

Exposition to Smoking and Attitudes: Comparison Between Inquiries Applied to Adult Population in São Paulo City, 1987 and 2002

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Summary

Background: Periodic monitoring of smoking in the population is of interest to public health.

Objectives: To compare the prevalence of smoking and attitudes regarding smoking in a sample of residents of the city of Sao Paulo in 1987 and 2002.

Methods: Two random sampling household surveys were conducted among residents of the city of Sao Paulo in 1987 and 2002, with 1471 and 2103 interviewees aged from 15 to 59 years, respectively. In both, very similar questionnaires on smoking habits and attitudes toward smoking were administered.

Results: Age-adjusted prevalence of smoking dropped from 41.8% (in 1987) to 25.5% (in 2002) in males, and from 30.6% to 19.8 in females, respectively. We observed smoking reduction in all education levels, decrease in the mean number of cigarettes smoked per day among males (but increase among females), increased demand for low-tar cigarettes, increase in the number of individuals who had quit smoking for more than 10 years, increase in the number of those who had seriously tried to quit smoking, increase in the number of individuals who were considering to quit completely, and increased awareness that “smoking is harmful to health”.

Conclusion: There was a favorable change in the situation regarding smoking in the city of Sao Paulo from 1987 to 2002. (Arq Bras Cardiol 2007;88(5):301-308)

Key words: Smoking, prevalence; adult; sampling studies.

Introduction

The World Health Organization (WHO) considers smoking the major single and preventable cause of morbidity and mortality worldwide. The smoking pandemic is expected to become the leading cause of death by the middle of this century, killing more than tuberculosis, AIDS, traffic accidents, homicides, suicides, illegal drugs and alcohol combined¹.

Smoking is classified as one of the major risk factors for coronary disease, hypertension, stroke, bronchitis, emphysema and cancer, which are important causes of death in developed countries and in larger Brazilian cities¹⁻².

In Brazil, 200,000 annual deaths from tobacco-related diseases are estimated to occur³. Additionally, it has been verified that smoking cessation implies the reduction of mortality and/or of the prevalence and later development of related diseases⁴⁻⁵. Studies on the prevalence of smoking conducted at different moments showed that the number of smokers older than 15 years of age was widely variable according to the geographic area⁶⁻⁸.

Repeat cross-sectional population-based studies are a mean of monitoring the spreading of the smoking habit. In 1987, the Health Institute of the Sao Paulo (SP) State Department of Health (SDH) conducted a household survey in a sample of 1471 individuals aged from 15 to 59 years, residents of the city of Sao Paulo⁹. In 2002, the Epidemiologic Surveillance Center (ESC) of the SP-SDH conducted another survey among 2103 individuals of similar age residing in the same region¹⁰. The SP-SDH made both databases available, which enabled a direct comparison of the prevalence of smoking at those two time points.

Methods

Both surveys were cross-sectional population-based studies on risk factors for noncommunicable chronic diseases in individuals aged between 15 and 59 years, and were conducted in cooperation with the SP-SDH, one of them in 1987, and the other in 2001-2⁹⁻¹⁰. The method used was almost the same in both, and consisted of household interviews with individuals selected by drawing lots. The 2002 survey was conducted in 12 out of the 96 administrative districts intentionally selected in the city of Sao Paulo – so as to cover a geographic area similar to that of the 1987 survey (the administrative division of the city was different then).

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The phases of the sampling process were the following: 1) the census sectors of the districts selected, as informed by the IBGE, were ordered according to the mean income; 2) the census sectors within each district were systematically drawn by lot, with a probability proportional to the number of households informed by the Census; 3) within each census sector, the households were selected proportionally to the number of households in that sector; and 4) finally, within each household, one individual aged between 15 and 59 years was drawn by lot (sampling unit), using a balanced system proposed by Marques & Berquó¹¹. As regards quality control, routine phone calls were made to check the integrity of the interviews, and most of them (71.1%) were made on weekends, which allowed a good compliance on the part of male participants. Percentages of refusal to participate were 10% and 16% in the 1987 and 2002 surveys, respectively.

