of age.

Of the 629 study patients, 76 (12.1%) were smokers, 179 (28.5%) were former smokers, and 374 (59.5%) were nonsmokers. Of the 76 smokers, 32 (42.1%) were male and 44 (57.9%) were female (Table 1). Among the smokers, 89.5% reported willingness to quit smoking and 84.2% had attempted to quit smoking at least once. Among the former smokers, the most common reasons for smoking cessation were those related to maintaining or recovering health and to pregnancy (in 56.4%), and 95.5% reported having quit smoking using willpower alone. The smoking cessation rate was 0.70 (95% CI: 0.64-0.76). The mean age of the smokers was 47.1 ± 12.5 years (range 18-76 years), whereas the mean age of the former smokers was 52.3 ± 14.6 (range, 18-84 years; p = 0.0070). The mean age at smoking initiation among the smokers and the former smokers was 16.3 ± 5.9 years (range, 6-46 years) and 16.1 ± 4.8 years (range: 5-35 years), respectively (p = 0.8379). The median smoking history among the smokers and the former smokers was 11.2 pack-years (limits, 0.05-245.0) and 20.0 pack-years (limits, 0.05-320.0) , respectively (p = 0.0292). Among the smokers, the degree of nicotine dependence, as determined by the FTND, was found to be low in 57 respondents (75.0%), moderate in 13 (17.1%), and high in 6 (7.9%); whereas, among the former smokers, a low, moderate, and high degree of nicotine dependence affected

Table 1 – Distribution of the characteristics of the study participants for the sample as a whole and by gender. Federal University of Paraná *Hospital de Clínicas*, 2009.

Characteristic	Gender				Total		p
	Male		Female				
	n = 206		n = 423		n = 629		
	n (%)	95% CI	n (%)	95% CI	n (%)	95% CI	
Smoking status							0.0001*
Smoker	32 (15.5)	10.9-21.2	44 (10.4)	7.7-13.7	76 (12.0)	9.6-14.9	
Former smoker	76 (36.9)	30.3-43.9	103 (24.4)	20.3-28.7	179 (28.5)	25.0-32.2	
Nonsmoker	98 (47.6)	40.6-54.6	276 (65.2)	60.5-69.9	374 (59.5)	55.5-63.3	
Age bracket, years							0.0313*
18-25	11 (5.3)	2.7-9.4	30 (7.1)	4.8-10.0	41 (6.5)	4.7-8.7	
26-40	40 (19.4)	14.2-25.5	101 (23.9)	19.9-28.2	141 (22.4)	19.2-25.9	
41-55	65 (31.6)	25.3-38.4	149 (35.2)	30.7-40.0	214 (34.0)	30.3-37.9	
56-70	64 (31.1)	24.8-37.9	118 (27.9)	23.7-32.4	182 (28.9)	25.4-32.7	
> 70	26 (12.6)	8.4-17.9	25 (5.9)	3.9-8.6	51 (8.1)	6.1-10.5	
Age[a]	52.2 ± 15.5		48.7 ± 14.6		49.3 ± 15.6		0.0061**
Prevalence of smoking[b]	32.8 (29.1-36.6)		67.2 (63.4-70.9)		59.5 (55.5-63.3)		

[a]Data expressed as mean ± SD. [b]Data expressed as % (95% CI). *Chi-square test. **Independent sample t-test.
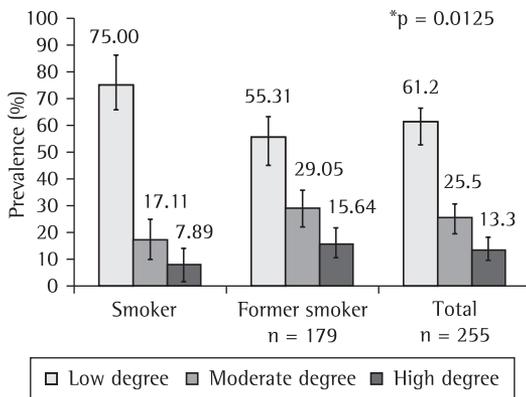
Figure 1 – Degree of nicotine dependence of the smokers and former smokers in the study sample. Federal University of Paraná *Hospital de Clínicas*, 2009. *Chi-square test.

