

Risk and protective factors for chronic diseases by telephone survey in capitals of Brazil, Vigitel 2014

Fatores de risco e proteção para doenças crônicas por inquérito telefônico nas capitais brasileiras, Vigitel 2014

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ABSTRACT: Objective: To describe the prevalence of risk and protective factors for chronic diseases in Brazilian adult population in 2014 and investigate the associated sociodemographic factors. **Methods:** Analyses were performed based on data from telephone interviews (Vigitel 2014) on probabilistic samples of adult population (≥ 18 years old) from the capitals of the 26 Brazilian States and the Federal District, living in households with landline phones. Prevalence is presented by gender, age and educational level, and adjusted prevalence ratios (PR) are estimated using Poisson Regression model. **Results:** Among the 40.853 adults who were interviewed, 10.8% were smokers and 21.2% ex-smokers. Among the respondents, 16.5% reported alcohol abuse and 52.5% were overweight, factors that were more frequent among men. The prevalence of recommended intake of fruits and vegetables was 24%, intake of sweets was 18.1% and replacements of main meals for snacks was 16.2%, factors that were higher among women. Leisure time physical activity reached 35.3% and increased with the level of education. Hypertension was the most frequent disease achieving 24.8%, which was higher among women and increased with age. **Conclusion:** The results from Vigitel 2014 indicate that risk factors are, in general, more frequent among men, older adults and less educated individuals, characterizing the socioeconomic and cultural dimensions in determining chronic diseases.

Keywords: Risk factors. Chronic diseases. Epidemiological surveys. Epidemiological surveillance. Cross-sectional studies. Behavioral risk factor surveillance.

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RESUMO: *Objetivo:* Descrever as prevalências dos fatores de risco e proteção para doenças crônicas na população adulta brasileira no ano de 2014, e investigar os fatores sociodemográficos associados. *Métodos:* Análise dos dados provenientes do inquérito telefônico Vigitel 2014, a partir de amostras probabilísticas da população adulta (≥ 18 anos) das capitais dos 26 estados brasileiros e Distrito Federal, residentes em domicílios com telefone fixo. Apresentadas prevalências por sexo, idade e escolaridade e razões de prevalências (RP) ajustadas, por meio da Regressão de Poisson. *Resultados:* Entre 40.853 adultos entrevistados, 10,8% são fumantes atuais e 21,2% ex-fumantes. O consumo abusivo de bebidas alcoólicas foi relatado por 16,5 e 52,5% apresentaram excesso de peso, fatores mais frequentes entre os homens. A prevalência do consumo recomendado de frutas e hortaliças foi de 24%, de doces de 18,1% e de substituição das refeições por lanches de 16,2%, maiores entre as mulheres. Atividade física no tempo livre alcançou 35,3% e aumentou com a escolaridade. A hipertensão arterial foi a doença mais frequente, com 24,8%, foi maior entre as mulheres, aumentando com idade. *Conclusão:* Os resultados do Vigitel 2014 indicam que os fatores de risco investigados costumam ser mais frequentes entre os homens, adultos de maior idade, e menos escolarizados, caracterizando o gradiente socioeconômico e cultural na determinação de doenças crônicas.

Palavras-chave: Fatores de risco. Doenças crônicas. Inquéritos epidemiológicos. Vigilância epidemiológica. Estudos transversais. Sistema de vigilância de fator de risco comportamental.

INTRODUCTION

Noncommunicable diseases (NCDs) are recognized as a public health issue bringing high costs to the health system and to society in general¹. In 2014, about 74% of deaths in Brazil were due to NCDs, especially among the four main groups of diseases: cardiovascular, diabetes, cancer and chronic respiratory². These diseases have in common modifiable risk factors, such as unhealthy diet, physical inactivity, alcohol abuse and smoking³.

The presence of these factors, besides contributing to the increase in mortality by NCDs, burdens the provision of health care. The control of these risk factors and the prevention of NCDs are essential to improve and enhance the quality of life of individuals¹. The monitoring of risk and protection factors for NCDs is essential for surveillance, since it provides an understanding of distribution, magnitude and trend of these factors. Strengthen surveillance and monitoring of NCDs and their risk factors is a national priority³, following the global efforts⁴.

In 2006, the Secretariat of Health Surveillance in the Ministry of Health launched the “Risk and Protective Factors Surveillance System for Chronic Diseases by Telephone Interviews (Vigitel)”, which monitors continuously the main risk and protective factors for NCDs in all Brazilian capitals and in the Federal District⁵. The purpose of this article is to describe the prevalence of risk and protective factors for NCDs in Brazilian adult population living in the capitals in 2014, and to investigate the socio-demographic factors associated.

METHODS

This study used data from Vigitel 2014, which is the continuous monitoring system implemented by the Ministry of Health in 2006. The Vigitel uses probability samples of adults (≥ 18 years old) of the capitals of the 26 Brazilian states and the Federal District, who live in households with at least one landline phone.

The sample calculation is based on the records of landline phones of 26 state capitals and the Federal District, provided by the country's leading telecommunications operators. In these cities, a random selection process, stratified by zip code, chooses 5,000 telephone lines. These selected telephone lines in each city are then divided into replicas of 200 lines each by another random selection process. It is necessary to divide the sample into replicas due to the difficulty in estimating the registered telephone lines that are eligible for the interview. In a second step, we conducted the selection of the adult to be interviewed in each household. At the end of this process, 40,853 interviews were conducted, with a success rate of 65.2%⁵.

A specialized company conducted the telephone interviews between February and December 2014. Interviewers read the questions and recorded the answers directly in electronic media, using a computer.

The questionnaire Vigitel 2014 consisted of questions involving the following: demographic and socioeconomic characteristics; food and physical activity habits; weight and height measures; consumption of cigarettes and alcoholic beverages; self-assessment of health status; hypertension, diabetes and dyslipidemia self-reported; screening tests for cancer in women; health plan utilization; traffic situations.

Risk and protection factors for Noncommunicable diseases (NCDs) that were studied and measured in percentages are the following:

- Smoking: smokers; ex-smokers; smokers who consume 20 or more cigarettes per day; passive smokers at home (non-smokers who reported that at least one of the residents of their household usually smokes at home); passive smokers in the workplace (non-smokers who reported that at least one individual usually smokes in the workplace).
- Drinking: excessive consumption of alcoholic beverages (defined as the consumption of five or more drinks for men and four or more drinks for women, consumed at the same occasion); individuals who reported driving a motor vehicle after consuming any amount of alcohol.
- Food consumption: regular consumption of fruit and vegetables (five or more days a week); recommended intake of fruit and vegetables (five or more times a day, in five or more days per week); regular consumption of beans (in five or more days a week); intake of meat with excessive fat (red meat with visible fat and/or chicken with skin); consumption of whole milk; regular consumption of soda (soda and/or artificial juice consumption in five or more days per week); regular consumption of sweets (five or more days per week); excessive salt intake

- (self-reported high or too high salt intake); consumption of snacks at lunch or dinner in seven or more times a week.
- Physical activity: practice of the recommended level of physical activity during leisure time (150 minutes per week of moderate-intensity physical activity or 75 minutes a week of vigorous-intensity physical activity, regardless of the number of days practicing physical activity per week); physical activity in commuting (commute to work or school by bike or walking totaling at least 150 minutes per week in the round trip); insufficient physical activity (< 150 minutes per week of moderate-intensity physical activity or < 75 minutes of vigorous-intensity physical activity during leisure time, commuting to work or school and occupational activity); physically inactive (percentage of adults who did not practice any physical activity during leisure time in the last three months; who do not perform intense physical activity at work; who do not commute to work or school by bike or walking; and who do not handle deep cleaning at home); habit of watching television for three or more hours a day.
 - Body Mass Index (BMI): the percentage of overweight (BMI ≥ 25 kg/m²) and obesity (BMI ≥ 30 kg/m²).
 - Health Self-Assessment: Percentage of individuals who rated their health as poor or very poor.
 - Self-reported morbidity: Percentage of adults who reported medical diagnosis of arterial hypertension, diabetes and dyslipidemia.