Data on gender, age, race/skin color, and education level variables were collected in both surveys, thus enabling comparisons between 1987 and 2002.

As regards tobacco smoking, the 1987 and 2002 surveys contained the following questions – with the same wording – that could also be compared:

– “Do you smoke everyday, sometimes, or do you not smoke any longer?”, with the following answer choices: a) daily (at least once a day); b) sometimes; c) do not smoke any longer; d) not applicable – the latter being left for those who had declared not to have smoked for six months or longer at any time of their lives. In the 1987 questionnaire, there was an additional option for this question: (e) do not know / do not want to answer. Individuals who chose option (a), regardless of the daily amount smoked, were considered cigarette smokers; those who chose option (b) were considered occasional smokers; and those who chose option (c) were considered former smokers.

– “In what month and year did you quit smoking?” – applicable to former smokers, expressed in years.

– “Do you smoke filter or non-filter cigarettes?” – applicable to smokers, with the answer choices: a) filtered, b) non-filtered, c) both (and also “do not know / do not want to answer”, in the 1987 questionnaire).

– “Do you usually smoke light cigarettes, that is, low-tar cigarettes?” – applicable to smokers, with the options: a) yes, b) no (and also “do not know / do not want to answer”, in the 1987 questionnaire).

– “How many cigarettes (or other) do you smoke per day?” – these answers were evaluated only among smokers.

– “Have you ever seriously tried to quit smoking?” – also evaluated only among smokers. “When you last tried to quit, how long did you stay off cigarettes?” – applicable to smokers and expressed in months.

– “Do you think your smoking pattern will have changed five years from now?” – also only evaluated among smokers. The common answer choices in both questionnaires were: a) yes, and b) no. In the 1987 questionnaire, there was also the option (c) do not know / do not want to answer.

– “How?” – applicable only to those who answered “yes” to the previous question. These were the answer choices: a) Will

certainly have stopped smoking; b) Will perhaps have stopped smoking; c) Will have reduced the number of cigarettes; d) Will have changed from non-filter to filter cigarettes; e) Will have changed to light cigarettes or low-tar and nicotine cigarettes; f) Other.

– “Do you think that smoking is harmful to your health?” – the answers here, in both questionnaires, could be: a) Fully agree; b) Partially agree; c) Partially disagree; d) Fully disagree. In the 1987 questionnaire there was also the option: (e) do not know / do not want to answer.

The answers to the question “What type of problem(s) can smoking cause to your health?”, included in both questionnaires, could only be tabulated for the 2002 survey. This question contained three open choices for answers, which were codified by the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). The per-capita income variable could only be determined for the 2002 questionnaire. The question on the age of smoking initiation was only included in the 2002 questionnaire.

The question “How soon after you wake up do you light your first cigarette?” was included only in the 2002 questionnaire, and was applicable to smokers, with the following answer choices: a) Within the first half hour after waking up; and b) More than half an hour after waking up. These answers, together with the number of cigarettes smoked per day, were used to analyze the degree of nicotine dependence using the modified Fagerström tolerance test¹²⁻¹³. The points were given as follows: individuals who lit their first cigarette of the day within the first half hour got two points; those who lit their first cigarette after the first half hour, one point; those who smoked up to 10 cigarettes per day did not get any points; those who smoked from 11 to 20 cigarettes per day, one point; those who smoked from 21 to 30 cigarettes per day, two points; and those who smoked more than 30 cigarettes per day, three points. According to the total points, the individuals were classified as: slightly dependent (1 and 2 points), moderately dependent (3 points), and strongly dependent (4 and 5 points) on cigarettes.

For purposes of external comparisons, age was grouped in four categories of ten years each, except for the youngest one (15 to 29 years). Point prevalence estimates were presented in percentages by age range for each gender, with the respective 95% confidence intervals (95% CI). These 95% CI were all calculated using exact probabilities provided by the binomial distribution, because approximation to normal distribution was not applicable to some cases. In each gender, the total crude prevalences were corrected for the sample effect using the actual age compositions, according to the technique described by Cochran¹⁴ for finite populations. This correction provided population estimates of total prevalences in each gender.

