Original Article

Smoking among physicians in a specific region of the greater metropolitan area of São Paulo*

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ABSTRACT

Objective: To evaluate the prevalence of and describe the methods used to control the smoking habit among a geographically-specific population of physicians. **Methods:** Questionnaires were distributed to physicians practicing in a region of the greater metropolitan area of São Paulo area known as the "ABC Paulista" (comprising the municipalities of Santo Andre, São Bernardo and São Caetano), and completed questionnaires were received from 678 physicians, all registered with the São Paulo State Regional Council of Medicine. **Results:** Of the 678 responding physicians, 58 (8.6%) were smokers, 183 (27.0%) were former smokers, and 437 (64.5%) were nonsmokers. No gender-based differences were found. Nor were there any significant differences in prevalence based on medical specialty. Most of the smokers had tried to stop smoking. Among the smokers, cessation methods were used by 7%: nicotine replacement therapy by 4.3%; and acupuncture by 2.7%. Most of the former smokers (88.1%) had successfully quit smoking without using any cessation methods. **Conclusion:** The prevalence of smoking among physicians in the ABC Paulista region was 8.6%. In this region, the majority of physicians who quit smoking did so without the aid of smoking cessation methods. Among those who did use such methods, nicotine replacement therapy was the method of choice.

Keywords: Prevalence; Smoking; Physicians; Smoking cessation

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INTRODUCTION

Smoking is the leading cause of premature death and disease, as well as the leading single cause of death in modern society, especially in developed countries.[1]

According to data from the World Health Organization, there are currently one billion two hundred and sixty million active smokers worldwide. In other words, one-third of the adult population of the world smokes. If we take into account the fact that each active smoker interacts with at least two nonsmokers, the number of people directly or indirectly exposed to tobacco smoke reaches three billion, corresponding to half of the world population, which is currently estimated to be approximately six billion inhabitants.[2]

Currently, four million people per year die from smoking-related diseases, which are responsible for 1/6 of all deaths worldwide (1/4 in rich countries and 1/8 in poor countries), subtracting, on average, 22 years from the life from each smoker.[2] In developed countries, there are currently three million deaths per year.[2] If this panorama does not change, we will have approximately ten million deaths per year in 2030, and 70% of those will occur in the developing world (Asia, Africa and Latin America).[2-3]

At the end of the 1960s, the American Medical Association produced posters that read: "100,000 doctors have quit smoking. Maybe they know something you don't."[4] This example highlights the fact that the physician plays a vital role in the fight against smoking, being, among health professionals, the main opinion maker (the one who is the most observed by all).

Medical advice, given in a consistent fashion, is an efficient antismoking tactic. Physicians can and should influence the motivation process in patients who are smokers.[5-6] However, for such advice to be productive, physicians have to set an example and should not smoke. By smoking, physicians may "undermine" their arguments. Smokers will rarely be convinced to abandon their habit if their counselor, a physician, is a smoker.

To date, there have been no studies on the prevalence of smoking, either among physicians or in the general population, in the region of the greater metropolitan area of São Paulo known as the "ABC Paulista" (comprising the municipalities of São Andre, São Bernardo and São Caetano).

It is known that 90% of smokers who abandon the habit do so without the aid of any cessation methods. There have been no studies analyzing the smoking cessation methods used by physicians in Brazil. Nor have there been any recent studies on the prevalence of smoking among physicians practicing in the state of São Paulo.

METHODS

A cross-sectional study was carried out based on letters sent to all physicians practicing in the ABC Paulista region (n = 2191), all registered with the São Paulo State Regional Council of Medicine. Of those 2191, 967 resided in Santo André, 651 resided in São Bernardo, and 573 resided in São Caetano. The letters were mailed by the Council at the beginning of the month of August, 2000. As a condition imposed by the Council, the authors of this study had no access to physician names or addresses.

Responding physicians completed the questionnaire spontaneously and anonymously. Postage-paid envelopes were enclosed, and the survey was therefore conducted at no cost to the physicians. The deadline set for returning the questionnaires was the last day of October, 2000.

