Health risk behavior of Brazilian university men

Luciana Zaranza Monteiro[1] (iD) *, Mayara Vinnie Souza Soares Parente[2]* (iD) *,*
Divina Marcia Soares de Oliveira[3] (iD) *, Juliana de Oliveira Toledo[4]* (iD) *, Esther de Oliveira Silva[3]* (iD) *,*
Suelene da Silva Montalvão Andrade[3] (iD) *, Andrea Ramírez Varela[5]* (iD) *.*

Summary: Health risk behavior of Brazilian university men. The insertion of men in the university environment is a complex and worrying phenomenon permeated by vulnerabilities, which are associated with the adoption of risky behaviors for health. The objective of this study was to evaluate the health behavior of Brazilian university men. A cross-sectional study with 663 men students. The study used a questionnaire on health-related life habits. All the questions were extracted from the Surveillance of Risk and Protection Factors for Chronic Diseases through Telephone Interviews. Logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals and chi-square tests. The analysis of the joint relationships between nutritional status, physical activity and diet was conducted by the multiple correspondence analysis. Of the 663 students, 67.8% were between 20-29 years of age, 69.2% consumed alcohol, 34.5% did not do physical activity, and 34.2% were overweight. The students who did not engage in physical activity smoked more (p=0.05), consumed less fruit (p<0.01), less salad (p<0.01), and consumed full fat milk (p=0.05). In the physically inactive students, a high prevalence of acquiring diabetes mellitus (p<0.01) and high cholesterol (p<0.01) was observed. University students were found to have unhealthy lifestyles. More public policies aimed at promoting preventive measures at universities are needed to encourage healthier health behaviors **Arch Latinoam Nutr 2021; 71(2): 94-103.**

Key words: Men; university; health promotion; nutrition; epidemiology.

Resumen: Comportamiento de los riesgos para salud de los varones universitarios brasileños. La inserción de los varones en el ámbito universitario es un fenómeno complejo y preocupante permeado por vulnerabilidades, las cuales están asociadas a la adopción de conductas de riesgo para la salud. El objetivo del trabajo fue evaluar el comportamiento de salud de los varones universitarios brasileños. Estudio transversal con 663 varones. El estudio utilizó un cuestionario sobre hábitos de vida relacionados con la salud. Todas las preguntas fueron extraídas de la Vigilancia de Factores de Riesgo y Protección de Enfermedades Crónicas mediante entrevistas telefónicas (Vigitel). Se utilizó la regresión logística para estimar los odds ratios (OR) y los intervalos de confianza del 95% and pruebas del test chi-cuadrado. El análisis de las relaciones conjuntas entre estado nutricional, actividad física y dieta se realizó mediante el análisis de correspondencias múltiples. De los 663 varones, el 67,8% tenía entre 20 y 29 años, el 69,2% consumía alcohol, el 34,5% no hacía actividad física y el 34,2% tenía sobrepeso. Los varones que no realizaron actividad física fumaron más (p = 0,05), consumieron menos fruta (p<0,01), menos ensalada (p<0,01) y consumieron leche entera (p = 0,05). En los varones físicamente inactivos, se observó una alta prevalencia de diabetes mellitus (p<0,01) y colesterol alto (p<0,01). Se descubrió que los varones universitarios tenían estilos de vida poco saludables. Se necesitan más políticas públicas orientadas a promover medidas preventivas en las universidades para fomentar comportamientos de salud más saludables. **Arch Latinoam Nutr 2021; 71(2): 94-103.**

Palabras clave: Varones; Universidad; promoción de la salud; nutrición; epidemiología.