In some statistical comparisons, the 95% CI were used instead of p values. In others, we used the chi-square test or Fisher’s exact test (for independent proportions), the Kruskal-Wallis and Mann-Whitney tests (non-parametric equivalents for independent samples of the one-criterion variance analysis, and of the Student’s t test, respectively) when normality could not be assumed. In these comparisons, $p < 0.05$ was considered

to indicate a low probability that the difference observed had occurred by chance, even when multiple statistical tests were performed¹⁵. Data were double entered. The SPSS 10.0, Stata 7.0 and Excel 97 software programs were used.

The 2002 study was approved by the Research Ethics Committee of *Universidade Federal de São Paulo*. Participants who required medical care were referred to the nearest basic health unit, and smokers wishing to have specific help to quit smoking were referred to reference centers for smoking treatment available in the city of São Paulo.

Results

Table 1 shows the smoking prevalence among all interviewees by age range and gender, and the estimated prevalence for the actual population, in the 1987 and 2002 surveys. By comparing the prevalences found in 1987 and 2002, a significant reduction in smoking prevalence can be observed in the two youngest age ranges of both genders. In the older age ranges, there were changes that did not reach statistical significance: drop among males, and increase among females. These changes in smoker percentages can be more easily observed in the total age-adjusted prevalences.

As regards skin color (Table 2), the crude smoker percentage was similar among white, mixed and black individuals in each of the surveys, with a significant reduction ($p < 0.001$) among white and mixed individuals from 1987 to 2002. The reduction among blacks did not reach statistical significance ($p = 0.280$), nor did the differences observed among Asians (both within each survey and from one survey to the other).

Of the 1471 interviewees in 1987, 795 (54.0%) were non-smokers, 130 (8.8%) were former smokers, and 35 (2.4%) were occasional smokers, versus 1247 (59.3%), 320 (15.2%) and 40 (1.9%) of the 2103 interviewees in 2002, respectively. These results point to a significant increase of non-smokers ($p = 0.002$) and former smokers ($p < 0.001$) from 1987 to 2002 in the total number of interviewees.

In relation to the education level, the results were the following (Table 3): among people with the lowest education level, no significant change was observed from 1987 to 2002 as regards the percentage of non-smokers (57.6 and 53.0%, respectively; $p = 0.321$), but the percentage of former smokers increased significantly ($p = 0.005$), from 11.0 to 20.2%. The relatively low prevalence of smokers (29.3%) in the group with the lowest education level in 1987 did not result from the higher concentration of young females in this category. Among individuals with intermediate education level, the percentage of non-smokers increased from 53.8% to 59.4% ($p = 0.005$) and that of former smokers increased from 7.2% to 14.1% ($p < 0.001$). Among individuals with the highest education level, the percentage of non-smokers increased from 49.3% to 62% in 1987 and 2002, respectively ($p = 0.007$), without a significant change in the percentage of former smokers (16.2% and 16.9%, $p = 0.854$).

Among smokers in 1987, the mean cigarette consumption per day was 19.7 for males, and 13.4 for females ($p < 0.001$). Among smokers in 2002, these means were 17.5 and 15.0, respectively ($p = 0.002$). The reduction in the male mean ($p = 0.037$), and the increase in the female mean ($p = 0.029$)

were significant. Both in 1987 and in 2002, there was a predominance of filter cigarette consumption (98.4% and 97.8%, respectively), but the demand for low-tar cigarettes increased from 41.7% in 1987 to 61.5% in 2002 ($p < 0.001$).

In 1987, of the 130 former smokers, all (100.0%) had quit smoking for less than 10 years, most of them (67.7%) for less than five years. In 2002, of the 320 former smokers, 64.1% had quit smoking for less than 10 years (44.4% for less than five years, 19.7% between five and 10 years), and 35.9% for more than 10 years.