Prevalence rates were calculated using as the denominator the total number of adults interviewed. The unequal probability that individuals living in households with more phone lines or fewer residents had to participate in the sample was taken into account in the weighting factors. These factors also correct the over or underestimation of the sample of Vigitel due to the uneven telephone coverage in Brazil, by the poststratification procedure⁵.

The weighting consists of three factors: inverse of the number of telephone lines in the household, the number of adults in the respondent's home and poststratification weighting, organized under the characteristics of gender, age and educational level of the sample and the total population of the Brazilian state capitals (from the 2010 census and census interpolations). Details regarding the methodology and construction of the weighting factors used in Vigitel can be found in its annual report⁵.

The prevalence rates were presented in proportions (%) with confidence intervals (95%CI), according to gender (male and female), age (18 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64 and 65 and over) and educational level (0 to 8, 9 to 11 and 12 years or more of study).

In order to investigate possible differences in prevalence among genders, age and educational levels, the prevalence ratios (PR) were estimated using multiple regression Poisson model with robust variance, adjusting for age, education or both. In each case, the first

category was assumed as reference: women, age group from 18 to 24 years and schooling from 0 to 8 years of study. Data analysis was performed using Stata 12.1 application.

The Vigitel was approved by the National Commission of Ethics in Research on Human Beings of the Ministry of Health, under Opinion No 355,590 of June 26, 2013. The Informed Consent was obtained by verbal consent of the respondent at the time of telephone interview.

RESULTS

From February to December 2014, the Vigitel conducted interviews with 40,853 adults living in all state capitals and in the Federal District. Most respondents (53.9%) were women. The average length of the interviews was approximately 10 minutes, ranging from 4 to 58 minutes. Refusal to participate in the survey was 3.9%, of which 3.1% occurred in the initial telephone contact and 0.8% after the selection of the resident.

Table 1 shows the prevalence of the indicator by gender. The prevalence of smokers among the adult population of the Brazilian state capitals was 10.8% (95%CI 10.1 – 11.4), and ex-smoker who reported consumption of cigarettes in the past was equivalent to 21.2% (95%CI 20.4 – 22.1). About 9% of the population was considered passive smokers either at home (9.4%) or at work (8.9%). The prevalence rates for the indicators of smoking were lower in women compared to men, except for the passive smoke at home.

Habits related to alcohol consumption also had higher frequency among men: the alcohol abuse, reported by 16.5% of the adult population had a prevalence 60% lower in women compared to men (PR = 0.39; 95%CI 0.35 – 0.43), while the frequency of driving a vehicle after the consumption of alcoholic beverages was 80% lower in women compared to men (PR = 0.16; 95%CI 0.13 – 0.20) (Table 1).

Body mass index (BMI) ≥ 25 kg/m², characterizing overweight, reached 52.5% of the adult population, 56.5% of men and 49.1% of women (PR = 0.84; 95%CI 0.81 – 0.87). Among these, 17.9% have reached BMI ≥ 30 kg/m², which is considered obese, with similar frequency between genders (Table 1).

Approximately 36% of adults reported regular consumption (at least five days a week) of fruit and vegetables, but only 24.1% reached the recommended intake of these foods, equivalent to five or more portions per day. For both indicators, the rate was higher for women than for men. The consumption of beans, reported by 66.1%, was more common among men (72.7%) than among women (60.5%). With regard to the diet indicators considered as risk factors, the regular consumption of sweets (20.3 versus 15.6%; PR = 1.34; 95%CI 1.22 – 1.46) and replacing lunch or dinner for snacks (18.8 versus 13.1%; PR = 1.41; 95%CI 1.28 – 1.54) stands out among women. The intake of meat with excessive fat and whole milk were reported by 29.4 and 52.9%, respectively. Both factors, in addition to the regular consumption of soda (20.8%) and the self-assessment of high consumption of salt (15.6%) were higher among men than among women (Table 1).

Table 1. Prevalence and prevalence ratio of risk and protective factors for chronic diseases in the adult population living in Brazilian state capitals and the Federal District, according to gender; Vigitel, 2014.

