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Nutrition status of elderly smokers and former smokers of São Paulo City, Brazil

Estado nutricional de idosos fumantes e
ex-fumantes da cidade de São Paulo, Brasil

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ABSTRACT: *Objectives:* The concomitance of smoking and poor dietary habits represents a worsened prognosis of health and quality of life for elderly. The aim of this study was to characterize the nutritional status of elderly who were smokers and former smokers and residents of São Paulo city. *Methods:* A cross-sectional study was conducted in 2010 with a representative sample of 1,345 individuals aged 60 years and over, who were part of the elderly cohort monitored at the SABE Study. Sociodemographic, health, and nutritional aspects of the elderly were described, according to their tobacco use in life. *Results:* The proportion of smokers and former smokers was 12.9 and 54.7%, 11.0 and 25.2%, and 11.8 and 37.2% for male, female, and total population, respectively. For both genders, increasing age decreased the proportion of smokers. The proportion of proper fruit intake was smaller for female smokers. Poorer nutritional status was observed in smokers, who had fewer meals per day and greater frequency of underweight compared with elderly nonsmokers. *Conclusion:* Considering the impact of inappropriate eating habits and smoking on health, elderly smokers deserve special attention on their nutritional status.

Keywords: Nutritional status. Feeding behavior. Aged. Tobacco. Brazil. Epidemiology.

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RESUMO: *Objetivo:* A concomitância de fumo e maus hábitos alimentares representa uma piora no prognóstico da saúde e na qualidade de vida dos idosos. O objetivo deste estudo foi caracterizar o estado nutricional de idosos fumantes e ex-fumantes residentes na cidade de São Paulo. *Métodos:* Foi realizado um estudo transversal em 2010, com uma amostra representativa de 1.345 indivíduos com 60 anos ou mais, que fazem parte da coorte de idosos acompanhados pelo Estudo Saúde, Bem-Estar e Envelhecimento (SABE). Foram descritos os aspectos sociodemográficos, de saúde e nutricionais dos idosos de acordo com o uso de tabaco na vida. *Resultados:* A proporção de fumantes e ex-fumantes foi de, respectivamente, 12,9 e 54,7% para o sexo masculino; 11,0 e 25,2% para o sexo feminino; e de 11,8 e 37,2% para a população total do estudo. Para ambos os sexos, com o aumento da idade, diminuiu a proporção de fumantes. A proporção de idosas fumantes com ingestão adequada de frutas foi menor. Fumantes apresentaram pior estado nutricional, com menos refeições por dia e maior frequência de baixo peso. *Conclusão:* Considerando-se o impacto do hábito alimentar inadequado e de fumar sobre a saúde, os fumantes idosos merecem atenção especial sobre o seu estado nutricional.

Palavras-chave: Estado nutricional. Comportamento alimentar. Idosos. Fumo. Brasil. Epidemiologia.

INTRODUCTION

Population aging is an established worldwide phenomenon, which raises concerns related to health, as it is accompanied by an increase in the occurrence of chronic and disabling diseases[1].

Some aspects of the current lifestyle, such as smoking, excessive alcohol consumption, sedentary lifestyle, high intake of foods rich in sugars and fats, and low consumption of fruits and vegetables, increase the risks to health[2,3]. Smoking stands out among the habits that offer higher risks to health because it is the leading cause of preventable deaths worldwide, especially those related to cardiovascular diseases and cancer[4]. The smoking effects are not studied much in the elderly population[5]; however, it is assumed that this population presents higher risks due to the longer exposure[6].

Literature points to a higher prevalence of smoking among the underweight elderly, which raises concerns because the concurrence of two or more risk behaviors may be more harmful than the sum of their separate effects[6,7]. This study examined smoking and its association with nutritional status of elderly residents in the city of São Paulo.

METHODS

DESIGN

This is a cross-sectional study with data from the SABE Study (Health, Well-being, and Aging), collected in 2010. SABE study is composed of multiple cohorts and was initiated in 2000 with a random sample of elderly patients (aged ≥ 60 years) living in São Paulo, SP.