Among smokers in 1987, 57.5% had already seriously tried to quit smoking, versus 61.7% in 2002 ($p = 0.179$). In both surveys, the median time off cigarettes was 1.0 month.

When smokers were asked whether they would change their smoking pattern in the next five years, 53.4% answered positively in 1987 (38.5% considered stopping completely, 12.9% considered reducing cigarette consumption, and 2.0% gave other answers). In 2002, 71.2% answered positively (57.7% would quit completely, 11.9% would reduce consumption, and 1.6% gave other answers).

The awareness that "smoking is harmful to health" was high in both surveys (Table 4), and increased from 1987 to 2002 – when the total percentage of those who agreed with this statement increased from 95.3% to 99.4% ($p < 0.001$). The most expressive change occurred for smokers, among whom the percentage of those who "fully agreed" increased from 78.7% to 95.0% ($p < 0.001$) and the percentage of those who disagreed decreased from 8.6% to 1.2% ($p < 0.001$). A similar situation occurred among non-smokers, for whom these percentages changed from 91.7 to 98.7% ($p < 0.001$) and from 1.1 to 0.3% ($p = 0.015$), respectively.

As regards the results available only for the 2002 survey, the mean age of smoking initiation was 16.3 years (16.4 for males and 16.2 for females), and 88.3% of the interviewees referred having started smoking before the age of 20 years. The median monthly per capita income was lower ($p = 0.008$) among smokers (R\$ 284) when compared to that of former smokers (R\$ 310) and of non-smokers (R\$ 333). Using the simplified Fagerström test, 57.1% of the smokers were classified as slightly dependent, 30.6% as moderately dependent, and 12.3% as strongly dependent. No statistical difference was found between degree of dependence and gender.

When all the 2103 individuals interviewed in 2002 were encouraged to freely mention what health problems they related to smoking, only 17 (0.8%) did not mention any, 981 (46.6%) mentioned one problem, 681 (32.4%) mentioned two, and 424 (20.2%), three. A total of 3614 problems were mentioned, and the most frequent ones could be classified into five ICD-10 chapters, as shown in Table 5, according to smokers categories: II – neoplasms (41.9%), X – diseases of the respiratory system (28.3%), XVIII – ill defined (12.6%), IX – diseases of the circulatory system (9.2%), V – behavioral and mental disorders (3.8%), and other (4.1%). In descending order, the more frequently mentioned neoplasms were: non-specified cancer, lung cancer, oropharynx cancer, mouth cancer, and cancer in other sites. The most frequently mentioned diseases of the respiratory system were: disorders

Table 1 – Prevalence (%) of tobacco smoking* by gender and age range, and respective 95% confidence intervals (95% CI), and total prevalence in the sample (n); estimate of total prevalence in the actual population of each gender, and total age-adjusted prevalence***, city of Sao Paulo, 1987 and 2002 surveyse 2002**

1987		Male			Female		
Age (years)	n	%	95% CI	n	%	95% CI	
15-29	208	37.5	30.9-44.5	384	32.3	27.6-37.2	
30-39	156	46.8	38.8-54.9	291	39.2	33.5-45.0	
40-49	74	45.9	34.3-57.9	167	22.2	16.1-29.2	
50-59	64	40.6	28.5-53.6	127	19.7	13.2-27.7	
Total in the sample	502	42.0		969	28.4		
Estimate of the total in the actual population of each gender		41.8	37.4-46.1		30.4	27.6-33.3	
Age-adjusted total		41.8	37.5-46.2		30.6	27.7-33.4	

2002		Male			Female		
Age (years)	n	%	95% CI	n	%	95% CI	
15-29	341	19.4	15.3-24.0	356	14.9	11.4-19.0	
30-39	259	28.6	23.2-34.5	290	20.3	15.9-25.4	
40-49	225	29.3	23.5-35.8	272	29.4	24.1-35.2	
50-59	153	35.3	27.7-43.4	207	21.2	15.9-27.5	
Total in the sample	978	26.6		1.125	21.0		
Estimate of the total in the actual population of each gender		25.4	22.6-28.1		19.9	17.6-22.2	
Age-adjusted total		25.5	22.8-28.2		19.8	17.5-22.2	