Indicators	Total		Women		Men		PR*	95%CI
	Prevalence	95%CI	Prevalence	95%CI	Prevalence	95%CI		
Smoking								
Smoker	10.8	10.1 – 11.4	9.0	8.2 – 9.8	12.8	11.7 – 14.0	0.7	0.62 – 0.80
Ex smoker	21.2	20.4 – 22.1	17.5	1.6 – 18.4	25.6	24.3 – 27.0	0.6	0.60 – 0.69
Smokers who consume 20 or more cigarettes per day	3.0	2.7 – 3.4	2.1	1.8 – 2.5	4.1	3.5 – 4.7	0.5	0.40 – 0.64
Passive smokers at home	9.4	8.8 – 10.0	10.0	9.2 – 10.8	8.7	7.7 – 9.7	1.2	1.06 – 1.41
Passive smokers at work	8.9	8.2 – 9.5	5.2	4.7 – 5.8	13.1	12.0 – 14.2	0.4	0.37 – 0.48
Alcohol Consumption								
Abusive alcohol consumption	16.5	15.7 – 17.3	9.4	8.6 – 10.2	24.8	23.4 – 26.2	0.4	0.35 – 0.43
Driving after the consumption of any amount of alcohol	5.9	5.4 – 6.3	1.7	1.4 – 2.1	10.7	9.8 – 11.6	0.2	0.13 – 0.20
Nutritional Status								
Overweight**	52.5	51.5 – 53.5	49.1	47.9 – 50.4	56.5	54.9 – 58.1	0.8	0.81 – 0.87
Obesity**	17.9	17.2 – 18.7	18.2	17.2 – 19.1	17.6	16.4 – 18.8	1.0	0.92 – 1.08
Food Consumption								
Regular consumption of fruit and vegetables	36.5	35.5 – 37.4	42.5	41.3 – 43.7	29.4	28.0 – 30.8	1.39	1.32 – 1.47
Recommended consumption of fruit and vegetables	24.1	23.3 – 24.9	28.2	27.1 – 29.3	19.3	18.1 – 20.5	1.41	1.31 – 1.52
Regular consumption of beans	66.1	65.2 – 67.1	60.5	59.4 – 61.7	72.7	71.3 – 74.1	0.84	0.82 – 0.86
Meat with excessive fat	29.4	28.5 – 30.4	21.7	20.6 – 22.8	38.4	36.9 – 40.0	0.59	0.55 – 0.63
Whole milk	52.9	51.9 – 53.9	50.4	49.2 – 51.7	55.7	54.1 – 57.3	0.92	0.89 – 0.96
Regular consumption of soda	20.8	19.9 – 21.7	18.2	17.2 – 19.2	23.9	22.4 – 25.3	0.80	0.74 – 0.87
Regular consumption of sweets	18.1	17.4 – 18.9	20.3	19.2 – 21.3	15.6	14.5 – 16.8	1.34	1.22 – 1.46
High intake of salt	15.6	14.8 – 16.3	14.1	13.1 – 15.0	17.4	16.2 – 18.6	0.85	0.77 – 0.93
Replacement of main meals for snacks	16.2	15.5 – 16.8	18.8	17.9 – 19.7	13.1	12.0 – 14.1	1.41	1.28 – 1.54
Physical Activity								
Recommended level of physical activity during leisure	35.3	34.4 – 26.3	30.0	28.8 – 31.1	41.6	40.0 – 43.2	0.73	0.70 – 0.77
Physical activity during commute	12.3	11.5 – 13.0	11.6	10.8 – 12.5	13.0	11.8 – 14.2	0.94	0.83 – 1.05
Insufficient physical activity	48.7	47.7 – 49.7	56.0	54.8 – 57.2	40.1	38.6 – 41.7	1.36	1.30 – 1.42
Physically inactive	15.4	14.7 – 16.1	14.7	13.9 – 15.6	16.2	15.0 – 17.4	0.87	0.80 – 0.96
Habit of watching television for three or more hours per day	25.3	24.4 – 26.2	24.9	23.8 – 26.0	25.8	24.4 – 27.2	0.97	0.90 – 1.04
Health Self-assessment and morbidity								
Self-assessment of poor health	4.4	4.1 – 4.8	3.4	2.8 – 4.1	5.3	4.8 – 5.8	1.53	1.26 – 1.86
Medical diagnosis of arterial hypertension	24.8	24.0 – 25.6	26.8	25.7 – 27.8	22.5	21.3 – 23.8	1.07	1.01 – 1.14
Medical diagnosis of diabetes	8.0	7.5 – 8.5	8.7	8.0 – 9.4	7.3	6.5 – 8.1	1.05	0.93 – 1.19
Medical diagnosis of dyslipidemia	20.0	19.3 – 20.8	22.2	21.2 – 23.1	17.6	16.4 – 18.7	1.17	1.08 – 1.26

*Prevalence ratio for women / men adjusted for age and educational level; ** data input; PR: prevalence ratio; 95%CI: confidence interval of 95%

Physical activity during leisure time was observed in 35.3% of the population, 30.0% of women and 41.6% of men (PR = 0.73; 95%CI 0.70 – 0.77). On the other hand, active commuting to work or school (on foot or by bicycle, in a distance of at least 10 minutes) was reported by 12.3% of the total, with no differences between genders. Meanwhile, insufficient physical activity during leisure time, corresponding to those that do not reach at least 150 minutes of weekly physical activity reached 48.7%, more frequently among women (56%) than among men (40.1%; PR = 1.36; 95%CI 1.30 – 1.42). Furthermore, 15.4% of the population was considered physically inactive in all of the four characteristics, 14.7% of women and 16.2% of men (PR = 0.87; 95%CI 0.80 – 0.96) and 25.3% watch television for three hours or more daily, with similar results for men and women.

The self-assessment of poor health, reported by 4.4% of the population, was more common among women (5.3%) than among men (3.4%; PR = 1.53; 95%CI 1.26 – 1.86). The medical diagnosis of arterial hypertension was reported by 24.8% and 20.0% reported dyslipidemia, both factors more common among women than among men. Among the population, 8% reported diagnosis of diabetes, 8.7% of women and 7.3% of men, however, presenting no differences when adjusted for age and education (Table 1).

Table 2 shows the frequencies of the indicators by age and adjusted prevalence ratios for education, with the age range of 18 to 24 years as reference category. The prevalence of smokers tended to be higher in the range of 25 to 34 years old and 45 to 54 years old compared to the younger population (18 to 24 years old). The prevalence of former smokers tended to increase with age, reaching a peak after 45 years of age. The frequency of adults considered heavy smokers (those who consume 20 or more cigarettes/day) increased from 25 to 34 years old. On the other hand, the frequency of passive smokers at home tended to decrease with advancing age, with a prevalence of 15.1% (95%CI 13.0 – 17.3) in the population of 18 to 24 years and 7.5 % (95%CI 7.3 – 8.8) in the population aged 65 and over. The frequency of passive smokers in the workplace decreased from 55 years of age (Table 2).

The alcohol abuse was most frequent between 25 and 34 years old, reducing considerably from 55 years of age. The motor vehicle driving after consuming any amount of alcohol was higher from 25 to 44 years of age, and lower in the population aged 65 and older (Table 2).

The prevalence rates of overweight and obesity increased with advancing age, especially in the range of 35 to 44 years. With regard to the intake of fruits and vegetables, regular consumption increased gradually with increasing age, and the recommended consumption showed an increase from 35 to 44 years. Regular consumption of beans showed a slight reduction from 45 years. The intake of meat with excessive fat and whole milk were more frequent between 18 and 34 years, with gradual reduction from 35 years. Regular consumption of soda and sweets and high salt intake also showed a reduction with advancing age. With regard to high salt intake, the rate was 70% lower for the group of 65 and over compared to the age range of 18 to 24 years (PR = 0.3; 95%CI 0.2 – 0.3). The replacement of main meals (lunch and/or dinner) for snacks in seven or more days a week was higher among adults aged 55 years and older (Table 2).

Table 2. Distribution of risk and protective factors for chronic diseases in the adult population living in Brazilian state capitals and the Federal District, according to age, and prevalence ratio adjusted for educational level; Vigitel, 2014.