[1]Department of Physical Education and Physiotherapy. University Center of the Federal District (UDF). Brasília, Distrito Federal, Brazil. [2] Department of Nursing. Escola Superior de Ciências da Saúde (ESCS). Brasília, Distrito Federal, Brazil. [3]Department of Nursing, University Center of the Federal District (UDF). Brasília, Distrito Federal, Brazil. [4]Department of Biomedicine. University Center of the Federal District (UDF). Brasília, Distrito Federal, Brazil. [5] Department of Public Health, School of Medicine, Universidad de los Andes, Bogotá, Colombia.
Autor para la correspondencia: Dra. Luciana Z. Monteiro   E-mail: lucianazaranza@hotmail.com

Introduction

The university constitutes an important environment in the configuration of the reality of life of university students. Several habits acquired during the years studied at universities continue to be incorporated into students' daily lives, even after leaving this environment (1). According to the collective imagination, health students have social responsibility for a healthy lifestyle

(2). In this perspective, it is widely reported that regular physical activity, together with nutritionally balanced food, in qualitative and quantitative terms, is an important factor in promoting health and quality of life (3).

The 2019 study on the Surveillance of Risk Factors and Protection for Chronic Diseases by Telephone Survey (Vigitel) showed, for all 26 capitals of Brazil and the Federal District, a prevalence of overweight of 55.4%. This prevalence of overweight was found to be higher in males, 57.1% compared to 53.9% in females. Also according to Vigitel, the prevalence of obese adults was 20.3%, with no inequality between men and women (4).

The relationship between physical activity (PA) and a balanced diet with health demonstrates that the combination of these factors acts directly in the prevention of chronic non-communicable diseases (NCDs), in promoting health and in the better capacity to perform the activities of daily living (5). Physical activity, in this field of knowledge, is accompanied by recommendations and protocols on how to prevent diseases and improve quality of life, seeking to mitigate and combat the deleterious effects of time and stressors on the human organism (5).

Physical activity has stood out as an effective strategy for the protection and treatment of several non-communicable chronic diseases (6). However, university students tend to adopt negative health behaviors, including the low level of physical activity (5).

Currently, there has been a high prevalence of insufficiently active university students and several barriers, such as the lack of access to information and the lack of adequate time or space, seem to contribute to the low adherence of this portion of the population to the regular practice of physical activity (7).

In this sense, the binomial food-physical activity is just one among other factors that make up well-being, quality of life, longevity, lifestyle and other aspects of a larger concept called health (8). Self-

image, relationships, control stress, finances, adoption of preventive behavior and restorative sleep are biological, social, economic and cultural factors that also influence health (9).

The National Policy for Integral Attention to Men's Health, focuses actions on illness and medicalization, focusing on male problems, for example, erectile dysfunction (10). However, male health behaviors, combined with the difficulty of health services in welcoming men, configure the main factors that distance men from the preventive perspective of healthcare (11).

It is noteworthy that studies have shown that entering university can increase health risk behaviors. The most prevalent behaviors are dissatisfaction with body weight (12), inappropriate eating habits, safety and violence, alcohol consumption and risky sexual behavior (13).

Healthy behaviors play a major role in wellbeing; exercise has been noted as having potential psychological and physical benefits, and academic achievement has been found to be positively associated with exercise habits (14). Therefore, investigating students' health is vital for developing tailored health promotion interventions aimed at improving their quality of life. Given that students in health majors are exposed to curriculums where they are taught how to maintain their health, we hypothesized that students at health colleges would show a higher level of adherence to healthy lifestyles than those at non-health colleges.

Thus, the aim of this study was to evaluate the health behavior of Brazilian university men.

Materials and methods

Cross-sectional study carried out with undergraduate students of the health course (Nursing, Physical Education and Pharmacy) at a private college in Brasília - DF.

The sample was of the convenience type consisted of 663 university students between October 2018 and April 2019 by trained researchers.

The number of participants was defined based on the guidelines on simple random sampling provided by Luiz and Magnanini (15). The number of university students per course was taken into consideration for sample size calculation. The

maximum tolerable error rate was 5% and the 95% confidence levels were indicated. Thus, the final sample consisted of 132 university students nursing, 327 Physical Education, and 204 Pharmacy.

A self-administered questionnaire on lifestyle was used, where the questions were obtained from the epidemiological survey - Surveillance of Risk and Protection Factors for Chronic Diseases through Telephone Interviews (VIGITEL) (4).

Were evaluated: Socioeconomic level (16); alcohol consumption (excess alcohol = consumption of five or more drinks in one session); smoking (yes / no); and health perception and self-assessment (excellent, very good, good, fair or poor).