Based on the responses, responding physicians were divided into three groups: nonsmokers, smokers and former smokers. Smokers were defined as individuals who had smoked at least one cigarette per day for a month or longer or those who had stopped smoking less than a month prior. Former smokers were defined as individuals who had quit smoking more than a month prior.[7]

Due to the vast size of the sample, individuals were grouped into four age brackets so as to enable a better analysis of the results: under 35; 35 to 44; 45 to 54; and over 54.

In order to measure the intensity of smoking, three consumption ranges were defined: from one to ten cigarettes per day; from eleven to twenty cigarettes per day; and more than twenty cigarettes per day. Smoking intensity was also evaluated based on history of daily cigarette consumption, quantified in packs (twenty cigarettes) and number of years of use, a relationship known as pack-years.[8]

Statistical analysis was carried out using the Epi Info 6.04 software program. Categorical variables were analyzed using the chi-square test, whereas

quantitative variables were compared using analysis of variance (ANOVA) or the Kruskal-Wallis test. The adopted level of significance was 5%.

RESULTS

The present study evaluated the 678 physicians who completed the questionnaire. This number represents 30.9% of the target population.

Ages ranged from 24 to 84, with a mean of 43.40 ± 10.86 years. The sample consisted of 437 nonsmokers, 183 former smokers and 58 smokers. Table 1 shows that, based on the results of the chi-square test, there was a statistically significant correlation between gender and smoking ($p < 0.0001$), the number of nonsmokers being higher among males.

In order to analyze the prevalence of smoking in the different age brackets, it was necessary to group physicians independently of gender since there was a limited quantity of data in some strata (Table 2). In order to compare the age brackets, physicians were divided into ten-year age brackets. Since the over-65 group comprised only 25 physicians, these individuals were included in the over-55 age bracket in order to form more homogeneous groups. The chi-square test revealed that there was a statistically significant correlation between age bracket and smoking ($p < 0.001$), and that most of the nonsmokers were in the 35 to 44 age bracket. The majority of smokers were between 45 and 54 years of age.

There were no statistically significant differences among the various medical specialties in terms of smoking. It is of note that, in our sample, there were no smokers among the responding cardiologists (n = 20), and that there was only one smoker among the responding pulmonologists (n = 17).

Overall mean daily consumption of cigarettes among the smokers evaluated was 16.3 ± 7.8 cigarettes per day. Among females mean daily consumption of cigarettes was 14.1 ± 8.8 cigarettes, compared with 17.7 ± 6.8 among males, a difference that was less than statistically significant ($p = 0.17$).

Table 3 shows that most smokers, of either gender, smoked eleven to twenty cigarettes per day. Among the smokers who smoked more than ten cigarettes per day, there was a predominance of males, whereas among the smokers who smoked up to ten cigarettes per day, there was a predominance of females. However, these differences were not statistically significant. Smoking intensity was also measured in pack-years. We observed that 60% of the smokers had smoked for 11 to 40 pack-years, with mean of 23 ± 17.7 pack-years. Mean consumption history was 17.2 ± 15.9 pack-years among females and 26.6 ± 18 among males, a difference that was less than significant ($p = 0.056$). When smoking intensity was compared by age bracket, no significant differences were found ($p = 0.50$). The analysis of the duration of the smoking habit revealed that the mean was 24.7 ± 12.5 years, and no gender-based differences were found.

We also sought to identify the age at which individuals acquired the habit. Among smokers, this

TABLE 1

Distribution of former smokers, nonsmokers and smokers by gender

Gender	FS n (%)	NS n (%)	S n (%)	Total n (%)
Female	33 (12,8%)	204 (79,1%)	21 (8,1%)	258 (38,1%)
Male	150 (35,7%)	233 (55,5%)	37 (8,8%)	420 (61,9%)
Total n(%)	183 (27,0%)	437 (64,5%)	58 (8,6%)	678 (100%)