It employed a stratified sampling in two stages, based on census tracts in the city. Details on the sample design of the initial study are described in a previous publication[8]. In 2006, the second interview was conducted with those elderly individuals, and a new sample of elderly individuals who were aged between 60 and 64 years was obtained by means of the same procedure of the first data collection point, as this age group was no longer represented. The third follow-up visit was conducted in 2010, when a third sample of elderly individuals who were aged between 60 and 64 years was added. The total sample of 1,345 elderly individuals was evaluated that year (aged ≥ 60 years), representing a population of 1,338,138 elderly individuals living in São Paulo, as the sample weights were recalculated based on the 2010 Census to maintain a representative sample of the elderly population living in the city.

VARIABLES

Data were collected by means of home interviews conducted by trained interviewers. Sociodemographic variables evaluated were gender (male, female); age (60 – 64; 65 – 69; 70 – 74; ≥ 75 years); schooling in complete years of study (< 1 – 3 years, 4 – 7 years, ≥ 8 years of schooling); income in minimum wages, which were categorized into quartiles; ethnicity (white, others); and family arrangement (living alone, living together). The characteristics of the health were evaluated with the following variables: number of self-reported chronic diseases (none, 1, ≥ 2); frequency of alcohol consumption in the last 3 months (< 1 day/ week, 1 – 3 days/week; ≥ 4 days/week), and self-rated health status (good, not so good), and tobacco use in life, which was obtained through self-report to the following question: "Do you *currently smoke* or have you ever smoked?" (never smoked, ex-smokers, and smokers).

The assessment of nutritional status was determined by the body mass index (BMI), and it was classified according to the recommendation from the Pan American Health Organization[9] as underweight (BMI ≤ 23 kg/m²), normal weight (23 kg/m² < BMI < 28 kg/m²), and overweight and obese (BMI ≥ 28 kg/m²) elderly.

Nutritional variables were number of full meals per day (< 3 meals; ≥ 3 meals), consumption of dairy products at least once a day (yes, no); consumption of eggs and beans at least once a week (yes, no); meat consumption at least three times a week (yes, no); consumption of fruits at least twice a day (yes, no); and consumption of vegetables at least twice a day (yes, no). Other features related to nutritional status were weight loss in the last 12 months (none, 1 to 3 kg; > 3 kg), waist–hip ratio (< 0.9, ≥ 0.9 for men and < 0.85; ≥ 0.85 for women), and nutritional self-perception (good, not so good).

STATISTICAL ANALYSES

For the descriptive analyses, ratios for the categorical variables were calculated. All analyzes incorporated weights to correct differences in the selection probability of the participants

and the results were presented by the weighted values. Differences between the groups were estimated by the Rao-Scott test for the categorical variables, which considered sampling weights to the population estimates with population weights. Survey package of the STATA software was used, which provides procedures for analyzing complex sample surveys and allows incorporating different weights of the observations that influence the point estimates of the total population parameters.

The study was approved by the Human Research Ethics Committee of the School of Public Health of the Universidade de São Paulo. Participation was voluntary and informed consent forms signed by all participants were obtained. The authors report no conflict of interest in relation to this study.

RESULTS

The behavior in relation to smoking differed among genders (Table 1), showing a higher proportion of women who had never smoked (63.8%). Although approximately 70% of men had been smokers, 54.7% reported having stopped smoking. The proportion of current smokers was similar in both the genders. The highest proportion of smoking occurred among those aged between 60 and 64 years in both the genders, with a significant decrease among those aged above 70 years. The frequency of smokers did not differ between white men and other ethnicities, but there was a higher proportion of nonsmokers among white women in relation to the other ethnicities. Higher proportion of smokers was seen among women living alone than those living together. There was no difference in the use of tobacco among the different levels of schooling evaluated. With regard to the income, there was a predominance of male smokers in the lower strata, whereas those with higher incomes showed the highest proportion of nonsmokers (Table 2).

Regarding nutritional status, 47.0% of men presented normal weight, 13.3% were underweight, and 39.7% were overweight or obese whereas among women, the proportions were

Table 1. Tobacco use in life by gender in 2010; SABE study (Health, Well-being, and Aging).

	Gender					
	Men		Women		Total	
	%	(95%CI)	%	(95%CI)	%	(95%CI)
Tobacco						
Nonsmoker	32.4	(27.8 – 37.5)	63.8	(59.5 – 67.9)	51.1	(47.5 – 54.6)
Ex-smoker	54.7	(49.6 – 59.6)	25.2	(22.1 – 28.6)	37.2	(34.4 – 40.0)
Smoker	12.9	(9.7 – 16.9)	11.0	(8.7 – 13.8)	11.8	(9.7 – 14.3)

χ^2 with Rao-Scott adjustment: p < 0.001.