Indicators	18 to 24 years			25 to 34 years			
	Prevalence	95%CI	PR*	Prevalence	95%CI	PR*	95%CI
Smoking							
Smoker	7.8	6.3 – 9.4	1.0	11.9	10.2 – 13.6	1.55	1.2 – 2.0
Ex smoker	10.3	8.4 – 12.3	1.0	12.8	11.1 – 14.4	1.24	1.0 – 1.6
Smokers who consume 20 or more cigarettes per day	1.0	0.6 – 1.4	1.0	3.0	2.1 – 3.9	3.18	1.9 – 5.4
Passive smokers at home	15.1	13.0 – 17.3	1.0	10.7	9.1 – 12.2	0.71	0.6 – 0.9
Passive smokers at work	10.3	8.3 – 12.3	1.0	9.7	8.4 – 11.0	0.98	0.8 – 1.2
Alcohol Consumption							
Abusive alcohol consumption	18.2	16.1 – 20.4	1.0	23.2	21.2 – 25.2	1.27	1.1 – 1.5
Driving after the consumption of any amount of alcohol	4.4	3.4 – 5.4	1.0	9.8	8.5 – 11.1	2.12	1.6 – 2.8
Nutritional Status							
Overweight**	31.5	28.9 – 34.1	1.0	48.9	45.7 – 50.3	1.5	1.4 – 1.7
Obesity**	8.5	7.0 – 10.0	1.0	15.1	13.5 – 16.7	1.8	1.5 – 2.2
Food Consumption							
Regular consumption of fruit and vegetables	27.5	25.1 – 29.8	1.0	33.9	31.8 – 36.0	1.2	1.1 – 1.3
Recommended consumption of fruit and vegetables	19.2	17.1 – 21.1	1.0	22.7	20.9 – 24.6	1.2	1.0 – 1.3
Regular consumption of beans	69.3	66.9 – 71.8	1.0	65.9	63.8 – 68.0	1.0	0.9 – 1.0
Meat with excessive fat	38.0	35.3 – 40.8	1.0	35.4	33.2 – 37.6	0.9	0.9 – 1.0
Whole milk	60.2	57.5 – 62.9	1.0	54.0	51.7 – 56.3	0.9	0.9 – 1.0
Regular consumption of soda	28.9	26.3 – 31.5	1.0	25.9	23.9 – 28.0	0.9	0.8 – 1.0
Regular consumption of sweets	27.3	24.7 – 29.9	1.0	22.2	20.4 – 24.1	0.8	0.7 – 0.9
High intake of salt	24.4	21.9 – 26.8	1.0	19.9	18.1 – 21.8	0.8	0.7 – 0.9
Replacement of main meals for snacks	15.4	13.2 – 17.6	1.0	13.8	12.3 – 15.2	0.9	0.7 – 1.1
Physical Activity							
Recommended level of physical activity during leisure	50.0	47.1 – 52.8	1.0	41.5	39.3 – 43.7	0.8	0.8 – 0.9
Physical activity during commute	14.9	12.6 – 17.2	1.0	13.7	12.0 – 15.3	0.9	0.8 – 1.1
Insufficient physical activity	37.0	34.3 – 39.8	1.0	41.3	39.0 – 43.5	1.1	1.0 – 1.2
Physically inactive	12.0	10.3 – 13.6	1.0	12.3	10.6 – 14.0	1.0	0.8 – 1.2
Habit of watching television for three or more hours per day	25.3	22.8 – 27.7	1.0	26.1	24.0 – 28.2	1.1	0.9 – 1.2
Health Self-assessment and morbidity							
Self-assessment of poor health	3.4	2.3 – 4.6	1.0	3.1	2.4 – 3.8	0.9	0.6 – 1.4
Medical diagnosis of arterial hypertension	4.6	3.4 – 5.8	1.0	9.5	8.2 – 10.8	2.1	1.6 – 2.8
Medical diagnosis of diabetes	1.0	0.4 – 1.6	1.0	1.6	1.0 – 2.1	1.6	0.8 – 3.1
Medical diagnosis of dyslipidemia	6.8	5.2 – 8.4	1.0	10.6	9.1 – 12.1	1.6	1.2 – 2.0

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Table 2. Continuation.

Indicators	35 to 44 years				45 to 54 years			
	Prevalence	95%CI	PR*	95%CI	Prevalence	95%CI	PR*	95%CI
Smoking								
Smoker	9.9	8.5 – 11.2	1.12	0.9 – 1.4	13.2	11.7 – 14.6	1.39	1.1 – 1.8
Ex smoker	15.8	14.2 – 17.4	1.43	1.1 – 1.8	30.2	28.1 – 32.2	2.64	2.1 – 3.3
Smokers who consume 20 or more cigarettes per day	2.7	2.0 – 3.4	2.54	1.5 – 4.2	5.0	4.0 – 6.0	4.54	2.8 – 7.4
Passive smokers at home	7.3	6.1 – 8.4	0.46	0.4 – 0.6	6.8	5.8 – 7.9	0.43	0.3 – 0.5
Passive smokers at work	10.6	9.1 – 12.0	0.92	0.7 – 1.2	9.6	8.3 – 10.9	0.78	0.6 – 1.0
Alcohol Consumption								
Abusive alcohol consumption	18.0	16.2 – 19.7	1.02	0.9 – 1.2	15.1	13.7 – 16.6	0.9	0.7 – 1.0
Driving after the consumption of any amount of alcohol	6.7	5.6 – 7.8	1.68	1.3 – 2.2	4.8	3.9 – 5.8	1.3	1.0 – 1.8
Nutritional Status								
Overweight**	58.6	56.5 – 60.8	1.8	1.7 – 2.0	61.6	59.5 – 63.6	1.9	1.8 – 2.1
Obesity**	22.0	20.1 – 23.9	2.5	2.0 – 3.0	21.3	19.5 – 23.0	2.3	1.9 – 2.8
Food Consumption								
Regular consumption of fruit and vegetables	33.9	31.8 – 35.9	1.3	1.1 – 1.4	38.7	36.7 – 40.8	1.5	1.4 – 1.7
Recommended consumption of fruit and vegetables	23.4	21.6 – 25.3	1.3	1.2 – 1.5	25.9	24.1 – 17.8	1.5	1.3 – 1.7
Regular consumption of beans	67.0	65.0 – 69.0	0.9	0.9 – 1.0	65.4	63.5 – 67.4	0.9	0.9 – 0.9
Meat with excessive fat	29.0	27.0 – 31.1	0.7	0.7 – 0.8	26.2	24.2 – 28.2	0.6	0.6 – 0.7
Whole milk	54.2	52.0 – 56.4	0.9	0.8 – 0.9	51.0	48.8 – 53.1	0.8	0.8 – 0.9
Regular consumption of soda	21.7	19.8 – 23.7	0.7	0.7 – 0.9	17.8	15.9 – 19.6	0.6	0.5 – 0.7
Regular consumption of sweets	17.4	15.8 – 19.1	0.7	0.6 – 0.8	12.9	11.5 – 14.3	0.5	0.5 – 0.6
High intake of salt	15.4	13.9 – 16.9	0.7	0.6 – 0.8	12.6	11.1 – 14.1	0.6	0.5 – 0.7
Replacement of main meals for snacks	14.8	13.3 – 16.3	1.0	0.9 – 1.2	15.2	13.8 – 16.6	1.1	0.9 – 1.3
Physical Activity								
Recommended level of physical activity during leisure	31.2	29.3 – 33.2	0.7	0.6 – 0.7	30.1	28.2 – 32.0	0.7	0.6 – 0.8
Physical activity during commute	14.3	12.7 – 15.9	0.9	0.7 – 1.1	12.7	11.3 – 14.1	0.8	0.6 – 0.9
Insufficient physical activity	47.2	45.0 – 49.3	1.2	1.1 – 1.4	51.2	49.1 – 53.4	1.3	1.2 – 1.5
Physically inactive	10.7	9.4 – 12.0	0.9	0.7 – 1.1	13.9	12.4 – 15.5	1.1	0.9 – 1.4
Habit of watching television for three or more hours per day	22.9	21.1 – 24.8	0.9	0.8 – 1.0	24.1	22.2 – 25.9	0.9	0.8 – 1.1
Health Self-assessment and morbidity								
Self-assessment of poor health	3.7	2.9 – 4.5	0.9	0.6 – 1.4	5.5	4.5 – 6.5	1.2	0.8 – 1.9
Medical diagnosis of arterial hypertension	19.5	17.7 – 21.3	4.1	3.1 – 5.3	32.6	30.6 – 34.6	6.6	5.1 – 8.6
Medical diagnosis of diabetes	3.9	3.0 – 4.9	3.5	1.9 – 6.6	11.5	9.9 – 13.0	9.8	5.4 – 17.6
Medical diagnosis of dyslipidemia	17.4	15.8 – 19.0	2.6	2.0 – 3.3	29.3	27.4 – 31.2	4.3	3.4 – 5.5

Continue...