99 (55.3%), 52 (29.1%), and 28 (15.6%), respectively (p = 0.0125; Figure 1). Seventy-two smokers (94.7%) and 166 former smokers (92.7%) had been asked about their smoking habits. Of those, 17 smokers (22.4%) and 30 former smokers (16.8%) had received smoking cessation counseling from their physicians, and 57 (22.4%) reported being aware of the local

(Curitiba) smoking control program. The two groups did not differ significantly regarding gender, age at smoking initiation, physician inquiry about smoking, or physician counseling regarding smoking cessation (Table 2).

The degree of nicotine dependence was different among the age groups (p = 0.0002; Figure 2) and similar between males and females (p = 0.4066; Figure 3). The degree of nicotine dependence was predominantly low in those between 26 and 70 years of age and predominantly moderate or high in those between 41 and 70 years of age. The prevalence of heavy smoking varied by age bracket (p = 0.0021; Figure 3) and by gender, being 44.2% (95% CI: 36.0-52.6) and 61.1% (95% CI: 51.2-70.3) in females and in males, respectively (p = 0.0111; Figure 3). The highest rates of heavy smoking were found in those between 41 and 70 years of age. The rate of smoking cessation, estimated at 0.70 (95% CI: 0.62-0.77), was higher at the extremes of age (Figure 2).

Discussion

The prevalence of smoking found among the patients at the HC-UFPR in the present study (12.1%; 95% CI: 9.5-14.9) is significantly lower

Table 2 – Clinical and demographic characteristics of smokers and former smokers. Federal University of Paraná *Hospital de Clínicas*, 2009.

Characteristic	Smokers	Former smokers	Total	p
	n = 76	n = 179	n = 255	
Male gender[a]	32 (42.1)	76 (42.5)	108 (42.4)	0.9312*
Age[b]	47.1 ± 12.5	52.3 ± 14.6	50.8 ± 14.2	0.0070**
Age bracket, years[a]				0.0043***
18-25	2 (2.6)	9 (5.0)	11 (4.3)	
26-40	25 (32.9)	27 (15.1)	52 (20.4)	
41-55	30 (39.5)	64 (35.8)	94 (36.9)	
56-70	17 (22.4)	62 (34.6)	79 (31.0)	
> 70	2 (2.6)	17 (9.5)	19 (7.4)	
Age at smoking initiation, years[b]	16.3 ± 5.9	16.1 ± 4.8	16.2 ± 5.13	0.8379*
Smoking history, pack-years[c]	11.2 (0.05-245.0)	20.0 (0.05-320.0)	20.0 (0.05-320.0)	0.0292****
Degree of dependence[a]				0.0125***
Low	57 (75.0)	99 (55.3)	156 (61.2)	
Moderate	13 (17.1)	52 (29.1)	65 (25.5)	
High	6 (7.9)	28 (15.6)	34 (13.3)	
Heavy smoker[a]	30 (39.5)	101 (56.4)	131 (51.4)	0.0193*
Physician inquiry[a]	72 (94.7)	166 (92.7)	238 (93.3)	0.7558*
Physician counseling[a]	17 (22.4)	30 (16.8)	47 (18.4)	0.3789*

[a]Data expressed as n (%). [b]Data expressed as mean ± SD. [c]Data expressed as median (limits). *Chi-square test with Yates' correction. **Independent sample t-test. ***Chi-square test. ****Mann-Whitney test for independent samples.
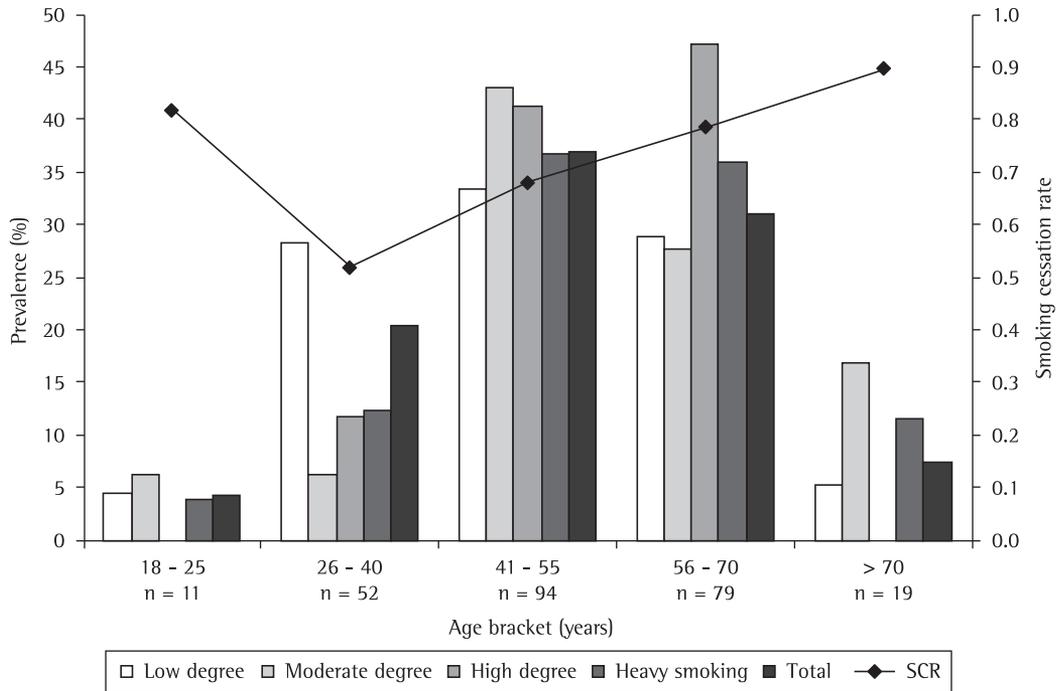
Figure 2 – Smoking history, degree of nicotine dependence, and smoking cessation rate among the smokers and former smokers in the study sample, by age bracket. Federal University of Paraná *Hospital de Clínicas*, 2009. SCR: smoking cessation rate. Note: Degree of dependence (p = 0.0002) and heavy smoking (p = 0.0020); chi-square test for both.