Food consumption was measured using healthy and unhealthy diet markers, according to VIGITEL (4). Healthy - regular consumption of fruits and vegetables (5 or more days / week), and beans (5 or more days / week), while the unhealthy - consumption of meat with excess fat; fat milk; soft drinks or mix of powdered drinks / artificial juice (5 or more days / week).

Nutritional status was assessed by calculating the body mass index (BMI) [weight in kilograms divided by the square of height in meters]. Self-reported weight and height. The university students were classified as: underweight (BMI<18.5), normal weight (BMI:18.5-24.9), overweight (BMI: 25-29.9) and obese (BMI ≥30) (17).

Regarding physical activity, it was classified as inactive individuals (less than 150 minutes of moderate intensity physical activity per week or less than 75 minutes of vigorous intensity physical activity per week accumulated in the domains of work, home, transportation or discretionary domains) or active (150 or more minutes of moderate-intensity physical activity per week) (18). Before data collection, all participants signed an informed consent form.

Ethical aspects

The research project complied with the ethical precepts of research with human beings and with Resolution 466/12 of the National Health Council and was submitted and approved by the Human Research Ethics Committee of the Centro Universitário do Distrito Federal (CEPSH/UDF) under protocol number 1.794.275 and the Certificate of Presentation for Ethical Appreciation.

Statistical analysis

Data are presented as absolute and relative frequencies, and displayed with their respective 95% confidence intervals. The association between physical activity, nutritional status and diet were analyzed by chi-square tests.

The analysis of the joint relationships between nutritional status, physical activity and diet was conducted by the multiple correspondence analysis.

All statistical analyses were performed using the SAS Software, version 9.2, while correspondence analysis was conducted using SPSS, version 2.1. The significance level set at $p<0.05$.

Results

Table 1 shows sample composition and characteristics of the university students. The university students presented: aged 20-29 years (67.8%), belonged to the socioeconomic classes C (52.7%), self-perception of health – very good (37.4%), used alcohol (69.2%), overweight (34.2%) and did not achieve 150 minutes or more of PA per week (34.5%). We observed that many students consumed alcohol and did not perform the recommended level of physical activity.

Table 2 shows the prevalence of risk and protective factors for NCDs and self-reported diseases in university students.

Table 3 shows the comparison of consumption habits of university students according to physical activity per week. Physically active participants consumed more fruit ($p < 0.01$) and salad ($p < 0.01$) and smoke less (p=0.05), whereas physically inactive participants consumed more full fat milk (p =0.05). Those physically inactive men also had a higher prevalence for diabetes mellitus ($p < 0.01$) and high cholesterol ($p < 0.01$). These data show us the influence of the practice of physical activity in improving the lifestyle.

Table 4 shows comparison of nutritional status according to of consumption habits and physical

Table 1. Sample composition and characteristics of the university students

Variable	n	%
Age		
≤ 19	100	15.08
20-29	450	67.87
≥ 30	113	17.05
Socioeconomic level		
A	21	3.17
B	186	28.05
C	350	52.79
D	106	15.99
Undergraduate course		
Nursing	132	19.90
Physical Education	327	49.31
Pharmacy	204	30.79
Self-perception of health		
Excellent	127	19.16
Very good	248	37.41
Good	224	33.79
Fair	50	7.53
Poor	14	2.11
Smoking		
Yes	207	31.22
No	456	68.78
Use of alcohol		
Yes	459	69.23
No	204	30.77
Nutritional status		
Underweight	22	3.32
Normal	388	58.52
Overweight	227	34.24
Obese	26	3.92
>150 min of PA/week		
Yes	434	65.46
No	229	34.54
Total	663	100

activity per week. We observed statistical differences in the consumption of fruits (p=0.04) and consumption of milk with fat (p=0.03).

Table 2. Prevalence of risk and protective factors for NCDs and self-reported diseases in university students.