FS: former smokers, NS: nonsmokers; SM: smokers

TABLE 2

Smoking by age bracket

Age bracket	FS n (%)	NS n (%)	S n (%)	Total n (%)
< 35 years	11 (7,6%)	125 (86,2%)	9 (6,2%)	145 (21,4%)
35 to 44 years	71 (28,2%)	163 (64,7%)	18 (7,1%)	252 (37,2%)
45 to 54 years	55 (30,7%)	101 (56,4%)	23 (12,8%)	179 (26,4%)
> 55 years	46 (45,1%)	48 (47,1%)	8 (7,8%)	102 (15,0%)
Total n(%)	183 (27,0%)	437 (64,5%)	58 (8,6%)	678

FS: former smokers, NS: non smokers; SM: smokers

TABLE 3

Smoking intensity among smokers and former smokers by gender

Cigarrettes/day	Smokers** n (%)		Former smokers*** n (%)	
	female n (%)	male n (%)	female * n (%)	male* n (%)
1-10	8 (38,1%)	8 (23,5%)	19 (55,9%)	52 (35,4%)
11-20	11 (52,4%)	22 (64,7%)	14 (41,2%)	75 (51,0%)
More than 20	2 (9,5%)	4 (11,8%)	1 (2,9%)	20 (13,6%)
Total n (%)	21 (100%)	34 (100%)	34 (100%)	147 (100%)

*p = 0.04; **no data for 3 smokers; ***no data for 7 former smokers

age ranged from 12 to 33 years, with a mean of 18.4 ± 4.5, and 68.4% acquired the habit before the age of 20. There was no statistically significant gender-based difference regarding the age at which individuals acquired the habit (p = 0.46).

Most of the smokers (54.4%) had already tried to stop smoking, and 77.4% reported having tried at least three times. In addition, 81.8% expected to be able to give up the habit within the next five years.

Among former smokers, the age at which individuals acquired the habit ranged from 8 to 50 years, with a mean of 16.9 ± 4.6 years, and there was no statistically significant gender-based difference (p = 0.056). Similar to what was observed among smokers, approximately 82.5% of the former smokers acquired the habit before the age of 20. In comparison to smokers, former smokers acquired the habit earlier in life (p = 0.03). Former smokers used cigarettes for a mean period of 17.0 ± 10.3 years, and mean smoking cessation age was 34.6 ± 9.8 years. There was no statistical gender-based difference.

Table 3 shows smoking intensity by gender and reveals that most of the men smoked eleven to twenty cigarettes per day, whereas most of the women were smoked one to ten cigarettes per day (p = 0.04). Smoking intensity measured in pack-years was also greater among men than among women. Men smoked for 15.81 ± 15.23 pack-years versus 10.09 ± 11.95 pack-years for women (p = 0.003).

The mean number of attempts to stop smoking was 1.39 ± 1.69, and 92.3% of the professionals interviewed did not receive help from a physician to achieve their goal. Among former smokers, 65% managed to quit on the first or second attempt. The strongest motivation to quit smoking found in this sample was personal conscience (64.08%), and 13.05% stopped due to smoking-related diseases or due to pregnancy.

We analyzed the relationship between acquisition and cessation of the smoking habit by academic year. We observed that the majority (76%) had acquired the habit prior to admission to medical school, and that the majority (78.1%) had quit after graduation. The percentage of students who started smoking during medical school (22.0%) was similar to that of those who stopped smoking during medical school (20.3%) (p < 0.001).

Table 4 shows the methods used by physicians to overcome their dependence. We observe that the majority (88.1%) used no established cessation methods, nicotine replacement therapy was used by 4.3%, and only 1.08% used antidepressants. It is of note that two of the physicians evaluated revealed having used bupropion. However, those two reported having stopped smoking less than a month prior and were therefore classified as smokers.