than that reported for adults in Brazil (16.1%), for adults in Curitiba (19.3%; 95% CI: 16.9-21.8), and for inpatients at the Botucatu School of Medicine *Hospital das Clínicas*, located in the state of São Paulo, Brazil (22.6%; 95% CI: 16.8-29.3).[10,11]

In the last 20 years, the prevalence of smoking in adults has decreased by more than 50% in Brazil, from 34.8% in 1989 to 22.4% in 2003, and, since 2006, has leveled off at approximately 16% (15.5% in 2009).[5,10] This decrease is attributable to interventions that have been introduced to prevent and control smoking, including educational, preventive, and regulatory measures, since the implementation of the Brazilian National Program for Smoking Control in 1996, as well as to the restrictions on the advertising, marketing, and consumption of cigarettes that came into effect in 2000.[3] The decrease is also attributable to public awareness campaigns about the dangers of smoking, the dissemination of the concept that smoking is a form of addiction, the law mandating smoke-free environments, the reduced social

acceptability of smoking, and the availability of treatment at no cost.[5,12]

In 2009, the prevalence of smoking in adults in Brazil ranged from 8.0% in the city of Aracajú to 22.5% in the city of Porto Alegre. In all Brazilian capitals, the smoking habit was more prevalent among males.[10] In Curitiba, the overall prevalence of smoking was 19.3% (95% CI: 16.9-21.8); among males, the prevalence of smoking was 23.0% (95% CI: 19.0-26.9), compared with 16.1% (95% CI: 13.1-19.2) among females, and the latter two rates are, respectively, the third and fourth highest smoking prevalence rates reported in Brazilian capitals.[10]

The prevalence of smoking found in this study, which involved a specific population—patients at a university hospital—is significantly lower than that reported in a study of a population with similar characteristics (patients at the Botucatu *Hospital das Clínicas*) and that reported in population-based studies, which indicates that differences observed in prevalence cannot be attributed exclusively to differences among samples.[10,11] This lower prevalence could
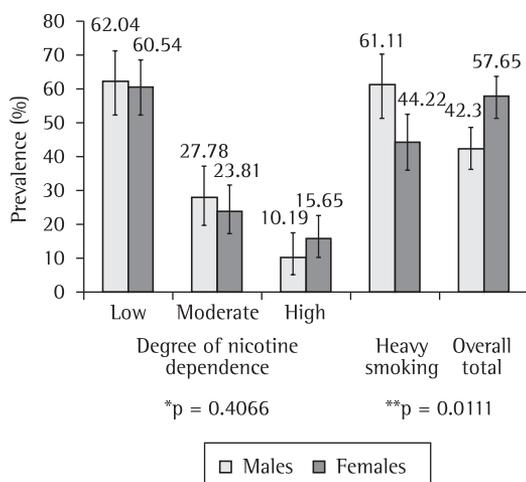
Figure 3 – Degree of nicotine dependence and prevalence of heavy smoking among smokers and former smokers, by gender. Federal University of Paraná *Hospital de Clínicas*, 2009. *Chi-square test. **Chi-square test with Yates' correction.