Variables	N	%	IC (95%)
Protection Factors			
Consumption (≥ 5 times/week)			
Fruit	338	50.98	47.18 - 54.79
Raw salad	290	43.74	39.96 - 47.52
Greens or vegetables	354	53.39	49.60 - 57.19
Beans	499	75.26	71.98 - 78.55
Risk factors			
Soft drinks	209	31.52	27.99 - 35.06
Consume full-fat milk	231	34.84	31.21 - 38.47
Consume of meat with visible fat	213	32.13	28.57 - 35.68
Sedentary	229	34.54	30.92 - 38.16
Smoking	207	31.22	27.69 - 34.75
Use of alcohol	459	69.23	65.72 - 72.74
Overweight (BMI ≥25 and < 30 kg/m²)	227	34.24	29.64 - 38.84
Obesity (BMI ≥30 kg/m²)	26	3.92	2.04 - 5.8
Self-reported diseases			
Arterial hypertension	22	3.32	1.95 - 4.68
Diabetes mellitus	30	4.52	2.94 - 6.11
High cholesterol	93	14.03	11.38 - 16.67
Dyslipidemia	31	4.68	3.07 - 6.28

Figure 1 shows the joint relationship between diet, nutritional status and PA, as assessed by multiple correspondence analyses. The proximity of the points referring to the line and the column indicate association and the distance a repulsion. The graph indicates that normal weight participants consumed meat with visible fat, full fat milk, and soft drinks, while obese participants did not consume full fat milk, meat with visible fat, beans and soft drinks. The proximity of the data in the graph indicates an association of the variables, thus, it is clear that: physically active individuals (150 min or more/week) tended to regularly consume vegetables/greens, fruit and salad, whereas their physically inactive counterparts did not consume these foods regularly.

The graph representing two dimensions generates four quadrants. Both dimensions, together, separate the characteristics placed in the upper left quadrant from those in the lower right quadrant, and the ones in the upper right quadrant from those in the lower left quadrant, thus

Table 3. Comparison of consumption habits of university students according to physical activity per week. Chi^2 Test.

| Variable | Physical activity > 150 min/week | | | | | | p |
| | No (n=229) | | | Yes (n=434) | | | |
	n	%	95% CI	n	%	95% CI	
Nutritional status							
Underweight	10	4.37	0.99 - 7.74	12	2.76	0.8 - 4.73	
Normal	130	56.77	48.59 - 64.95	258	59.45	53.56 - 65.33	0.65
Overweight	81	35.37	27.48 - 43.26	146	33.64	27.98 - 39.31	
Obese	8	3.49	0.46 - 6.52	18	4.15	1.76 - 6.54	
Alcohol							
No	81	35.37	29.18 - 41.56	123	28.34	24.1 - 32.58	0.05*
Yes	148	64.63	58.44 - 70.82	311	71.66	67.42 - 75.9	
Smoking							
No	157	68.56	62.55 - 74.57	299	68.89	64.54 - 73.25	0.93
Yes	72	31.44	25.43 - 37.45	135	31.11	26.75 - 35.46	
Fruit							
No	139	60.70	54.37 - 67.02	186	42.86	38.2 - 47.51	<0.01*
Yes	90	39.30	32.98 - 45.63	248	57.14	52.49 - 61.8	
Salad							
No	145	63.32	57.08 - 69.56	228	52.53	47.84 - 57.23	<0.01*
Yes	84	36.68	30.44 - 42.92	206	47.47	42.77 - 52.16	
Greens							
No	117	51.09	44.62 - 57.57	192	44.24	39.57 - 48.91	0.09
Yes	112	48.91	42.43 - 55.38	242	55.76	51.09 - 60.43	
Beans							
No	58	25.33	19.69 - 30.96	106	24.42	20.38 - 28.47	0.80
Yes	171	74.67	69.04 - 80.31	328	75.58	71.53 - 79.62	
Soft drinks							
No	147	64.19	57.98 - 70.4	307	70.74	66.46 - 75.02	0.08
Yes	82	35.81	29.6 - 42.02	127	29.26	24.98 - 33.54	
Full fat milk							
No	160	69.87	63.93 - 75.81	272	62.67	58.12 - 67.22	0.05*
Yes	69	30.13	24.19 - 36.07	162	37.33	32.78 - 41.88	
Meat with visible fat							
No	148	64.63	58.44 - 70.82	302	69.59	65.26 - 73.91	0.19
Yes	81	35.37	29.18 - 41.56	132	30.41	26.09 - 34.74	
Arterial hypertension							
No	218	95.20	92.43 - 97.97	423	97.47	95.99 - 98.94	0.12
Yes	11	4.80	2.03 - 7.57	11	2.53	1.06 - 4.01	
Diabetes Mellitus							
No	209	91.27	87.61 - 94.92	424	97.70	96.28 - 99.11	<0.01*
Yes	20	8.73	5.08 - 12.39	10	2.30	0.89 - 3.72	
High cholesterol							
No	184	80.35	75.2 - 85.5	386	88.94	85.99 - 91.89	<0.01*
Yes	45	19.65	14.5 - 24.8	48	11.06	8.11 - 14.01	
Dyslipidemia							
No	216	94.32	91.33 - 97.32	416	95.85	93.98 - 97.73	0.38
Yes	13	5.68	2.68 - 8.67	18	4.15	2.27 - 6.02	