*Daily consumption, regardless of amount

**Correction for the age structure of the population of each gender in the respective year

***Adjustment for the total age structure from 15 to 59 years in the city of Sao Paulo in 2000

Table 2 – Crude prevalence of tobacco smoking by skin color, city of Sao Paulo, 1987 and 2002

Color	1987			2002		
	Smokers	Total	Total	Smokers	Total	%
White	380	1,089	1,089	342	1,434	23.8
Mixed	98	282	282	107	470	22.8
Black	23	68	68	45	168	26.8
Asian	8	29	29	2	23	8.7
Other	2	3	3	-	8	-
Total	511	1,471	1,471	496	2,103	23.6

- Denotes zero

due to inhalation, other respiratory disorders, respiratory failure, emphysema and bronchitis. The ill-defined problems mentioned were: malaise and fatigue, cough, respiratory abnormalities, sore throat, chest pain, other general signs and symptoms, unknown and non-specified causes of morbidity, and diseases of the digestive system. The diseases of the circulatory system mentioned were: hypertension, myocardial infarction, stroke, ill-defined heart diseases, and other diseases

of the circulatory system. Among the behavioral and mental disorders, those most frequently mentioned were sexual dysfunction and other mental disorders.

Discussion

Since tobacco smoking was introduced in the modern society, the proportion of male smokers has been higher than that of female smokers. In the past decades, a decrease in

Table 3- Prevalence of non-smokers, former smokers, occasional smokers and smokers by education level (years of formal schooling), city of Sao Paulo, 1987 and 2002e 2002

Education level (years)	Non-smokers		Former smokers		Occasional		Smokers		Total	
	n	%	n	%	n	%	n	%	n	%
1987										
< 4	163	57.6	31	11.0	6	2.1	83	29.3	283	100.0
4 a 11	559	53.8	75	7.2	27	2.6	379	36.4	1.040	100.0
≥ 12	73	49.3	24	16.2	2	1.4	49	33.1	148	100.0
Total	795	54.0	130	8.8	35	2.4	511	34.7	1.471	100.0
2002										
< 4	105	53.0	40	20.2	4	2.0	49	24.7	198	100.0
4 a 11	892	59.4	212	14.1	29	1.9	369	24.6	1.502	100.0
≥ 12	250	62.0	68	16.9	7	1.7	78	19.4	403	100.0
Total	1.247	59.3	320	15.2	40	1.9	496	23.6	2.103	100.0

Table 4 – Absolute numbers and percentage of answers to the question: “Do you think that smoking is harmful to health?”, according to smoking categories, city of Sao Paulo, 1987 and 2002

Answer		Smoking categories									
		Smokers		Occasional smokers		Former Smokers		Non-smokers		Total	
		n	%	n	%	n	%	n	%	n	%
1987											
Agree	Fully	402	78.7	33	94.3	121	93.1	729	91.7	1,285	87.4
	Partially	64	12.5	1	2.9	7	5.4	45	5.7	117	7.9
Sub-total that agree		466	91.2	34	97.1	128	98.5	774	97.4	1,402	95.3
Fully or partially disagree		44	8.6	-	-	2	1.5	9	1.1	55	3.7
Do not know		1	0.2	1	2.9	-	-	12	1.5	14	1.0
Total		511	100.0	35	100.0	130	100.0	795	100.0	1,471	100.0
2002											
Agree	Fully	471	95.0	37	92.5	310	96.9	1,231	98.7	2,049	97.4
	Partially	19	3.8	1	2.5	8	2.5	13	1.0	41	1.9
Sub-total that agree		490	98.8	38	95.0	318	99.4	1,244	99.7	2,090	99.4
Fully or partially disagree		6	1.2	2	5.0	3	0.6	3	0.3	13	0.6
Total		496	100.0	40	100.0	320	100.0	1,247	100.0	2,103	100.0

smoking prevalence has been observed in males, especially in developed countries, but also in some developing countries, such as Brazil¹⁶. In females, in turn, the rate of decrease in the smoking prevalence rate has varied among different countries¹⁶⁻¹⁷.