reflect not only the benefits of the anti-smoking campaigns and the dissemination of knowledge about the dangers of smoking but could also be associated with a difference in terms of physician intervention: 93.3% of the patients (smokers and nonsmokers) were asked about smoking; and 17.7% received smoking cessation counseling. However, there have been studies suggesting that clinical and demographic characteristics correlate with smoking cessation. Peixoto et al. found smoking cessation to correlate positively with being ≥ 40 years of age, having had ≥ 4 years of schooling, having two or more chronic diseases, and having had more than one medical visit in the last year.[13] The motivation for smoking cessation might therefore be linked not only to physician intervention, as mentioned above, but also to a history of disease.[14]

The fact that the present study was conducted at a university hospital suggests that physician interventions were preventive, possibly different from those applied in the study conducted by Peixoto et al.,[13] which was a population-based study. However, the fact that most patients attributed their motivation for smoking cessation to health maintenance/recovery or to pregnancy, not recognizing the direct effect of physician intervention, makes us consider the contribution of previous diseases and of physician instructions for their control and

treatment, especially, the control and prevention of sedentary habits, smoking, overweight, and alcohol consumption. Nevertheless, the efficacy of physician intervention for smoking cessation is proven and unquestionable. Smoking cessation was confirmed as follows: the prevalence of former smokers in the present study was 28.5% (95% CI: 25.0-32.2), which was higher than the rate of 23.8% (95% CI: 20.9-26.7) estimated for the population of Curitiba in 2009[10]; and the smoking cessation rate in the present study was 0.70 (95% CI: 0.62-0.77), which was significantly higher than the rate of 0.55 (95% CI: 0.52-0.59; p < 0.0001) reported for Curitiba[10] and showed a trend toward significance when compared with the rate of 0.60 (95% CI: 0.51-0.70; p = 0.0914) reported in the study conducted at the Botucatu School of Medicine *Hospital das Clínicas*.[11]

The consensus guidelines for the approach to and treatment of smokers established in 2001[4] and 2008[15] confirmed the effectiveness of cognitive-behavioral therapy in increasing abstinence rates. Systematic reviews have shown that smoking cessation is associated with care and counseling, as well as with the implementation of comprehensive, multi-strategy interventions.[16-19] Even simple interventions, without previous planning and with an emphasis on motivation for smoking cessation, show favorable results.[20,21] However, it should be borne in mind that smoking cessation is multifactorial[9,14,22-27] and is often hindered by factors unrelated to physician intervention.[28]

In addition to physician intervention, there are pharmacological treatments that assist patients in smoking cessation. Physicians should know about the methods available, effective medications, and major difficulties encountered by patients in smoking cessation, providing those patients with appropriate counseling and thus increasing smoking cessation success rates.[29]

The highest smoking cessation rates were found among the youngest and the oldest age groups, both of which have been associated with a higher rate of smoking cessation in other studies.[13,14] The higher degrees of nicotine dependence and greater smoking history found among former smokers suggest that these factors are not obstacles to smoking cessation. On the contrary, these factors could be useful, informing health care professionals that they

should not feel discouraged by the resistance shown by heavy smokers who face the need to quit smoking. Smoking more cigarettes per day has been identified as a predictor of smoking cessation in elderly subjects.[22]

The present study has at least two limitations. The study population, composed exclusively of patients at a university hospital, prevents us from generalizing the estimates reported here to other populations. In addition, the smoking cessation estimates were based on self-reports, which, despite constituting a measure with proven validity,[30] were not confirmed by biochemical tests.

In this group of patients, the prevalence of smoking was lower than that reported for patients at another university hospital, for adults in Curitiba, and for adults in Brazil. The smoking cessation rate in our sample was higher than the estimated rate for the population of Curitiba. In the present study, smokers and former smokers differed regarding age, smoking history, and degree of nicotine dependence. Heavy smoking and a moderate or high degree of nicotine dependence were not found to be obstacles to smoking cessation. Smokers and former smokers were comparable in terms of gender and age at smoking initiation, as well as in terms of physician inquiry about smoking and physician counseling regarding smoking cessation. It is now known that even a brief physician intervention for smoking has a beneficial effect on the smoking cessation process. In addition to older patients and those with chronic disease, other groups that are particularly susceptible to smoking cessation should be identified, which could inform choices regarding specific methods of intervention.

Acknowledgments

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