* Chi-square test

Table 4. Comparison of nutritional status according to of consumption habits and physical activity per week. Chi^2 Test

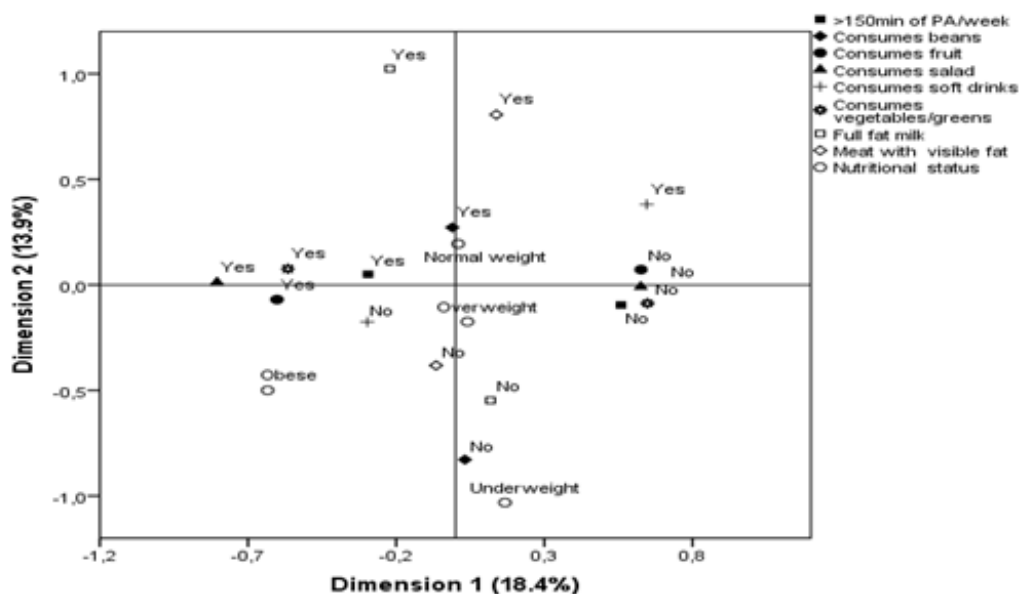| Variable	Nutritional status												p
	Underweight (n=22)			Normal weight (n=388)			Overweight (n=227)			Obese (n=26)			
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	
Alcohol													
No	08	36.4	16.26 - 56.46	128	32.9	28.31 - 37.67	59	25.9	20.29 - 31.79	09	34.6	16.33 - 52.90	0.28
Yes	14	63.6	43.54 - 83.74	260	67.1	62.33 - 71.69	168	74.1	68.30 - 79.71	17	65.4	47.10 - 83.67	
Smoking													
No	15	68.2	48.72 - 87.64	264	68.1	63.40 - 72.68	156	68.7	62.69 - 74.75	21	80.7	65.6 - 95.92	0.61
Yes	07	31.8	12.36 - 51.28	124	31.9	27.32 - 36.60	71	31.2	25.25 - 37.31	05	19.3	4.08 - 34.38	
Fruit													
No	06	27.3	8.66 - 45.88	202	52.1	47.09 - 57.03	108	47.6	41.08 - 54.07	09	34.6	16.33 - 52.90	0.04*
Yes	16	72.7	54.12 - 91.34	186	47.9	42.97 - 52.91	119	52.4	45.93 - 58.92	17	65.4	47.10 - 83.67	
Salad													
No	14	63.6	43.54 - 83.74	217	55.9	50.99 - 60.87	131	57.7	51.28 - 64.14	11	42.3	23.32 - 61.30	0.43
Yes	08	36.4	16.26 - 56.46	171	44.1	39.13 - 49.01	96	42.3	35.86 - 48.72	15	57.7	38.70 - 76.68	
Greens													