Table 2. Continuation.

Indicators	55 to 64 years				65 years and over			
	Prevalence	95%CI	PR*	95%CI	Prevalence	95%CI	PR*	95%CI
Smoking								
Smoker	12.5	10.9 – 14.1	1.27	1.0 – 1.6	8.1	6.7 – 9.5	0.8	0.6 – 1.0
Ex smoker	37.5	35.1 – 39.9	3.21	2.6 – 4.0	34.9	32.7 – 37.1	2.9	2.3 – 3.6
Smokers who consume 20 or more cigarettes per day	4.2	3.3 – 5.1	3.72	2.3 – 6.2	2.4	1.7 – 3.2	2.0	1.1 – 3.6
Passive smokers at home	8.1	6.6 – 9.6	0.50	0.4 – 0.6	7.5	6.3 – 8.8	0.5	0.4 – 0.6
Passive smokers at work	6.9	5.6 – 8.3	0.55	0.4 – 0.7	2.5	1.6 – 3.4	0.2	0.1 – 0.3
Alcohol Consumption								
Abusive alcohol consumption	11.0	9.5 – 12.5	0.6	0.5 – 0.8	3.8	2.9 – 4.7	0.2	0.2 – 0.3
Driving after the consumption of any amount of alcohol	3.2	2.5 – 4.0	0.9	0.7 – 1.3	1.8	1.2 – 2.5	0.6	0.4 – 0.9
Nutritional Status								
Overweight**	61.8	59.4 – 64.3	1.9	1.8 – 2.1	57.8	55.6 – 60.1	1.8	1.6 – 2.0
Obesity**	23.1	21.0 – 25.2	2.5	2.0 – 3.0	19.8	18.0 – 21.5	2.0	1.6 – 2.5
Food Consumption								
Regular consumption of fruit and vegetables	44.6	42.4 – 47.1	1.8	1.6 – 2.0	47.6	45.4 – 49.9	1.9	1.8 – 2.2
Recommended consumption of fruit and vegetables	28.7	26.5 – 31.0	1.7	1.5 – 2.0	27.8	25.8 – 29.9	1.8	1.6 – 2.1
Regular consumption of beans	65.9	63.7 – 68.1	0.9	0.9 – 0.9	62.0	59.8 – 64.1	0.8	0.8 – 0.9
Meat with excessive fat	20.1	18.0 – 22.2	0.5	0.4 – 0.6	19.0	17.0 – 20.9	0.4	0.4 – 0.5
Whole milk	46.0	43.5 – 48.5	0.7	0.7 – 0.8	47.8	45.6 – 50.1	0.8	0.7 – 0.8
Regular consumption of soda	11.8	10.1 – 13.5	0.4	0.3 – 0.5	10.1	8.6 – 11.5	0.3	0.3 – 0.4
Regular consumption of sweets	10.9	9.4 – 12.4	0.5	0.4 – 0.6	12.9	11.4 – 14.3	0.6	0.5 – 0.7
High intake of salt	8.4	7.1 – 9.8	0.4	0.3 – 0.5	5.5	4.4 – 6.6	0.3	0.2 – 0.3
Replacement of main meals for snacks	17.5	15.9 – 19.2	1.3	1.1 – 1.5	25.4	23.5 – 27.2	1.9	1.6 – 2.3
Physical Activity								
Recommended level of physical activity during leisure	28.4	26.2 – 30.5	0.7	0.6 – 0.7	22.8	21.0 – 24.5	0.6	0.5 – 0.7
Physical activity during commute	9.6	8.1 – 11.2	0.6	0.4 – 0.7	3.6	2.7 – 4.5	0.2	0.1 – 0.3
Insufficient physical activity	57.3	54.8 – 59.7	1.5	1.4 – 1.6	72.5	70.6 – 74.5	1.8	1.7 – 2.0
Physically inactive	15.9	14.0 – 17.8	1.3	1.1 – 1.6	38.2	35.9 – 40.5	3.1	2.6 – 3.6
Habit of watching television for three or more hours per day	25.2	23.0 – 27.2	1.0	0.9 – 1.1	30.1	28.1 – 32.2	1.2	1.0 – 1.3
Health Self-assessment and morbidity								
Self-assessment of poor health	6.1	5.0 – 7.2	1.3	0.9 – 2.0	6.9	5.8 – 7.9	1.3	0.9 – 2.0
Medical diagnosis of arterial hypertension	50.2	47.7 – 52.7	10.1	7.8 – 13.0	59.9	57.6 – 62.1	11.7	9.0 – 15.1
Medical diagnosis of diabetes	18.2	16.2 – 20.1	15.1	8.4 – 26.9	24.4	22.4 – 26.5	19.1	10.7 – 34.2
Medical diagnosis of dyslipidemia	35.5	33.2 – 37.8	5.2	4.1 – 6.7	34.7	32.6 – 36.8	5.1	4.0 – 6.6

*Prevalence ratio adjusted for educational level; **low accuracy; ***data input; PR: prevalence ratio; 95%CI: confidence interval of 95%.

The physical activity during leisure time decreases significantly with age, especially up to 35 to 44 years of age, and again among adults aged 65 and older, whose prevalence was 40% lower (22.8%; 95%CI 21.0 – 25.5) in relation to younger people from 18 to 24 years (50.0%; 95%CI 47.1 – 52.8; PR = 0.6; 95%CI 0.5 – 0.7). Active commuting to work or school decreases from 45 years of age. On the other hand, insufficient physical activity increases with advancing age from 35 to 44 years, and physical inactivity in all areas increases from 55 to 64 years (Table 2).

The self-assessment of poor health tended to be more frequent from 55 years of age; however, no significant differences were observed when the adjustment for schooling was performed. The frequency of medical diagnoses of diseases such as arterial hypertension, diabetes and dyslipidemia increased considerably with age: the prevalence of arterial hypertension was 3 times higher from the age of 35 years compared to the range from 18 to 24 years (PR = 4.1; 95%CI 3.1 – 5.3). Diabetes increased from 35 years of age (PR = 3.5; 95%CI 1.9 to 6.6) and affected more than a fifth of the population aged 65 years or older (24.4%; 95%CI 22.4 – 26.5). Dyslipidemia affected more than a third of the population and showed a prevalence ratio 4 times higher among the elderly compared to younger population (PR = 5.2; 95%CI 4.1 – 6.7) (Table 2).