In this study, the estimated tobacco smoking prevalence in 2002 was lower than that of 1987, both in males (25.4 and 41.8%) and in females (19.9 and 30.4%). The relative reduction from 1987 to 2002 was of 39% in males and 35%

in females, because of a strong influence of the reduction in younger age ranges.

In a comparison with data from the literature on the prevalence of smoking in the city of Sao Paulo, for the age range of 15 to 74 years, a prevalence of 54.8% was reported in males, and of 20% in females¹⁸. In 2002-2003, the Household Survey on Risk Behaviors and Referred Morbidity of Noncommunicable Diseases and Disorders⁸ studied individuals older than 15 years of age and showed

Table 5 – Percentage of answers to the question “What kind of problem(s) can the smoking habit cause to your health?”, city of Sao Paulo, 2002 (codified by the Tenth Revision of the International Statistic Classification of Diseases and Related Health Problems, ICD-10)

ICD-10 chapter*	Non-smokers	Former smokers	Occasional smokers	Smokers	Total
II	45.5	35.2	34.1	38.5	41.9
X	29.9	28.6	25.6	24.5	28.3
XVIII	9.9	16.4	14.6	16.2	12.6
IX	7.6	10.7	12.2	11.8	9.2
V	3.5	3.7	8.5	4.4	3.8
Other	3.5	5.4	4.9	4.7	4.1
Total	100.0	100.0	100.0	100.0	100.0

* II – Neoplasms; X – Diseases of the respiratory system; XVIII – Symptoms, signs and abnormal findings in clinical and laboratory tests not classified in other part (ill-defined); IX – Diseases of the circulatory system; V – Behavioral and mental disorders

a prevalence of 23.1% in males and 17.5% in females in a sample of 1210 individuals, thus confirming the tendency of reduction in prevalences in both genders, also more significant in males in relation to females.

This historical drop in the smoking prevalences seems to be strongly influenced by national campaigns against tobacco smoking, as well as by income decrease and unemployment¹⁰. In the past decade, Brazil created several laws to restrict cigarette advertisement and consumption in public premises, in addition to increasing the level of awareness on the harmful effects of smoking. However, the lower decrease in the prevalence of smoking among females may be pointing to a disturbing difficulty of smoking cessation in this group, partly due to the extensive publicity from the tobacco industry, which also tries to encourage smoking initiation, targeting specifically women. In the present study, we observed an increase in the mean cigarette consumption from 13.4 to 15 cigarettes per day among women from 1987 to 2002.

As regards the smoking prevalence according to skin color, we observed a reduction in all groups, although not reaching statistical significance among blacks and Asians – probably because of the small number of interviewees in these two groups. This study did not enable the analysis of whether the relation between skin color and a higher smoking prevalence resulted from the lower social class of the interviewees.

As regards tobacco smoking by education level, a reduction in the prevalence of smokers was observed in all the three levels from 1987 to 2002. In relation to the 1987 results, the low prevalence of smokers in the group with lower education level may have occurred because of sample variation, since it is not explained by differences in gender and age in this category in relation to the others, nor does it follow the patterns observed in different parts of the world¹⁹. Therefore, it is reasonable to assume that in 1987 the prevalence of tobacco smoking among the low education level population was higher than the 29.3% recorded in that survey.

In addition to the lower education level, the declared per-capita income among smokers was also lower than that of former smokers and non-smokers (results available only for the 2002 survey). The tendency of smoking to concentrate in

the less privileged social classes is observed in Brazil and in several other countries¹⁷⁻¹⁹. Among the social factors, we can point out the poorer access to information, education and health care. These factors are amplified by market incentives that promote consumption and access to tobacco products, especially cigarettes. In fact, many poor families spend a significant part of their income with tobacco²⁰, thus aggravating their health and poverty status, since smoking is an additional risk factor that will add to other morbid conditions found in less privileged populations.