34.4, 12.4, and 53.4%, respectively. The prevalence of overweight and obesity was higher among women than among men (p < 0.001).

Male smokers were predominantly underweight, whereas nonsmokers were overweight or obese (Table 2). The same pattern was observed among the women smokers. Among the male smokers, there was higher proportion of individuals who presented high alcohol

Table 2. Distribution of sociodemographic characteristics according to tobacco use in life by gender in 2010; SABE study (Health, Well-being, and Aging).

	Men				Women				Total			
	¥NS %	ES %	S %	p-value*	NS %	ES %	S %	p-value	NS %	ES %	S %	p-value
Tobacco	32.4	54.7	12.9	< 0.001	63.8	25.2	11.0	< 0.001	51.1	37.2	11.8	< 0.001
Age (years)												
60 – 64	29.3	51.0	19.7		53.5	31.5	15.0		42.9	40.1	17.1	
65 – 69	41.8	48.5	9.8	0.027	56.0	29.4	14.6	< 0.001	50.2	37.2	12.6	< 0.001
70 – 74	36.1	53.7	10.3		76.2	17.2	6.7		60.0	31.9	8.1	
≥ 75	26.3	66.8	6.8		73.7	19.9	6.4		56.6	36.9	6.6	
Ethnicity												
White	34.1	52.6	13.3	0.622	68.5	21.1	10.4	0.009	54.7	33.7	11.6	0.013
Others	30.2	57.5	12.4		57.3	31.0	11.8		45.9	42.1	12.0	
Schooling (grade)												
Up to 3rd	26.5	61.2	12.3		62.6	26.7	10.8		50.0	38.7	11.3	
4th – 7th	29.3	56.8	13.9	0.295	65.6	25.2	9.2	0.531	50.6	38.2	11.2	0.750
> 8th	40.8	46.8	12.5		63.1	22.9	13.9		52.7	34.1	13.3	
Family arrangement												
Living alone	27.7	55.1	17.2	0.711	59.2	23.6	17.3	0.032	50.6	32.1	17.3	0.074
Living together	33.0	54.6	12.4		64.9	25.6	9.6		51.1	38.1	10.8	
Monthly income (quartile)												
1st	15.7	61.6	22.7		68.4	22.2	9.4		56.0	31.5	12.5	
2nd	29.7	52.8	17.6	0.005	58.3	28.8	12.9	0.583	48.3	37.2	14.6	0.195
3rd	26.7	67.1	6.2		65.7	23.5	10.9		47.2	44.2	8.7	
4th	41.5	48.4	10.2		63.1	23.3	13.6		49.9	38.6	11.5	

Data were weighted to be representative of the elderly population in 2010 in São Paulo, Brazil; *χ² with Rao-Scott adjustment; ¥NS: nonsmokers, ES: ex-smokers, S: current smoker.

consumption and reported having had less than three meals a day, with a significant difference seen among women. Moreover, a good self-perception of health predominated among these women. Individuals who reported two or more chronic diseases presented lower proportion of smokers, which was significant among women (Table 3).

There was no significant difference in the consumption of dairy products (p = 0.737 for men and p = 0.188 for women), meat (p = 0.321 and p = 0.341), eggs and beans (p = 0.320 and p = 0.493), and vegetables (0.328 and 0.870), considering the use of tobacco in life as well as in fruit consumption among men (p = 0.664). The proportion of inadequate consumption of fruits (p = 0.005) was higher among female smokers (Figure 1).

DISCUSSION

The frequency of smoking in this study was 12%. Although approximately 70% of the elderly men have smoked at least once in life, and this proportion was much lower among the women with approximately 35%, current smokers had similar proportion in both genders, as the proportion of ex-smokers was considerable among men. Historically, the prevalence of tobacco use is higher among them, but smoking among the female elderly has risen because of the increase in the smoking habit among younger women[10]. Stopping smoking should be encouraged among the elderly, as there are benefits observed in all age groups, including functional improvement and reduction in morbidity and mortality[11,12].