In Tables 3 and 4, the same indicators are evaluated according to educational level. The prevalence of smokers and ex-smokers was higher in men and women with up to 8 years of study and decreased with increasing level of education. The frequency of consumption of 20 or more cigarettes a day was 60% lower for men in the range of 12 or more years of schooling than those who studied up to 8 years (PR = 0.4; 95%CI 0.3 – 0.5), with no difference in relation to women.

The frequency of passive smoke at home showed no variation according to schooling. The percentage of men who were passive smokers at work decreased with increasing level of schooling (Table 3). For women, age-adjusted prevalence was lower among those who studied 12 years or more (PR = 0.6; 95%CI 0.4 – 0.8) (Table 4).

When adjusting for age, there were no significant differences in the alcohol abuse among men. The frequency of the habit of driving after consuming any amount of alcoholic beverage gradually increased according to the educational level among men (Table 3). For women, the frequency of alcohol abuse was 60% higher among those who studied 12 years or more compared to less educated women (PR = 1.6; 95%CI 1.2 – 2.1). The more educated women also had a higher prevalence of the habit of driving after alcohol consumption (Table 4).

Overweight did not change according to the educational level among men; however, obesity was less common among men with 12 or more years of education than among those who studied up to 8 years (Table 3). Among women, overweight and obesity gradually reduced with increased education (Table 4).

Regular and recommended consumption of fruits and vegetables was higher among the more educated men and women. The regular consumption of beans decreased with increasing education for both men and women. The intake of meat with excessive fat was lower

Table 3. Prevalence of risk and protective factors for chronic diseases in the adult population of men living in Brazilian state capitals and the Federal District, according to educational level, and prevalence ratio adjusted for age; Vigitel, 2014.

Indicators	0 to 8 years of schooling			9 to 11 years of schooling				12 years and more of schooling			
	Prevalence	95%CI	PR*	Prevalence	95%CI	PR*	95%CI	Prevalence	95%CI	PR*	95%CI
Smoking											
Smoker	16.4	14.3 – 18.6	1.0	12.9	11.1 – 14.7	0.7	0.6 – 0.9	7.6	6.0 – 9.1	0.4	0.3 – 0.5
Ex smoker	36.2	33.5 – 38.9	1.0	20.3	18.6 – 22.1	0.8	0.7 – 0.9	18.5	15.9 – 21.1	0.7	0.6 – 0.8
Smokers who consume 20 or more cigarettes per day	5.6	4.4 – 6.8	1.0	4.0	3.0 – 5.0	0.8	0.6 – 1.1	2.0	1.4 – 2.7	0.4	0.3 – 0.8
Passive smokers at home	8.8	7.1 – 10.5	1.0	8.6	7.2 – 10.1	0.8	0.6 – 1.0	8.7	6.2 – 11.2	0.8	0.6 – 1.1
Passive smokers at work	16.5	14.2 – 18.8	1.0	14.1	12.5 – 15.8	0.7	0.6 – 0.9	6.6	5.0 – 8.1	0.3	0.3 – 0.5
Alcohol Consumption											
Abusive alcohol consumption	19.8	17.5 – 22.0	1.0	27.8	25.6 – 30.0	1.2	1.0 – 1.4	27.6	24.7 – 30.5	1.2	1.0 – 1.4
Driving after the consumption of any amount of alcohol	6.4	5.2 – 7.7	1.0	11.4	9.9 – 13.0	1.6	1.2 – 2.0	15.8	13.7 – 17.9	2.1	1.7 – 2.8
Nutritional Status											
Overweight**	56.9	54.0 – 59.9	1.0	56.5	54.1 – 58.9	1.1	1.0 – 1.2	55.8	52.7 – 58.9	1.1	1.0 – 1.2
Obesity**	20.4	18.0 – 22.7	1.0	17.2	15.4 – 18.9	0.9	0.8 – 1.1	14.4	12.5 – 16.4	0.8	0.6 – 0.9
Food Consumption											
Regular consumption of fruit and vegetables	22.9	20.6 – 25.1	1.0	28.8	26.7 – 31.0	1.5	1.3 – 1.7	39.7	36.7 – 42.6	2.0	1.8 – 2.3
Recommended consumption of fruit and vegetables	15.0	13.0 – 16.9	1.0	19.0	17.1 – 21.0	1.5	1.2 – 1.7	26.0	23.5 – 28.6	2.0	1.7 – 2.3
Regular consumption of beans	76.9	74.7 – 79.1	1.0	74.0	72.0 – 75.9	0.9	0.9 – 1.0	64.8	61.8 – 67.8	0.8	0.8 – 0.9
Meat with excessive fat	38.0	35.2 – 40.8	1.0	41.6	39.2 – 44.0	0.9	0.9 – 1.0	34.2	31.2 – 37.2	0.8	0.7 – 0.9
Whole milk	54.4	51.5 – 57.3	1.0	60.8	58.5 – 63.1	1.1	1.0 – 1.1	49.8	46.7 – 53.0	0.9	0.8 – 1.0
Regular consumption of soda	20.1	17.5 – 22.6	1.0	27.9	25.6 – 30.2	1.1	1.0 – 1.1	23.3	20.6 – 26.0	0.9	0.8 – 1.1
Regular consumption of sweets	10.8	8.9 – 12.7	1.0	17.5	15.6 – 19.3	1.4	1.1 – 1.7	19.9	17.5 – 22.3	1.6	1.3 – 2.0
High intake of salt	11.3	9.5 – 11.3	1.0	19.9	17.9 – 22.0	1.4	1.1 – 1.7	22.2	19.7 – 24.7	1.6	1.3 – 1.9
Replacement of main meals for snacks	12.3	10.2 – 14.3	1.0	12.1	10.7 – 13.4	1.2	0.9 – 1.5	15.8	13.7 – 17.8	1.5	1.2 – 1.9
Physical Activity											
Recommended level of physical activity during leisure	25.1	22.6 – 27.7	1.0	48.1	45.7 – 50.5	1.6	1.4 – 1.8	55.3	52.2 – 58.5	1.9	1.7 – 2.1
Physical activity during commute	13.9	11.7 – 16.2	1.0	13.7	11.8 – 15.6	0.8	0.6 – 1.0	10.7	8.7 – 12.6	0.6	0.5 – 0.8
Insufficient physical activity	48.5	45.6 – 51.4	1.0	34.6	32.4 – 36.8	0.9	0.8 – 1.0	36.5	33.4 – 39.7	0.9	0.8 – 1.0
Physically inactive	21.2	18.9 – 23.6	1.0	12.5	11.1 – 13.9	0.8	0.7 – 1.0	14.5	12.0 – 17.1	0.9	0.7 – 1.1
Habit of watching television for three or more hours per day	26.4	23.9 – 29.0	1.0	28.0	25.8 – 30.2	1.1	0.9 – 1.2	21.6	18.8 – 24.4	0.8	0.7 – 0.9
Health Self-assessment and morbidity											
Self-assessment of poor health	5.6	4.2 – 7.1	1.0	2.8	2.0 – 3.5	0.5	0.3 – 0.8	1.3	0.9 – 1.7	0.2	0.1 – 0.4
Medical diagnosis of arterial hypertension	31.7	29.2 – 34.3	1.0	17.8	16.1 – 19.6	1.0	0.9 – 1.1	16.5	14.5 – 18.4	0.9	0.7 – 1.0
Medical diagnosis of diabetes	12.3	10.5 – 14.1	1.0	4.8	3.9 – 5.6	0.9	0.7 – 1.1	3.9	3.0 – 4.8	0.6	0.5 – 0.8
Medical diagnosis of dyslipidemia	20.3	18.1 – 22.6	1.0	14.4	12.9 – 15.9	1.1	0.9 – 1.3	18.4	15.8 – 20.9	1.3	1.1 – 1.5