Smoking initiation before 20 years of age, as reported by 88.3% of the smokers in 2002, shows that it occurs early in life. Recently, the importance of age at smoking initiation on the development of a higher degree of nicotine dependence was analyzed more deeply. Of those who start smoking at around the age of 14 years, approximately 90% will be dependent by the age of 19. Those who start smoking between 14 and 16 years of age have been proven to develop a higher degree of nicotine dependence in comparison with those who smoked their first cigarette after 20 years of age²¹⁻²². Early initiation is an important prognostic factor for the development of diseases and should be avoided so that the risk of premature deaths in middle age or old age will not be higher²³.

Several studies demonstrated the importance of smoking in the first half hour after waking up and of consuming more than 20 cigarettes per day as indicators of high nicotine dependence¹²⁻¹³. In the present study, 12.3% of the smokers were classified as strongly dependent, and 30.6% as moderately dependent; this classification will help in the identification, by health services, of the individuals who will likely present discomfort (abstinence syndrome) when they quit smoking, and will perhaps require more complex interventions, including the use of medications, which makes one believe that it will be more difficult for them to maintain abstinence in the long term.

The attitude of smokers in the city of Sao Paulo has been changing, considering the comparison of the 1987 and 2002 results. There was a reduction in the mean amount of daily cigarette consumption among males (but an increase among females), increase in demand for low-tar cigarettes, increase in

the number of individuals who had quit smoking for more than 10 years, increase in the percentage of those who seriously tried to quit smoking, increase in the number of individuals who are considering to stop smoking completely in the next five years, and increase in the awareness that “smoking is harmful to health”, both among smokers and non-smokers. As a critical comment, in relation to the attempt of “seriously quit smoking”, the attribute of “seriousness” may have a different connotation from person to person, so that the results should be evaluated with more reservation, although the question was asked with the same wording both in 1987 and in 2002.

The awareness on the harmful health effects caused by cigarettes has dramatically changed over the years. In the 1950's, less than 50% of the American adults believed that smoking could cause lung cancer. In the 1990's, this percentage increased to 92%. Other studies have demonstrated that the majority of the population (smokers and non-smokers) is in favor of laws restricting smoking in public and work premises²⁴.

In the present study, when smokers and former smokers were asked about the health problems that tobacco consumption could cause, both tended to spontaneously mention more ill-defined conditions than did non-smokers, and non-smokers tended to mention more neoplasms in relation to smokers and former smokers.

The literature shows that more than 70% of the smokers state that they would like to stop smoking²⁵. Even so,

information regarding the harmful health effects of smoking should be addressed in campaigns, school curricula, and in public health policies. Despite their intention to quit smoking and their knowledge of the health problems caused by tobacco smoking, a great number of smokers is not able to actually quit, which can be partly justified by their being nicotine dependent. Strategies on the prevention and treatment of tobacco smoking need to be encouraged and targeted at teenagers, women and low-income individuals. Thus, periodic studies on the prevalence of tobacco smoking will be useful to redirect prevention campaigns and to evaluate cost-effective strategies for the control of smoking and treatment of smokers.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