No	11	50.0	29.11 - 70.89	182	46.9	41.94 - 51.87	105	46.3	39.77 - 52.74	11	42.3	23.32 - 61.30	0.96
Yes	11	50.0	29.11 - 70.89	206	53.1	48.13 - 58.06	122	53.7	47.26 - 60.23	15	57.7	38.70 - 76.68	
Beans													
No	03	13.6	0 - 27.98	91	23.5	19.24 - 27.67	61	26.8	21.11 - 32.64	09	34.6	16.33 - 52.90	0.29
Yes	19	86.4	72.02 - 100	297	76.5	72.33 - 80.76	166	73.2	67.36 - 78.89	17	65.4	47.1 - 83.67	
Soft drinks													
No	14	63.6	43.54 - 83.74	269	69.3	64.74 - 73.92	153	67.4	61.3 - 73.5	18	69.2	51.49 - 86.97	0.92
Yes	08	36.4	16.26 - 56.46	119	30.7	26.08 - 35.26	74	32.6	26.5 - 38.7	8	30.7	13.03 - 48.51	
Full fat milk													
No	20	90.9	78.9 - 100	241	62.1	57.29 - 66.94	152	66.9	60.84 - 73.08	19	73.1	56.03 - 90.13	0.03*
Yes	2	9.1	0 - 21.1	147	37.9	33.06 - 42.71	75	33.1	26.92 - 39.16	7	26.9	9.87 - 43.97	
Meat with fat													
No	14	63.6	43.54 - 83.74	268	69.1	64.47 - 73.67	153	67.4	61.3 - 73.5	15	57.7	38.7 - 76.68	0.64
Yes	8	36.4	16.26 - 56.46	120	30.9	26.33 - 35.53	74	32.6	26.5 - 38.7	11	42.3	23.32 - 61.3	
PA >150 min/week													
No	10	45.4	24.6 - 66. 26	130	33.5	28.81 - 38.2	81	35.7	29.45 - 41.91	8	30.8	13.03 - 48.51	0.65
Yes	12	54.5	33.74 - 75.35	258	66.5	61.8 - 71.19	146	64.3	58.09 - 70.55	18	69.2	51.49 - 86.97	