Another question studied was the level of counseling offered by physicians to their patients. We observed that most of the health professionals studied always warned their patients of the harmful

TABLE 4

Cessation methods used by physicians who successfully gave up the smoking habit

Méthod	n	(%)
None	163	88.1
Nicotine replacement therapy	8	4.3
Antidepressants	2	1.1
Acupuncture	5	2.7
Self-help literature	2	1.1
Progressive daily reduction	2	1.1
Anxiolytics	1	0.5
Psychological support	1	0.5
Laser therapy	1	0.5
Total	185*	100,0

*some physicians used more than one method

TABLE 5

Smoking prevalence among Brazilian physicians

Author	Year	n	S (%)	FS (%)	NS (%)
Saltz, Gadia[15]	1981	500	29,0	29,0	52,0
Quagliato[10]	1994	440	15,6	23,3	61,1
Campos, Sobrinho[14]	1991	166	23,0	26,0	51,0
Campos, Machado[13]	1991	161	32,0	30,0	38,0
Campos[12]	1993	246	15,0	27,0	58,0
Campos[11]	1992	5158	24,9	23,6	51,5
Mirra, Rosemberg[6]	1997	11909	6,4	34,3	59,3
Halty et al[16]	2002	333	18,3	21,3	60,4
Guazzelli	2005	678	8,6	27	64,5

S: smokers; FS: former smokers, NS: nonsmokers

effects of smoking. However, only 62.1% of those who were smokers advised their patients to stop smoking, compared with 84.2% of those who were former smokers and 85.1% of those who were nonsmokers (p = 0.001). There were no differences based on workplace or medical specialty in terms of the level of counseling offered to smoking patients.

Physicians who were smokers and physicians who had been smokers exhibited similar behavior towards their patients: 10.5% of the smokers and 18.9% of the former smokers smoked in front of patients, and approximately 60% of both groups informed their patients of their tobacco dependence.

DISCUSSION

This study presents two possible biases: a selection bias, since it is possible that some smoking physicians were not motivated to complete the questionnaire, and an information bias, since some questions taxed the memory of the respondents.

Neither was it possible to check if all physicians residing in the ABC Paulista region actually received the questionnaire since the authors had no access to the names and addresses of the professionals.

The questionnaire was completed and returned by 678 physicians, representing 30.9% of the target population. This was greater than the 23.1% of responses obtained in a nationwide Brazilian study carried out in 1996 using a similar methodology.[6]

The prevalence of smoking found among the ABC Paulista region physicians who completed the questionnaire (8.6%) is lower than the approximately 23.9% found in the Brazilian population at large.[9] With regard to gender, we found, in the general population of Brazil, that the prevalence of smoking is lower among women than among men (25% vs. 42%). This difference was not found in the population studied, in which there was no gender-based difference in prevalence.

In Brazil, there have been few such studies. Most of those conducted have been regional, have used distinct methodologies and have involved differing sampling techniques.[6,10-16] Table 5 shows results of the main studies published, together with data from the present study. Although the studies are not comparable, smoking prevalence ranged from 6.4% to 32% of the physician population, showing, as would be expected, a decrease over the past 20 years. With regard to former smokers, the variation was less pronounced, which leads us to conclude that the decrease in the smoking habit among physicians reflects not only smoking cessation but also the increase in the number of nonsmokers, which has been growing over the past 20 years. The numbers found in the present study are similar to those reported in the 1996 study cited above,[6] confirming the existence of this tendency.

Taking into account these last studies, we observe that the smoking prevalence among Brazilian physicians is close to that found among physicians in countries such as the USA, England and Canada,[17-18] all of which present rates lower than 10%, and much lower than the rates found in Japan, Holland, Mexico and Spain.[18-23]

All of the studies revealed that more men than women managed to give up the habit. Among nonsmokers, there was a predominance of females over males in all of the studies. The results of the

present study reveal the same tendencies.