Similar to other studies, smoking habit decreased with advancing age. Literature shows association of the smoking habit with the following characteristics of the elderly: living alone, lower education and lower income[6,13]. In this study, there was no significant difference with regard to schooling; living alone was associated with smoking among women and low income was associated with smoking among men.

It was observed that a high frequency of female smokers presented with being underweight, which is similar to the findings of Zaitune et al.[6] in the population of the southwest region of the Greater São Paulo, Campinas, and Botucatu, and to the findings of Berto et al.[3] in the population of Rio Grande do Sul. Weight gain as a consequence of smoking cessation may represent an obstacle to the treatment of smoking, especially among women, in whom overweight is seen more frequently[14]. However, in this study, there was an increase in the overweight frequency among the nonsmoking women, but the same did not occur among ex-smokers. Changes in the dietary pattern with aging may be originated from different physiological or psychosocial causes, but smoking is a factor that increases the potential of the negative effects on the eating habits of the elderly, as the smoking habit causes reduction in taste and smell[3,15]. Furthermore, the anorectic effects of nicotine act on the appetite; thus, the body weight tends to be lower among the smokers[6]. The determinants for low weight were not described in this work, but it was observed that female smokers had fewer meals a day. In this study, with regard to the quality of food intake, the results followed some patterns observed in the elderly population in Brazil, presenting higher proportion of adequacy

Table 3. Distribution of nutritional characteristics and health according to tobacco use in life by gender in 2010; SABE study (Health, Well-being, and Aging).

	Men				Women				Total			
	¥NS %	ES %	S %	p-value*	NS %	ES %	S %	p-value*	NS %	ES %	S %	p-value*
Classification by BMI[&]												
Underweight	28.9	49.2	21.9		50.1	22.3	27.6		41.3	33.5	25.2	
Normal weight	32.3	52.9	14.8	0.360	60.1	26.4	13.5	< 0.001	46.8	39.0	14.1	< 0.001
Overweight/obese	32.7	57.7	9.7		68.8	25.6	5.6		56.8	36.2	7.0	
Weight loss in the past year												
None	17.4	56.7	25.9		64.9	22.4	12.7		51.3	32.2	16.5	
1 – 3 kg	27.9	69.6	2.5	0.076	63.5	29.0	7.5	0.880	50.4	44.0	5.7	0.213
≥ 3 kg	33.8	53.7	12.5		63.7	25.3	11.0		51.1	37.3	11.6	
Number of full meals per day												
< 3	20.5	60.1	19.3	0.161	46.8	29.0	24.2	0.002	33.8	44.4	21.8	0.002
≥ 3	34.2	53.8	12.0		65.5	24.8	9.7		53.1	36.3	10.6	
Self-perception of nutrition												
Good	32.9	54.1	13.0	0.083	65.0	24.5	10.5	0.083	51.7	36.8	11.5	0.295
Not so good	23.4	65.6	11.1		50.2	33.0	16.7		42.3	42.6	15.1	
Self-perception of health												
Good	27.7	55.1	17.2	0.711	59.2	23.6	17.3	0.032	50.6	32.1	17.3	0.074
Not so good	33.0	54.6	12.4		64.9	25.6	9.6		51.1	38.1	10.8	
Waist-hip ratio												
Above	38.9	46.7	14.4	0.534	60.6	26.2	13.3	0.412	55.3	31.1	13.6	0.099
Below	30.6	55.9	13.5		64.9	25.1	10.0		49.5	39.0	11.6	
Consumption of alcoholic beverages (days/week)												
< 1	32.3	56.4	11.4		64.4	25.7	10.0		53.9	35.7	10.4	
1 – 3	27.4	56.8	15.9	0.427	58.4	23.5	18.0	0.059	38.8	44.6	16.7	0.022
> 4	39.5	45.2	15.4		59.7	11.8	28.5		42.9	39.5	17.6	
Chronic diseases												
None	36.4	48.9	14.8		68.3	19.8	12.0		52.3	34.3	13.4	
1	33.4	52.5	14.1	0.285	64.4	22.6	13.0	0.039	53.0	33.6	13.4	0.021
≥ 2	28.2	61.6	10.2		60.9	30.7	8.4		48.3	42.6	9.1	

Data were weighted to be representative of the elderly population in 2010 in São Paulo, Brazil; *χ^2 with Rao-Scott adjustment; ¥NS: nonsmokers, ES: ex-smokers, S: current smoker.