*Prevalence ratio adjusted for age; **data input; PR: prevalence ratio; 95%CI: confidence interval of 95%.

Table 4. Prevalence of risk and protective factors for chronic diseases in the adult population of women living in Brazilian state capitals and the Federal District, according to educational level, and prevalence ratio adjusted for age; Vigitel, 2014.

Indicators	0 to 8 years of schooling			9 to 11 years of schooling				12 years and more of schooling			
	Prevalence	95%CI	PR*	Prevalence	95%CI	PR*	95%CI	Prevalence	95%CI	PR*	95%CI
Smoking											
Smoker	12.1	10.6 – 13.7	1.0	8.0	6.8 – 9.3	0.7	0.5 – 0.8	6.1	4.8 – 7.4	0.5	0.4 – 0.6
Ex smoker	24.9	23.0 – 26.8	1.0	14.0	12.7 – 15.3	0.8	0.7 – 0.9	12.6	11.1 – 14.0	0.7	0.6 – 0.8
Smokers who consume 20 or more cigarettes per day	2.7	2.0 – 3.4	1.0	1.9	1.3 – 2.5	0.9	0.5 – 1.4	1.7	1.0 – 2.4	0.7	0.4 – 1.2
Passive smokers at home	9.2	8.0 – 10.4	1.0	11.0	9.7 – 12.4	0.9	0.8 – 1.1	9.6	8.0 – 11.1	0.8	0.6 – 1.0
Passive smokers at work	5.1	4.1 – 6.0	1.0	6.2	5.2 – 7.2	0.9	0.7 – 1.1	4.1	3.1 – 5.1	0.6	0.4 – 0.8
Alcohol Consumption											
Abusive alcohol consumption	5.8	4.6 – 7.0	1.0	10.3	9.0 – 11.6	1.3	1.0 – 1.7	12.9	11.3 – 14.6	1.6	1.2 – 2.1
Driving after the consumption of any amount of alcohol	0.1	0.0 – 0.2	1.0	1.2	0.7 – 1.7	6.6	3.0 – 14.2	4.7	3.7 – 5.7	23.5	11.5 – 48.0
Nutritional Status											
Overweight**	60.7	58.6 – 62.8	1.0	47.4	45.4 – 49.3	0.9	0.9 – 1.0	36.1	34.0 – 38.3	0.7	0.6 – 0.7
Obesity**	24.8	23.0 – 26.6	1.0	17.2	15.8 – 18.6	0.8	0.7 – 0.9	10.6	9.3 – 12.0	0.5	0.4 – 0.6
Food Consumption											
Regular consumption of fruit and vegetables	40.7	38.6 – 42.8	1.0	37.4	35.5 – 39.2	1.1	1.0 – 1.2	52.2	49.8 – 54.5	1.6	1.4 – 1.7
Recommended consumption of fruit and vegetables	24.8	22.9 – 26.6	1.0	25.5	23.9 – 27.2	1.2	1.1 – 1.4	36.7	34.4 – 38.9	1.8	1.6 – 2.0
Regular consumption of beans	65.2	63.2 – 67.2	1.0	61.1	59.2 – 63.0	0.9	0.9 – 0.9	53.6	51.2 – 55.9	0.8	0.7 – 0.8
Meat with excessive fat	20.9	19.0 – 22.7	1.0	23.5	21.7 – 25.3	0.8	0.7 – 0.9	20.3	18.3 – 22.4	0.7	0.6 – 0.8
Whole milk	52.7	50.6 – 54.8	1.0	54.8	52.9 – 56.8	0.9	0.9 – 1.0	41.2	38.9 – 43.5	0.7	0.7 – 0.8
Regular consumption of soda	16.3	14.5 – 18.0	1.0	21.4	19.7 – 23.1	1.0	0.8 – 1.1	16.2	14.3 – 18.0	0.7	0.6 – 0.9
Regular consumption of sweets	11.4	10.1 – 12.7	1.0	22.1	20.3 – 23.8	1.6	1.4 – 1.9	29.6	27.3 – 32.0	2.1	1.8 – 2.5
High intake of salt	9.4	8.1 – 10.6	1.0	15.9	14.4 – 17.5	1.2	1.0 – 1.4	17.7	15.7 – 19.7	1.3	1.1 – 1.6
Replacement of main meals for snacks	17.4	16.0 – 18.8	1.0	19.2	17.7 – 20.7	1.3	1.2 – 1.5	20.1	18.2 – 21.9	1.4	1.2 – 1.6
Physical Activity											
Recommended level of physical activity during leisure	21.1	19.3 – 22.8	1.0	30.2	28.4 – 31.9	1.4	1.2 – 1.5	41.7	39.3 – 44.0	1.9	1.7 – 2.1
Physical activity during commute	11.7	10.2 – 13.2	1.0	13.1	11.7 – 14.5	0.8	0.7 – 1.0	9.4	8.0 – 10.8	0.6	0.5 – 0.7
Insufficient physical activity	64.2	62.1 – 66.3	1.0	53.9	51.9 – 55.8	0.9	0.9 – 1.0	48.0	45.7 – 50.4	0.8	0.8 – 0.9
Physically inactive	17.0	15.6 – 18.5	1.0	12.8	11.4 – 14.1	1.0	0.9 – 1.1	14.5	12.9 – 16.0	1.2	1.0 – 1.4
Habit of watching television for three or more hours per day	26.3	24.4 – 28.1	1.0	27.6	25.8 – 29.4	1.1	1.0 – 1.2	19.2	17.4 – 21.0	0.8	0.7 – 0.9
Health Self-assessment and morbidity											
Self-assessment of poor health	8.3	7.2 – 9.3	1.0	4.9	4.1 – 5.7	0.7	0.5 – 0.8	1.9	1.5 – 2.3	0.3	0.2 – 0.3
Medical diagnosis of arterial hypertension	43.6	41.6 – 45.7	1.0	20.6	19.1 – 22.1	0.8	0.8 – 0.9	13.0	11.6 – 14.4	0.5	0.5 – 0.6
Medical diagnosis of diabetes	15.9	14.4 – 17.4	1.0	5.4	4.6 – 6.2	0.7	0.6 – 0.8	3.6	2.8 – 4.4	0.5	0.4 – 0.6
Medical diagnosis of dyslipidemia	30.5	28.7 – 32.3	1.0	18.6	17.2 – 20.0	1.0	0.9 – 1.0	16.2	14.7 – 17.7	0.9	0.8 – 1.0

*Prevalence ratio adjusted for age; **data input; PR: prevalence ratio; 95%CI: confidence interval of 95%.

among more educated men and women, and the consumption of whole milk showed the same variation only among women (Tables 3 and 4).