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References

1. Prabhath JHA, Chaloupka FJ (eds.). Tobacco control in developing countries. Oxford: Oxford University Press; 2000. 490 p.
2. Organización Panamericana de la Salud. World Bank. La epidemia del tabaquismo: los gobiernos y los aspectos económicos del control del tabaco. Washington, DC; 2000. Publicación Científica 577).
3. Brasil. Ministério da Saúde. Instituto Nacional de Câncer. Tabagismo: dados e números. [on line]. [Acesso em 2000 outubro 19]. Disponível em: <http://inca.gov.br/tabagismo/frameset.asp?>
4. Doll R, Peto R, Boreham J, Sutherland I. Mortality in relation to smoking: 50 years' observations on male British doctors. *BMJ*. 2004; 328: 1519.
5. Rosenberg L, Kaufman DW, Helmrich SP, Shapiro S. The risk of myocardial infarction after quitting smoking in men under 55 years of age. *N Engl J Med*. 1985; 313: 1511-4.
6. Carlini EA, Galduróz JCF, Noto, AR, Nappo AS. Levantamento domiciliar sobre o uso de drogas psicotrópicas no Brasil: estudo envolvendo as 107 maiores cidades do País, 2001. São Paulo: CEBRID, UNIFESP; 2002.
7. Brasil. Ministério da Saúde. Instituto Nacional de Alimentação e Nutrição (INAN). Pesquisa Nacional sobre Saúde e Nutrição. PNSN: some statistics about smoking habit in Brazil. Brasília; 1989.
8. Brasil. Ministério da Saúde. Instituto Nacional do Câncer. Coordenação de Prevenção e Vigilância. Prevalência de tabagismo no Brasil: dados dos inquéritos epidemiológicos em capitais brasileiras. Rio de Janeiro; 2004.
9. Rego RA, Berardo FAN, Rodrigues SSF, Oliveira ZMA, Oliveira MB, Vasconcellos C, et al. Fatores de risco para doenças crônicas não-transmissíveis: inquérito domiciliar no Município de São Paulo. SP (Brasil). Metodologia e resultados preliminares. *Rev Saúde Publ*. 1990; 24 (4): 277-85.
10. Marcopito LF, Rodrigues SSF, Pacheco MA, Shirassu MM, Goldfeder AJ, Moraes MA. Prevalência de alguns fatores de risco para doenças crônicas na cidade de São Paulo. *Rev Saúde Publ*. 2005; 39 (5): 738-45.
11. Marques RM, Berquó E. Seleção da unidade de informação em estudos de tipo “survey”: um método para a construção das tabelas de sorteio. *Rev Bras Estat*. 1976; 37: 81-92.
12. Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström test for nicotine dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict*. 1991; 86: 1119-27.
13. Halty LS, Hüttner MD, Oliveira Netto IC, Santos VA, Martins G. Análise da utilização do Questionário de Tolerância de Fagerström (QTF) como instrumento de medida da dependência nicotínica. *J Pneumol*. 2002; 28 (4): 180-6.
14. Cochran WG. Sampling techniques. New York: John Wiley & Sons; 1953. 330 p.
15. Rothman KJ. No adjustments are needed for multiple comparisons. *Epidemiology*. 1990; 1: 43-6.
16. World Health Organization. Building blocks for tobacco control: a handbook. Geneva: 2004. 30p.
17. Menezes AMB. Epidemiologia do tabagismo. *J Pneumol*. 2004; 30 (2): 3-7.
18. Joly, DJ. El hábito de fumar cigarrillos en la América Latina: una encuesta en ocho ciudades. *Bol Ofic Sanit Panamer*. 1975; 79: 93-111.
19. The World Bank. Curbing the epidemic: governments and the economics of tobacco control. Washington, DC; 1999.
20. Instituto Brasileiro de Geografia e Estatística. Pesquisa de Orçamentos Familiares (POF), 2002-2003. [Acesso em 2005 outubro 10]. Disponível em URL: <http://www.ibge.gov.br/home/estatistica/populacao/condicaoadevida/pof/2002/default.htm>.
21. Breslau N, Fen NN, Peterson EL. Early smoking initiation and nicotine dependence in a cohort of young adults. *Drug Alcohol Dep*. 1993; 33: 129-37.

-
22. US Department of Health and Human Services. Preventing tobacco use among young people: a report of the Surgeon General. Atlanta: US Dept of Health and Human Services, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1994.
 23. Doll R, Peto R. The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today. *J Natl Cancer Inst.* 1981; 66 (6): 1193-308.
 24. Ribeiro SA, Pérez D, Jardim JRB. Actitud ante el tabaquismo de funcionarios fumadores y no fumadores de la Universidad Federal de São Paulo, Brasil: análisis comparativo de fumadores y no fumadores. *Archivos de Bronconeumología.* 1999; 35 (8): 385-9.
 25. Brasil, Ministério da Saúde. Instituto Nacional do Câncer: ajudando seu paciente a deixar de fumar. Brasília; 1997.