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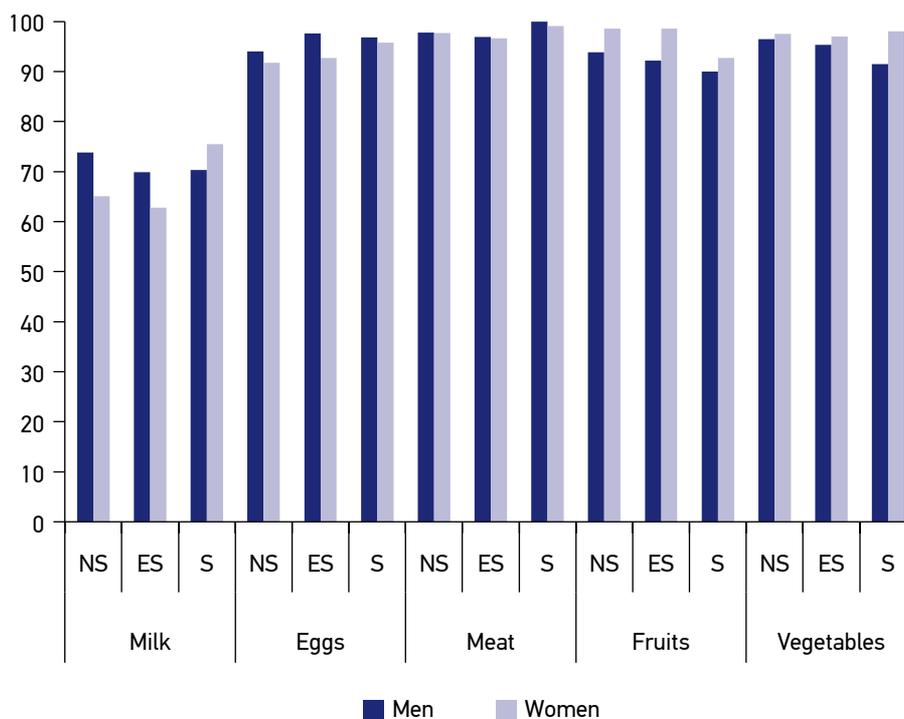
NS: nonsmoker, ES: ex-smoker, S: current smoker.

Figure 1. Proportion of food intake according to gender and tobacco use in life, in 2010; SABE study (Health, Well-being, and Aging).

in the consumption of food that are protein sources, with the exception of milk and dairy products. Smoking did not significantly harm the consumption of these foods. There was only a reduction in the proportion of adequate consumption of fruits among female current smokers; however, the frequency of adequacy remained above 80%. In contrast, Subar et al.[2] observed that the consumption of fruits and vegetables was lower with higher intensity of smoking, increasing the risk of cancer. These authors also observed that smokers are those who skip breakfast more often. Underweight may lead to functional and physical impairment, decreased quality of life, and increased hospitalization and mortality, due to low caloric and nutrients intake[16].

The concurrence of smoking with other unhealthy habits, observed in this study, has been identified in several studies, such as excessive alcohol consumption and poor diet[3,6] .

The frequency of smokers decreased and ex-smokers increased with the presence of two or more chronic diseases. This distribution was also observed among women, when analyzed with respect to gender. Further analysis is needed to justify these data; however, Zaitune et al.[6] pointed out two phenomena that may explain this fact, which are as follows: smoking cessation as a consequence of the onset of diseases and the increased risk

of early mortality among the smokers. Moreover, the highest proportion of female smokers with good self-perception of health and smokers in the age group of 60 to 64 years support this assumption.

This study has limitations of not being able to determine whether the nutritional status observed in smokers is due to smoking, as the cross-sectional design of the study does not establish the temporality of events. Although the nutritional assessment by the BMI has its limitations, such as the identification of body composition and central adiposity, it is still considered a good indicator in epidemiological studies, according to Silveira et al.[17], because it presents low cost, easy application, association with noncomunnicable chronic diseases, among others.

CONCLUSION

Smoking habit among the elderly individuals was associated with the worst nutritional status, with fewer meals per day compared with nonsmoker elderly, contributing to the higher frequency of underweights observed in this study. In view of the observed results and considering the impact on health, elderly smokers deserve special attention in relation to their nutritional status.

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