* Chi-square test

Figure 1. Joint relationship between consumption habits, nutritional status
and physical activity per week of university students. Multiple correspondence analysis.

characterizing groups with extremely opposite profiles. The method does not establish the statistical significance of the associations nor assesses the independent effect of each characteristic; however, it combines the advantages of non-linear and multidimensional methods.

Discussion

Lifestyle is a determining element of health promotion. There are lifestyle factors that can negatively affect health, over which one can have control, like smoking, alcohol, and stress. Nonetheless, there are positive factors, such as diet, physical activity and preventive behavior, which, if properly administered, contribute to the prevention and control of various diseases (19). In healthcare for men, knowing the degree of importance attached to these factors can be useful in planning health actions that encourage the adoption of healthy lifestyles, with greater focus on the health measures less prioritized by the population (19).

The study demonstrated a high prevalence of alcohol consumption among university students 69.2% (95% CI: 65.72-72.74), which corroborates the alcohol consumption of the Brazilian population (86.2%) (20) and also that found in studies with university students (21), despite

the methodological differences to estimate consumption.

Alcohol is one of the drugs with high consumption among university students, being consumed in moments of leisure and entertainment. Students consume alcoholic beverages mainly at party times, in the company of friends and colleagues (22).

The Global Status Report on Alcohol and Health estimated that in the population above 15 years old the punctual prevalence of alcohol dependence was around 2.6% in the world and 4.1% in the Americas (23).

The Vigitel 2019 allowed describing the eating habits of the Brazilian population: the frequency of the regular consumption of beans was 66.5%; 27.9% of the population met the recommended intake of fruits and vegetables and consumption of regular intake of soft drinks or processed juices was 18.3% (4).

Another important health-risk behavior is the low level of physical activity among university students, and the men showed even lower levels. We identified in other studies that academics did

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not perform regular physical activity, becoming more and more inactive and it was noted that those in the health area were considered more physically inactive when compared to other areas (3).

Another study (24) found that 55% of academics in the areas of exact sciences, humanities and biological sciences were considered physically inactive (did not perform more than 150 min / week of physical activity). This demonstrates that only slightly less than half of the participants met the recommendations for physical activity.

The prevalence of physical inactivity among young university students appears to be the result of several factors, including today´s highly competitive job market demanding increasingly skilled professionals and the consequent search for activities that enable entry into this market as the course progresses (25).

Thus, healthcare students increasingly engage in academic and extracurricular activities, which may limit time spent on physical activity (26). As the course progresses, they focus on activities in more skilled areas, such as hospital internships, and neglect physical activity, an essential factor in preventing diseases and staying healthy (26).

A study carried out in Europe also showed high prevalence of accumulation of risk factors in adults living in Belgium. The authors concluded that the factors were associated with higher prevalence of poor physical and mental health, especially among adults (27).

A 10-year-study monitored health indicators and quality of life of 1.232 university students in Bahia, Brazil, and found an insufficient consumption of fruit and vegetables by 81.2% and 57% of participants, respectively (28).

Data from the Behavior Risk Factor Surveillance System (BRFSS), also collected by telephone interview and with a questionnaire similar to that used in VIGITEL, show that in the United States the recommended consumption of fruits and vegetables remained stable over a period of 10 years (between 1994 and 2005), varying between

24.6% and 25%, at a level similar to that currently observed in Brazilian capitals (29).

The marked prevalence of high full-fat milk consumption by men (34.8%) is worrisome, as this habit is associated with the global risk of cardiovascular diseases, such as coronary heart disease and stroke (30). The habit of consuming fatty meat was not assessed in other studies conducted with university students. In this study, the men had a high prevalence of consuming fatty mean (32.1%) (30).

The majority of our sample (58.5%) was normal weight. This agrees with the results of other studies, in which normal weight was also more prevalent among university students (6). In China, the prevalence of overweight and obesity among university students was 9.5%, with a specific prevalence of 13.5% in males (31).

We observed that inactive university students presented more morbidities and inadequate eating habits, these factors can be explained by the fact that physical inactivity provides a high prevalence of chronic diseases, as well as the appearance of metabolic and physiological alterations, such as obesity and diabetes.

The present study has a number of limitations. First, the cross sectional nature of the data analyzed impedes indicating any causal relationship or direct influences of the variables included in the study. Second, the data on physical activity and diet were collected using a self-reported questionnaire, which might have caused measurement errors in the estimation of the prevalence (over-reporting in the case of healthy habits or under- reporting in the case of unhealthy habits as previously reported in literature). Finally, regarding dietary information, consumption of each of the selected foods was collected based on frequency per week without portion size.

Despite the limitations, the results reached the objective proposed and contribute to the health of university students by providing important information for the development of other studies in the same perspective and for the construction of educational strategies focused on the ways of coping with stress and choosing healthier life behaviors, which can have positive impacts on quality of life and health in general.

If health professionals are considered health promoters, their actions, behaviors and healthy habits represent an important image for their patients.

Conclusions

The data show that a large number of university students have adopted an unhealthy lifestyle, especially with regard to consuming high levels of alcohol, not engaging in physical activity according to international recommendations, and inappropriate eating habits.

Thus, the results of this research can contribute to the development of actions focused on promoting health and a healthier lifestyle in academia.

Conflict of interest:

The authors report no conflicts of interest

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