In the present study, there were no statistical differences among the various medical specialties in terms of smoking, as was also observed in two other studies.[11,13] A study published in 1997 evaluated 11,909 physicians.[6] The authors found the prevalence of smoking to be lower among those who belonged to specialties whose societies had effective smoking control programs. Such specialties include Pulmonology (2.2% smoking prevalence), Cardiology (4.3%), Oncology (3.7%) and Otorhinolaryngology (4.3%). If our study sample had been larger, it is possible that there would have been differences since, among the physicians responding, none of the cardiologists smoked, and only one of the pulmonologists smoked. Among pulmonologists alone, the one smoker found in our sample corresponds to a prevalence of 5.9%, whereas other authors found smoking prevalences from 0 to 17.5%.[6,11,16,24]

It is known that most smokers acquire the habit in their youth.[25] The same occurs among physicians. In the present study, 68.4% of the smokers and 82.5% of the former smokers acquired the habit before the age of 20, and therefore prior to graduation from medical school. Similar number have been reported in other Brazilian studies.[6,11-13,16]

Most of the smokers in our sample had already tried to stop smoking, and 77.4% of those had tried at least three times. Among former smokers, 65% managed to stop on the first or second attempt. These last data are different from those obtained for smokers who are not physicians and who normally make several attempts before they manage to give up the smoking habit.[26-27]

The mean age at smoking cessation was 32.87 years among female physicians and 34.94 years among male physicians, and there were no gender-based differences. These data are similar to those obtained in two other Brazilian studies.[11-12] The male physicians evaluated usually quit smoking after the age of 30, whereas the female physicians tended to quit at an earlier age.

We observed that, among the physicians in the ABC Paulista region who were former smokers, 76% had acquired the habit prior to admission to medical school, 22% during medical school and the minority after graduation. It is of note that the percentage of individuals who quit smoking during medical school is practically the same as that of those who started smoking during medical school. Similar results were reported in 1992 and 1993.[11-12] These data suggest that attending medical school did not influence the decision to start or stop smoking. It is likely that medical schools in general have not appropriately addressed the smoking issue. This aspect was also reported in a study conducted in England, in which smoking prevalences were reported to be high among medical students studying in the United Kingdom (from 11% to 35.7%), Poland and Spain (61%). The author reported probable deficiencies in the instruction related to smoking-related diseases and smoking cessation methods.[28] In a study conducted in the United States, the authors found a lower prevalence of smoking among medical students (3.3%).[29] In a recent Brazilian study, temporal smoking tendencies towards were observed among medical students of the Federal University of Pelotas between 1986 and 2002. The authors found that smoking prevalence declined, principally at the beginning of the period studied, to a final rate of 10.1% in 2002. The authors of this study stressed the possibility that the knowledge imparted to students is still limited and inefficacious.[30]

The fact that a greater proportion of physicians abandoned the habit after graduation surely cannot be attributed to the knowledge acquired in medical school since most smokers quit smoking after the age of 25.

It is known that 90% of all smokers who manage to stop smoking do so without the aid of cessation methods.[5] In the present study, 88.1% of the physicians gave up the habit without the aid of any established cessation methods, a behavior that is very similar to that of smokers who are not physicians. Among those who used such techniques, the method of choice was nicotine replacement therapy (4.3%). Antidepressants were used by only 1.1%. It is important to mention that bupropion, currently one of the most widely-used drugs in smoking cessation therapy, had been placed on the Brazilian market less than a year prior to our study being carried out and therefore was not well known among health professionals. Two physicians reported having used it, but they had abandoned the habit less than a month prior and were therefore considered smokers.

The fact that physicians who were smokers advised their patients to stop smoking less often

than did those who were former smokers or nonsmokers might reveal a lower level of consciousness regarding the smoking problem. With regard to the good example physicians should set, physicians who were smokers or former smokers were asked if they informed their patients of the fact that they smoked. In a study carried out in 1991,(12) it was observed that only 11% of smokers and 5% of former smokers concealed the fact that they smoked from their patients.

The present study found more favorable numbers: 33% of the smokers and 37% of the former smokers hid their habit from their patients. This improvement in the behavior of physicians towards their patients may be explained by the higher level of consciousness acquired by the medical community over the past ten years, or even by the pressure that society has put on this community regarding their behavior in relation to the smoking habit.

These data lead us to believe that medical schools should give the smoking issue the utmost attention, providing future physicians with a different perspective on the problem, thereby causing them to behave more appropriately as health professionals.

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