The regular consumption of soda did not vary according to the educational level among men and was less common on women with 12 years or more of study. Regular consumption of sweets, self-assessment of high intake of salt and the replacement of lunch and dinner for snacks were more frequent among more educated men and women (Tables 3 and 4).

In both genders, the practice of physical activity during leisure time increased with schooling, while physical activity in commuting and the habit of watching television for three or more hours a day was lower among more educated men and women (Tables 3 and 4). Insufficient physical activity was also higher among the more educated women (Table 4).

The self-assessment of poor health and the frequency of physician-diagnosed diseases such as arterial hypertension, diabetes and dyslipidemia tended to be higher among less educated men and women. The adjusted prevalence showed gradual reduction of self-assessment of poor health with increased education. Among men, the lowest frequency of diabetes and the highest frequency of dyslipidemia were observed among the more educated (Table 3). Among women, the frequency of diagnosis of arterial hypertension and diabetes decreased with education, and the diagnosis of dyslipidemia showed no significant variation (Table 4).

DISCUSSION

The monitoring of risk and protective factors for Noncommunicable diseases is of great importance for the support of health promotion policies and for dealing with NCDs^{3, 6}. The current study presents the results of the ninth year of Vigitel, reinforcing the importance of this monitoring and consolidating this nationwide survey as a major source of information of risk factors in the country.

Risk factors investigated were more frequent among men, particularly tobacco and alcohol consumption, and among the less educated population, characterizing the socio-economic and cultural dimensions in determining chronic diseases. The diagnosis of chronic diseases and overweight was higher among older adults, as a result of the exposure to risk factors throughout life.

The number of smokers has been decreasing constantly in the past decades in Brazil^{6,7}, but still accounts for 10% of the population, especially among the less educated men. The country has one of the lowest prevalence in the world⁸. In Latin America, other countries also have much higher frequencies, such as Chile (40.6%), Bolivia (26.6%), Ecuador (22.7%) and Argentina (21.9%)⁹.

The prevalence of smoking in 1989 was 36.4%, however, it has reduced substantially in recent decades due to the measures adopted for controlling smoking^{7,10,11}.

In 2014, the presidential decree on smoke-free environments banned the use of cigarettes, cigars, pipes, hookahs or other smoking products, derived or not from tobacco, in public indoor environments and prohibited all advertising and promotion of cigarettes, besides expanding health warning messages on cigarette packages. In addition to these measures, the presidential decree raised taxes and established minimum prices for cigarettes¹¹. These measures are in line with the best practices recommended by the World Health Organization (WHO)⁴.

The consumption of alcoholic drinks and the dangerous habit of driving after alcohol consumption were more frequent among younger and more educated men, being the last an important cultural factor that should be repressed by the society itself. In 2012, over 3.3 million people died worldwide due to alcohol consumption, which represents 6% of all deaths in the planet¹². There was a reduction in the occurrence of driving after alcohol abuse as a result of the implementation of Law No. 11,705, of June 19, 2008 (called Dry Law - “Lei Seca”)¹³ and the approval of Law No. 12,760/2012¹⁴, which raised the penalty amount, in addition to authorizing the use of evidences such as videos, testimonials or other means, in order to prove the driver’s intoxication in a criminal case¹⁵.

The consumption of fruit and vegetables was reported by more than a third of Brazilians and the recommended intake (five servings or 400 g of fruit and vegetables per day) by around a quarter of the adults, being more frequent among women and the elderly. The consumption of fruit and vegetables prevents cardiovascular diseases, diabetes, cancer, and its consumption increase is recommended in the Brazilian dietary guidelines¹⁶ and worldwide⁴. The replacement of meals for snacks and the consumption of sweets and salt showed high frequencies, emphasizing the importance of communication actions related to a healthy diet and the benefits of consuming fresh food and reducing the consumption of processed food, according to the recommendations of the Food Guide for the Brazilian population^{10,16}. These indicators of an unhealthy diet, associated with the low percentage of adults who perform physical activities during leisure time in the recommended intensity and durations, possibly contribute to the high proportion (52.5%) of overweight in the population, which is one of the most worrying data of this study.

For the third consecutive year, the prevalence of obesity has not increased in 2014, despite the increasing trend in recent years¹⁷. Studies show that in other countries in South and Central America the prevalence of obesity have increased in the last three decades¹⁸. Countries like Mexico and Chile have the highest overweight rates in Latin America (71.3% in Mexico and 64.5% in Chile)^{19,20}.

The physical activity can be evaluated in different situations such as: in leisure, in the daily commute to work and/or school, in work-related activities and at home. Sedentary activities seem to prevail in the population against a physically active routine, due to the pace of life, massive traffic in the country’s capitals and even security issues that inhibit the outdoor activities, in addition to reducing the availability, dedication and motivation to perform physical activity out of the work environment.

Physical activity during leisure time was more frequent among younger and more educated men. The good news is that this practice has grown among adults of both genders. About half of the adult population reported insufficient physical activity (less than 150 minutes per week of moderate physical activity or equivalent), however, the commitments of Global Action Plan for the Prevention and Control of NCDs predicted a 10% reduction of physical inactivity by 2025²¹. International comparison studies show prevalence of 43.2% in the world, among individuals aged 15 years and over²², besides pointing out that men tend to be more physically active than women. In Brazil, we highlight the implementation of the “Health Academy Program”, aimed at building facilities for the development of health promotion and physical activities, conducted by health professionals in conjunction with the community²³.

The presence of diseases such as hypertension, diabetes and dyslipidemia, although assessed by self-reporting, therefore, dependent on the access to health services for diagnosis²⁴, increase with the age of the population and generally is more common among women and less educated people, as a consequence of the lifestyle adopted by this population^{25,26}. Hypertension was reported by approximately a quarter of the population, dyslipidemia by a fifth and 8% mentioned diabetes.

FINAL CONSIDERATIONS

Among the limitations of the study, we highlight the representation restricted to the capitals of Brazil and sampling linked to the landline telephone coverage, resulting in the necessity of use of poststratification methods to minimize possible biases⁶.

The results of the 2014 Vigitel help to obtain an overview of the health behavior of the Brazilian adult population living in the country capitals, and have been continuously used for understanding the frequency and socio-demographic distribution of risk and protective factors for the development of chronic diseases in the population. The annual results have also subsidized the monitoring of the national targets established in the Strategic Action Plan to Combat Noncommunicable Diseases (NCDs) in Brazil, 2011 – 2022^{3,10}.

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